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Bemis Industries, Inc. B2320
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Certain-teed Products Corp. B2082; B2319
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Bliss Steel Products Corp. B1506
Campbell Casement Window Corp. B1507
Campbell Industrial Window Co., Inc., Div. of Campbell Metal Window Corp. B1510
General Bronze Corp. B1661
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Lupton's, David, Sons Co. B1721
Milcor Steel Co. B1835
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Crittall Casement Window Co. B1515
General Bronze Corp. B1661
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METAL WINDOWS

SOLID SECTION STEEL WINDOW INDUSTRY

1119 Terminal Tower
CLEVELAND, OHIO

Membership

Member manufacturers of this Association may be identified as such in the following pages, by the line "Member Solid Section Steel Window Industry" in the title headings of their individual catalogues.

The SOLID SECTION STEEL WINDOW INDUSTRY includes the principal manufacturers engaged in the manufacture, distribution and erection of all or a number of the following products fabricated mainly from hot rolled steel sections:

Division "A." Windows of the horizontally pivoted or vertically pivoted type; pivoted window operators; windows of the commercial projected or architectural projected type; Underwriters' windows; continuous windows; continuous window operators; basement windows; utility windows; and industrial doors.

Division "B." Casement windows of the inward-opening and outward-opening type, hinged or projected from the side, top, or bottom; and casement windows of the horizontally pivoted or vertically pivoted type.

Purpose

The objects of the SOLID SECTION STEEL WINDOW INDUSTRY are to broaden the market and stimulate trade in the products of the Industry; to eliminate unfair methods of competition and uneconomic trade practices; and to develop methods and products to bring about general standardization and elimination of waste.

Use and Adaptability of Industry Products

There follows a list of the principal products of this Industry together with a brief indication of the more particular usage of each:

Pivoted Windows—This window is practically universally used on industrial plants, powerhouses, garages, and all similar construction where economy of first cost combined with a maximum degree of light and ventilation are the determining factors.

Projected Windows—Commercial—For high grade industrial construction and for schools, institutional buildings and similar construction where the superior and convenient features of the projected type window make it desirable.

Projected Windows—Architectural—For use on schools, office buildings, hotels and institutional buildings where a high grade window is required. Standard hardware is solid bronze and glass is held in place with continuous solid steel glazing stops.

Continuous Windows—These windows are adapted to use in monitors or in sawtooth construction. They are often used in powerhouses and industrial plants where their heavy construction and hinged-at-the-top feature provide for maximum ventilation with full protection during inclement weather.

Basement Windows—Now generally used in all residence construction where the inherent non-sticking and non-swelling advantages of steel windows are especially desirable.

Mechanical Operators—Operators for steel windows may be had in the tension design for continuous and pivoted windows, or in the torsion design (worm and gear, or rack and pinion) for pivoted windows and for short runs of continuous windows.

Industrial Doors—Tubular steel doors are the logical type for use in all industrial construction where their rugged strength provides ample resistance to the severe usage encountered in manufacturing plants, warehouses, garages, railroad shops, freight houses, etc.

Light Casements—The rapid expansion of the use of this product in the construction of homes, apartments, dormitories, hotels, and similar work, attests to its popularity gained through highly satisfactory performance in the residential field.

Intermediate Casements—These windows are suited for use on any building where rugged construction, high quality of hardware, and finished architectural appearance are essential requirements. These casements may be had with or without glazing beads.

Heavy Casements—Windows in this classification are intended for use on high grade building construction when the size of ventilator design is greater than the maximum recommended for the intermediate casement.

Casement doors are also furnished under this specification.

Casement Section Projected Windows—This high quality product may be used on practically any type of building. Its convenient control of natural ventilation with projected type ventilators, suggests its use particularly on schools, hospitals, offices, etc.

This classification includes also the "Combination Casement" made up of a pair of casement leaves with a projected type transom or a sill ventilator.

Underwriters' Windows—The Underwriters' Laboratories, Inc., will provide labels for most types of steel windows, provided certain special details of construction and limiting glass layout are followed.

Subframes—These are usually desirable on the more important public building projects employing casements; also, on large openings made up of any better grade steel windows, metal subframes with suitably designed mullions and imposts are often an architectural or a structural necessity.

Service and Consultation

All members of the SOLID SECTION STEEL WINDOW INDUSTRY offer products made in standard sizes in accordance with the latest U. S. Department of Commerce Simplified Practice recommendations, Pamphlet R-72. Individual details and data concerning the various Industry products will be found more completely in the catalogue insertions of the Member Manufacturers.

Information may also be had by consulting the "Where to Buy It" section in the classified telephone directory, under the heading "Windows, Metal" for the address of the nearest local representatives. These local offices will co-operate with architects, engineers, contractors, and owners in all matters relating to the use and cost of Industry products.

Standard specifications and building code recommendations, covering practically all divisions of steel window products, have been prepared for the use of public and commercial architects and engineers. Copies will be furnished on application.

ESTABLISHED 1883

THE ADAMS COMPANY

Manufacturers of Steel Windows and Steel Doors

Steel Street
DUBUQUE, IOWA

Products

ADAMS STEEL WINDOWS: Architectural, Industrial, Commercial, Basement, Utility and Agricultural.

ADAMS STEEL DOORS: Architectural, Industrial and Garage.

Also Adams Metal Frame Window Screens, Casement, Projector and Basement; Adams Wire Guards, Window, Partition and Special.

Adams Steel Casement Windows

Standard Type—Windows made to standard sizes and are outswinging. All windows fully equipped with suitable anchors and cleaning hinge. Hardware is designed special for screening. Screens can be installed easily.

Note: Inswinging windows can be furnished at an extra cost.

Heavy Type—Windows made special according to plans and specifications.

Adams Steel Industrial Windows

Center Pivoted Type—Standard sizes; details upon request.

Utility Type—One standard type, 6-light, 12x18 ins.



Adams Standard Outswinging Steel Casement Window

Adams Steel Commercial Type Projected Windows

Windows project either in or out and are equipped with all necessary hardware. Standard and stock sizes. Prices upon request.

Special sizes made to order.

Adams Steel Basement Windows

Detailed information and price sheets for standard and stock sizes upon request.

Top Hinged—Windows open in at bottom, hinged at top.

Bottom Hinged—Windows open in at top, hinged at bottom.

Adams Agricultural Steel Windows

Made especially for barns, poultry houses, hog houses, etc. Windows open in at top and can be raised up at bottom, so as to have bottom ventilation as well as top. Windows can be furnished with or without side shields.

Details and prices upon request.



Adams Architectural Steel Door, Special Design

Adams Steel Doors

Details and prices for standard size steel doors upon request. Special sizes made to order.

Architectural Type—Specially designed.

Industrial Type — Standard and special.

Garage Type—Special.

Special Work

Steel windows and doors made to specifications.

Let us submit elevations, details and prices on your special work, such as: steel store fronts, special steel doors, etc.

Our Engineering Department will gladly work out construction details and furnish drawings for approval.

Catalogues

Catalogues, construction and installation details mailed upon request.

ESTABLISHED 1881

THE WILLIAM BAYLEY CO.

51 Years Progressive Service to Builders

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NEW YORK, N. Y., 67 W. 44th Street
Telephone, VAnderbilt 3-2858

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SALES AGENTS IN 75 AMERICAN CITIES

Member Solid Section Steel Window Industry

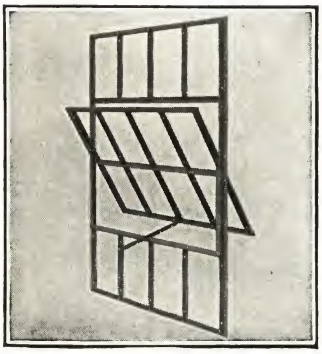
BAYLEY
STEEL WINDOWS & DOORS

Separate Catalogues Covering These Products Are Available
A Part of the Line is Offered in Wrought Iron, Bronze and Aluminum as Well as Steel

Bayley Products

For over half a century Bayley Products have been accorded considerable preference by the building industry. Bayley windows and doors maintain this record because Bayley has pioneered many important movements since the introduction of steel windows and doors. The products which have led the way have maintained high standards of quality in workmanship and material, of simplicity and efficiency in design and of continuous service and satisfaction to each user.

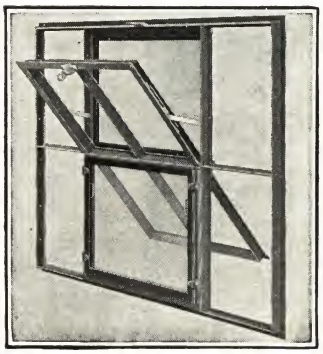
Bayley catalogues are consistent with the standard of the products. Each different window and door pictured and described hereafter is completely covered by its individual catalogue which contains sections, details and standard layouts. These catalogues are designed to permit easy tracery of details and sections for transfer to plans and construction drawings. You may have any or all catalogues and an indexed folder to file them in by asking either the Executive Office in Springfield, Ohio, or the district offices listed above. The Bayley man in every territory is a trained window and door specialist.



Pivoted Windows

Pivoted windows for sidewalls of factories, warehouses, garages, loft buildings, powerhouses and all other industrial buildings. Standard layouts and sizes are 12x18 and 14x20 in. They are made of heavy, rolled steel sections.

Design of sections insures permanence and low cost of maintenance. There are neither sharp edges which encourage corrosion, nor ledges where dirt and moisture may collect. Flat surfaces are neat, easily painted and require a minimum amount of paint. Pivoted windows have a deep angle frame of a sufficient size to provide a ½-in. engagement at head, jambs and sill in all wall constructions. Sections are 1½ in. or more in depth.



Pivoted Windows Screened

Pivoted windows screened for buildings requiring screen protection added to advantages of pivoted windows. Standard layouts and sizes are 12x18 and 14x20 in.

These screened windows protect materials and machinery in all kinds of manufacturing and distributing plants. They should not be confused with pivoted windows with screens attached in a makeshift manner.

Ventilators and screens are built together but screens are removable.

Screens made by THE WILLIAM BAYLEY CO. are an integral part of the window. They have solid steel frames in hot dipped galvanized finish. Bronze screen cloth in 16-mesh is standard.



Projected Windows Commercial

Projected windows commercial for industrial buildings, garages, offices, storage and loft buildings. Standard layouts and sizes are 12x18 and 14x20 in. Windows are made to be glazed from the inside or the outside and this detail should be carefully specified.

Sections are 1½ in. deep and similar to those of pivoted windows. Projected ventilators permit use of shades and drapes. Screens when attached fit flat against weathering.

Corners of ventilators and ventilator openings are electrically welded and ground where necessary for strength. Ventilators have bronze sliding pivots at top for projected out and at bottom for projected in.



Projected Windows Architectural

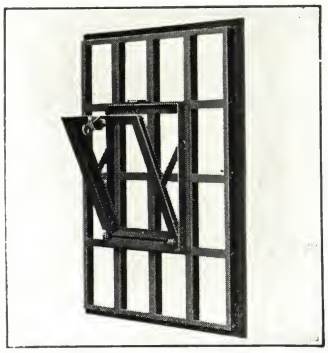
Projected windows architectural for schools, clubs, public and office buildings. Windows are made to be glazed from the inside or the outside and this detail should be carefully specified.

Frames are extra heavy deep flanged channels which provide for wall anchorage, rigidity and pleasing appearance.

Masonry, stucco, plaster and interior finish are brought directly against flanges of frames. Corners of ventilators and ventilator openings are electrically welded and ground. Ventilators project in and out to an extent which permits washing of outside surfaces from the inside.

Hardware of bronze in matt bronze finish is standard.

BAYLEY STEEL WINDOW AND DOOR PRODUCTS



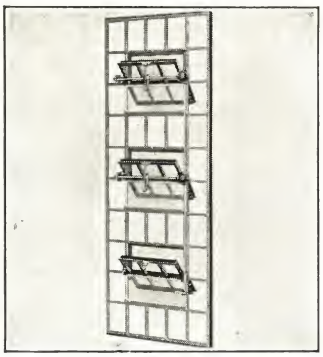
Guard Windows for Prisons Super Bar

Originated by THE WILLIAM BAYLEY CO. and protected by patents. For maximum and medium security buildings in prisons and jails. Also adaptable to banks, jewelry stores and warehouses, where protection from burglary is required.



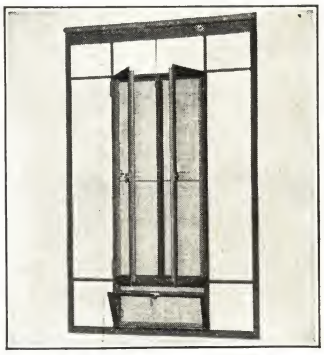
Prison Windows Screened 1½-in. T-bar

For medium and minimum security buildings in prisons and jails. Ventilator is limited in its degree of opening to prevent escape. Average size of glass spaces 6x9 in. Screens cannot be removed by inmates.



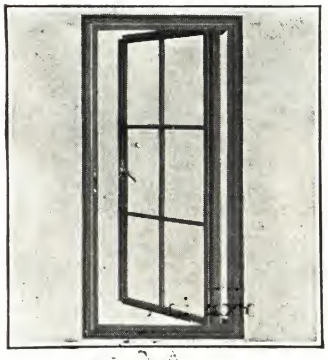
Prison Windows Screened with Mechanical Operator

For medium and minimum security buildings where windows come in high bays and require mechanical operation. Operation is by crank handle and operator is made by THE WILLIAM BAYLEY CO.



In-swinging Casements Weatherstripped and Screened

For hospitals, hotels, apartment houses and office buildings, provide safety from falling out, complete light and ventilation control and economy because of weatherstrip ping.



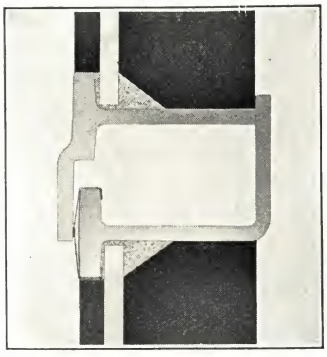
Steel Casements

For use in many kinds of buildings and various type of wall construction. Ventilators open out removing all obstruction within the building and permit draperies to hang with no interference with casement.



Casement Screens

Bayley screen for steel casements showing small door through which casement is operated. Screen fits tight against casement frame. Screens can be removed and replaced without special tools. Bronze screen cloth, 16-mesh, is standard.



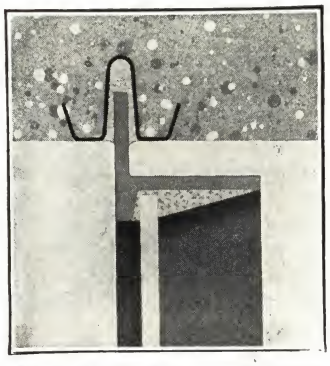
Casement Weatherstripping

Spring bronze weatherstripping fits tightly on ventilator section and closes against frame section. Makes steel casement weathertight. Weatherstripping saves fuel bill. Bayley furnishes it as standard equipment.



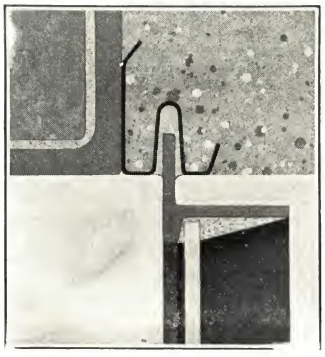
Continuous Windows and Operating Devices

Constructed of specially designed solid rolled steel sections and welded together for strength and permanency. Operators may be either manually or electrically controlled. Sturdy construction and good quality.



Steel Window Inserts, Concrete Construction

Save time and money by eliminating cement finishing and calking. Permit installation of windows in all kinds of weather and glazing may follow immediately after erection. Ventilators work freely when inserts are used.



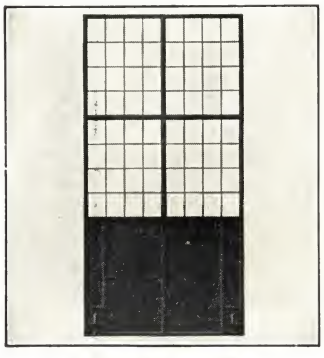
Steel Window Inserts, Concrete Frame—Brick Veneer

Safeguard against corrosion and serve as an expansion joint. They also eliminate leakage where frame of window enters wall. Windows erected in openings provided with inserts, never become loose.



Tubular Steel Doors

Adaptable to industrial, commercial and airport buildings. They are made to swing, slide and fold, and are furnished complete with hardware. Corners are mitered and reinforced with heavy castings driven inside tubes.



Airplane Hangar Doors

Adaptable to straight and curved tracks in airplane hangars and factories. Heavy tubes are used to provide structural strength and neat finished appearance. Doors are completely welded together, an exclusive feature which gives superior strength.

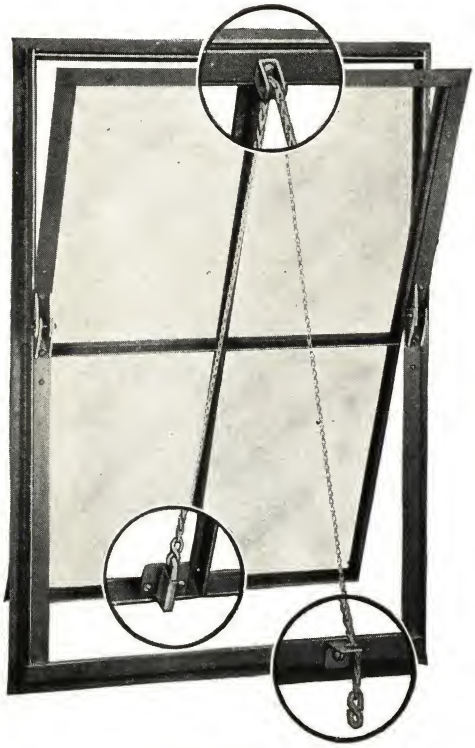
BAYLEY STEEL WINDOW AND DOOR PRODUCTS

BLISS STEEL PRODUCTS CORPORATION

Manufacturers of Solid Section Steel and Aluminum Windows

EAST SYRACUSE, N. Y.

MEMBER OF THE SOLID SECTION STEEL WINDOW INDUSTRY

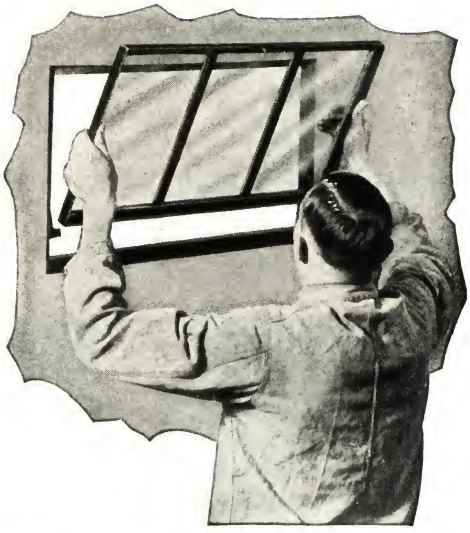


Products

PIVOTED WINDOWS
PROJECTED WINDOWS:
Commercial and Architectural
BASEMENT WINDOWS:
Puttyless
UTILITY WINDOWS
ALUMINUM WINDOWS
STEEL TUBE DOORS

Literature

Catalogue No. 2 is available to all interested. It contains illustrations, details, and typical installations of all our windows and doors.

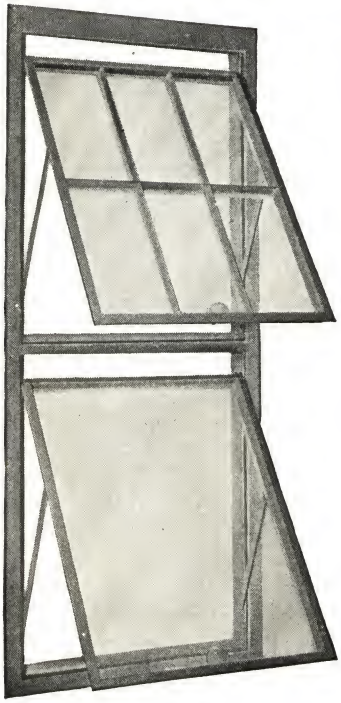


"Mostlite" Puttyless Basement Windows

This basement window (illustrated above) includes many features: ventilator stays open in any position and can be instantly removed, glazed on cork, weathertight, welded and riveted throughout. A fine window at a very reasonable price.

Sidewall Pivoted Windows

A window of guaranteed quality (illustrated above). Welded throughout, weathertight, durable, made to stand hard usage. For standard sizes and construction details, write for our complete catalogue.



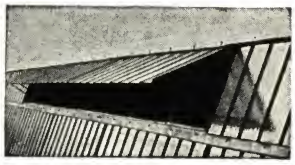
Architectural Projected Windows

An attractive and well proportioned window welded throughout—all welds ground. It is designed with the utmost care for appearance, ventilation and screening.

This window is ideal for office buildings, etc. (illustration at left). Made in both steel and aluminum.

Operation of ventilators and tightness guaranteed. Inside putty glazed for easy replacement of glass.

Top Hung Continuous Windows



We have furnished this type of window for some of the country's largest manufacturers. Names on request. These windows are welded throughout, and of rigid construction that will last.

Bliss "Manifold" Window



A fine utility steel window of good design, welded or riveted throughout. This window is proving very popular for private garages, penthouses, and small stores. A window that operates very easily and will give a lifetime of continuous service.

Bliss Steel Tube Doors



The Bliss Steel Doors are carefully constructed. They are made of heavy tube steel, welded and ground throughout.

The proper door for industrial buildings.

Stiles are wide enough to take any standard lock with standard backset.

CAMPBELL CASEMENT WINDOW CORP.

Manufacturers of Steel, Bronze and Aluminum Windows and Doors

Pershing Square Building, NEW YORK, N. Y.

SALES REPRESENTATIVES IN PRINCIPAL CITIES

Products

HEAVY SECTION WEATHERSTRIPPED CASEMENTS and DOORS, in steel, bronze and aluminum; STANDARD STEEL WEATHERSTRIPPED CASEMENTS; DOUBLE GLAZED CASEMENTS; BALANCED STEEL WINDOWS; and CASEMENT PROJECTED WINDOWS in steel and aluminum.

Also Heavy and Standard Casements non-weatherstripped.

Weatherstripping

The efficiency of the Campbell method of weatherstripping casements is definitely proven by the performance of 3,300 Campbell Weatherstripped Casements installed in the Harkness Memorial Quadrangle at Yale University in 1920. These casements are absolutely weatherproof and have given complete satisfaction. It is a convincing example of a permanent and thoroughly efficient method of weatherproofing.

Campbell Weatherstripped Casements eliminate inleaking air draughts and water—they are stormproof and dustproof.

Furnished in two weights of steel sections, the Heavy 400 Series sections and the Standard 100 Series sections. They are also furnished in aluminum and bronze.

Campbell Weatherstripped Casements—400 Series

Furnished with muntins or for leaded glass.

This series embraces side hung or pivoted casement windows for residences, banks, clubs, public buildings, churches, etc., balanced and projected windows for hospitals and schools, double glazed windows (either side hung or pivoted) and casement doors.

The appearance of both fast and opening portions is identical throughout. Whether opening or fixed, the sight lines of all windows are exactly similar and the glass is in the same plane. Hinges are of solid bronze, of unusually substantial design.

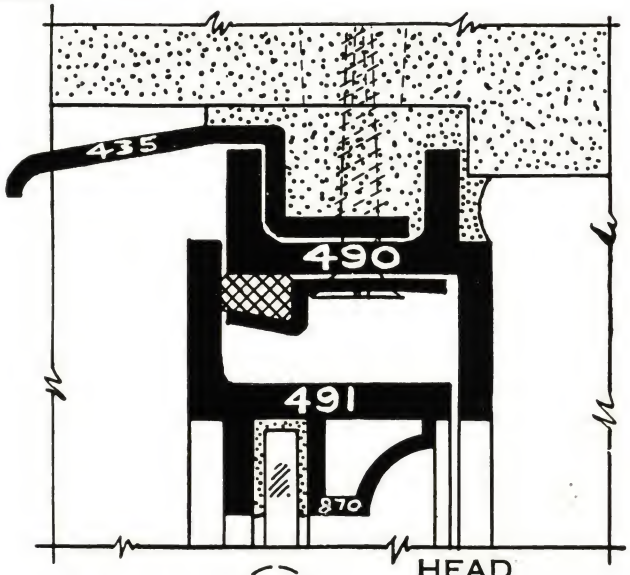
Campbell Pivoted Casements are hung on our special solid brass, machine turned pivots of large diameter. They are formed with two ribs on the outside of each part designed to prevent any thrust on the screws that hold them in position. Bars to which the pivots are fixed are machined from solid, continuous sections, instead of being formed by reversing and welding two bars together. Weathering is solid with the frames and not obtained by use of welded or screwed beads or strips.

Construction—The Campbell Weatherstrip is inserted in a dovetailed groove in the casement frame. The sash is so arranged as to make a continuous contact with the weatherstrip in addition to the usual metal to metal contact. Cross joints of glazing bars are locked to avoid cutting away the strength of the bar at the joint and to give a distinctive appearance to the window. All corners are mitered by specially designed tools and then welded solid. All contacts polished smooth.

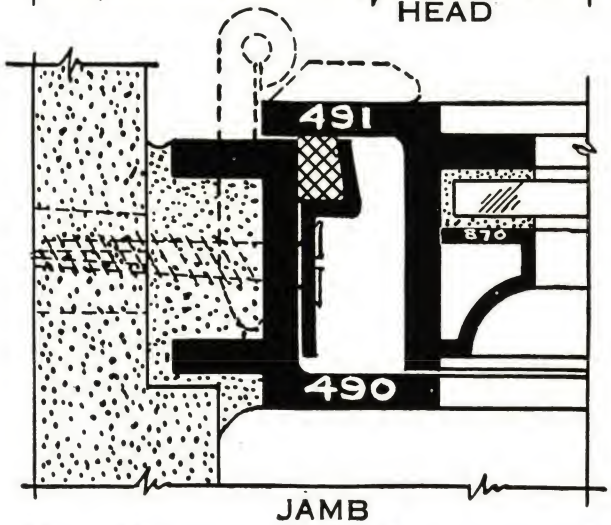
Hardware—2-point solid bronze handle. Bronze sliding adjusting stay. Extension hinges, permitting cleaning the window from the inside.

Non-weatherstripped Casements—400 Series

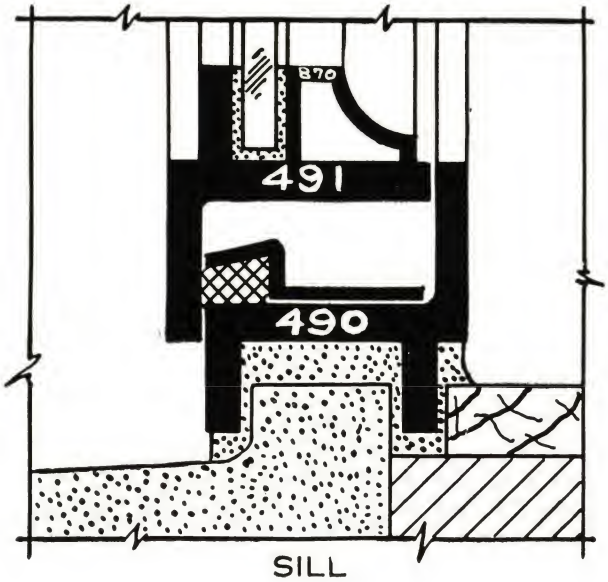
400 Series Casements can also be furnished, if desired, in non-weatherstripped sections.



HEAD



JAMB



SILL

Campbell Standard Casements—100 Series

Furnished with muntins or for leaded glass.

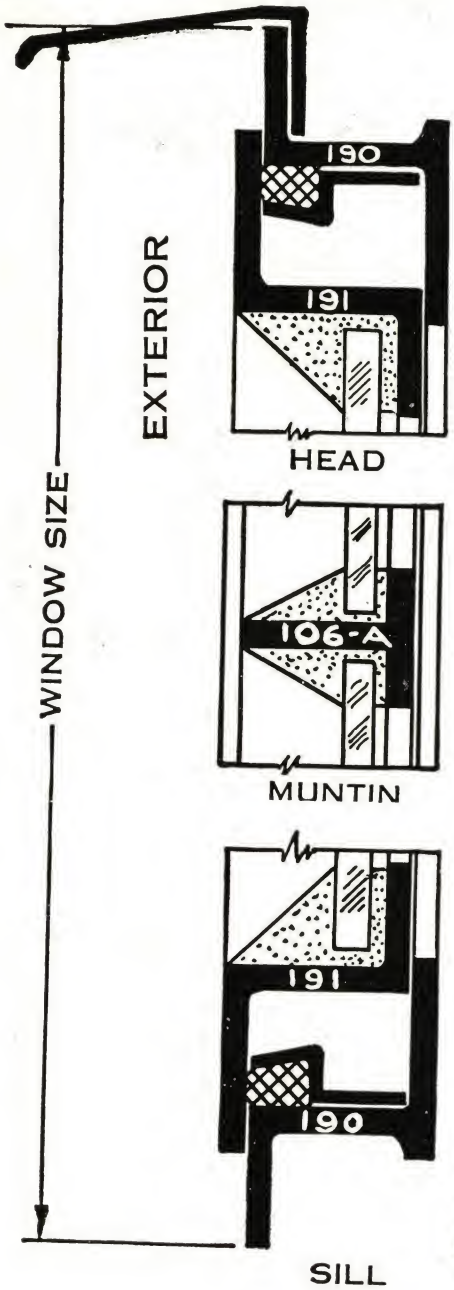
Campbell Casements are arranged for coupling together by means of our heavy mullions and transom bars, specially designed to afford double weathering and rigidity, neither of which is secured when T-bars are used for this purpose. This feature enables the use of these windows in large openings, even when exceptional wind pressure must be provided against.

Material Specifications—Windows are constructed of rolled mild steel sections of best quality, hydraulically straightened. Cross joints of glazing bars are locked to avoid cutting away the strength of the bar at the joint and to give a pleasant and distinctive appearance to the windows.

The frame member is so designed that an undercut slot is formed for the reception of a continuous felt weatherstrip around its entire perimeter. The sash is so arranged in the frame that it makes one weathering contact with the felt weatherstrip and one weathering contact with the steel frame.

All corners are mitered by specially designed tools and then welded solid.

All casements open outwards and are hung on heavy steel hinges, with ⅜-in. diameter bronze pins. Side hung casements are fitted with two-point solid bronze handles and solid bronze sliding adjusters. Top hung casements are fitted with hinges and solid bronze peg stay with pin and rest.



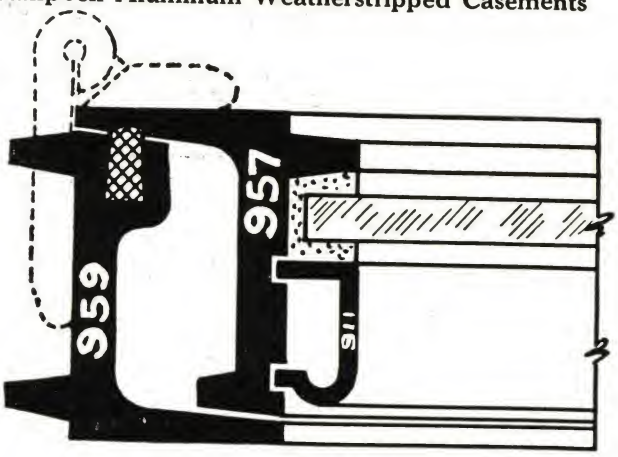
Vertical Section Campbell 100 Series Casement

All fittings have bronze working parts.

These windows are designed for building in as the work proceeds and anchors are provided for this purpose. Where it is desired to erect these in wood or stone, countersunk fixing holes are provided.

100 Series Casements can also be furnished, if desired, in non-weatherstripped sections.

Campbell Aluminum Weatherstripped Casements



JAMB

Frame and sash members are of aluminum extruded sections. The frame member is so designed that an undercut slot is formed for the reception of a continuous felt weatherstrip around its entire perimeter. Sight and glass lines are exactly similar throughout, whether fixed or opening sash.

Furnished either for outside glazing with spring clips and putty, or with glazing beads, either inside or outside glazed, as specified.

All hardware is of white bronze, cadmium plated, satin finish. Handles are of lever type and are provided with two ventilation notches. Stays are of the sliding, non-projecting thumbscrew type. Cleaning hinges are provided where required.

Transom bars have the weatherdrip rolled solid with the section.

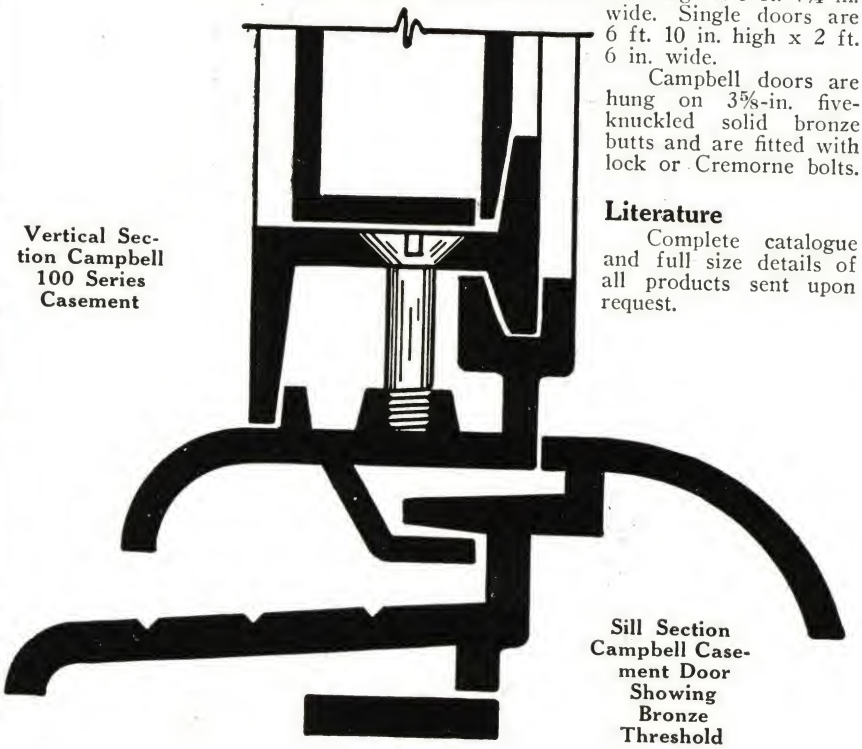
Campbell Casement Doors

All Campbell Casement Doors are made in 400 series sections as we are unable to recommend a lighter weight section for doors. Standard doors are 6 ft. 10 in. high x 3 ft. 4¼ in. wide. Single doors are 6 ft. 10 in. high x 2 ft. 6 in. wide.

Campbell doors are hung on 3½-in. five-knuckled solid bronze butts and are fitted with lock or Cremorne bolts.

Literature

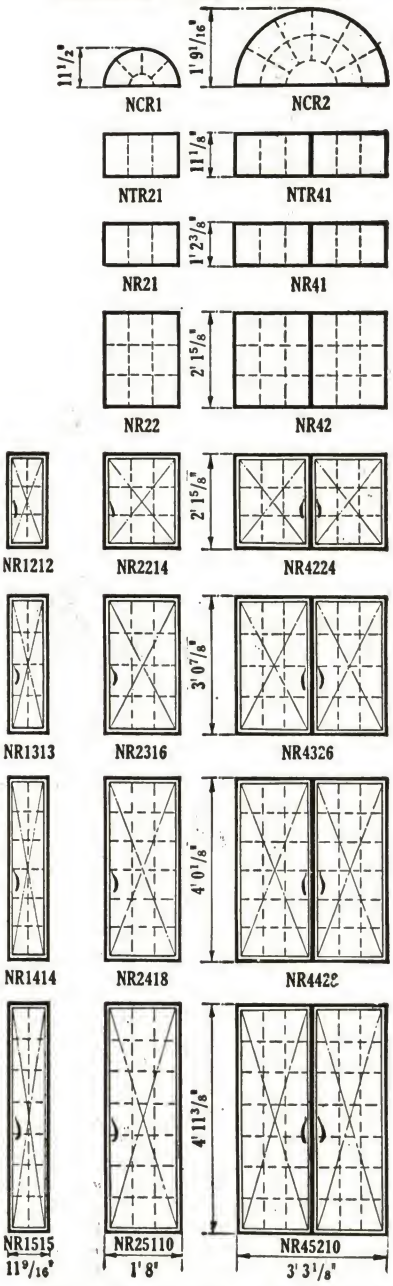
Complete catalogue and full size details of all products sent upon request.



Sill Section Campbell Casement Door Showing Bronze Threshold

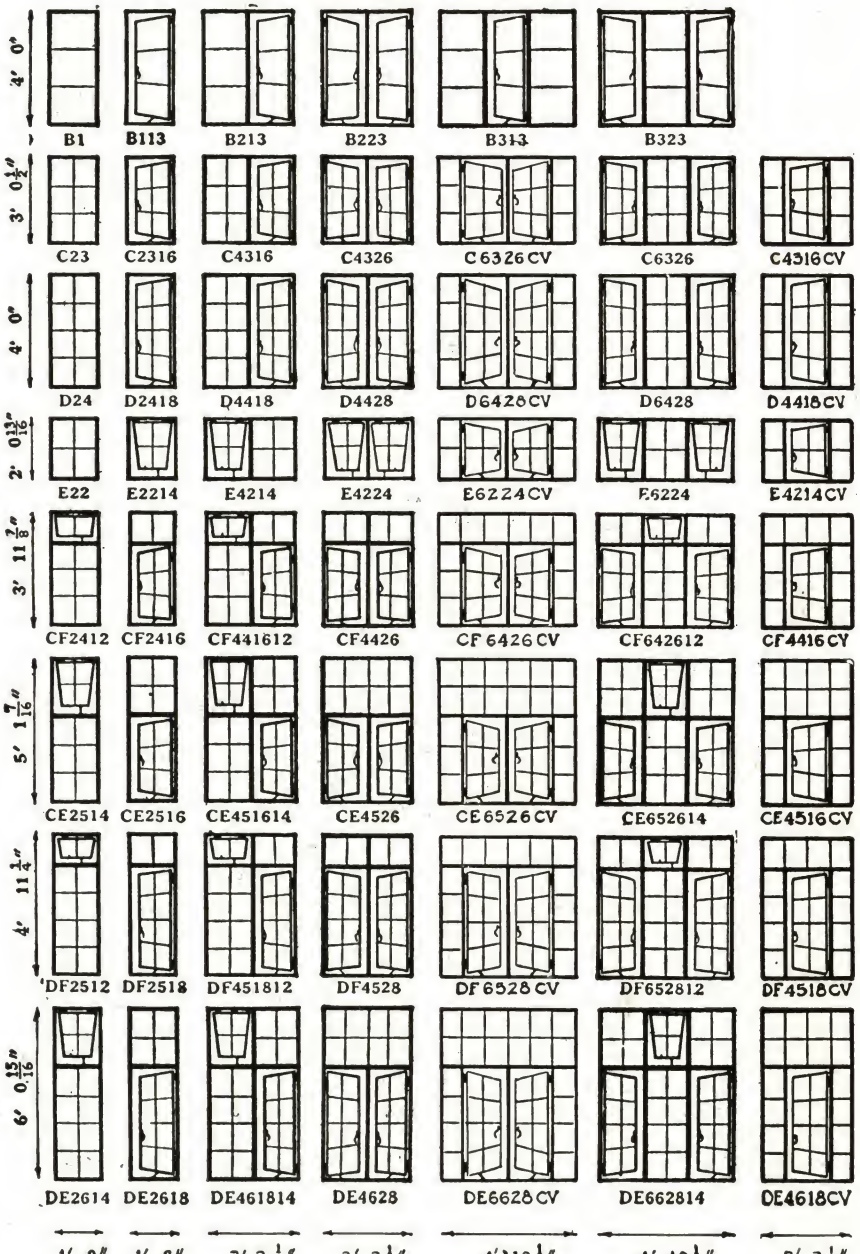
TYPES AND SIZES CAMPBELL CASEMENTS IN STANDARDIZED UNITS

Standard Types 400 Series



Carried in stock and can be furnished either without muntins for lead glazing or with muntins for plain glass

Standard Types 100 Series



Carried in stock with the exception of the "B" and "CF" series and Types D6418, DF2512, DF451812, DF651822, DF652812 and DF1511. Transoms in the "E" series are carried in stock also as side hung windows

Recent Installations by Campbell Casement Window Corp.

Duquesne Club, Pittsburgh, Pa.
Notre Dame University, South Bend, Ind.
Kalamazoo City Hall, Kalamazoo, Mich.
Auburn State Prison, Auburn, N. Y.
Rutgers Gymnasium, New Brunswick, N. J.
Queens General Hospital, Queens, N. Y.
Royal Ontario Museum, Toronto, Ontario, Can.
Ramsay Tower, Oklahoma City, Okla.
Roosevelt Memorial, New York, N. Y.
Women's Dormitory, Louisiana State University, Baton Rogue, La.
Phoenix Valley Bank, Phoenix, Ariz.
Berks County Courthouse, Reading, Pa.
Third Order Villa, Garrison, N. Y.
U. S. Veterans' Hospital, Tucson, Ariz.
U. S. Marine Hospital, Seattle, Wash.
Oceanographic Building, Seattle, Wash.
Frelinghuysen Residence, Palm Beach, Fla.
Wallkill Security Prison, Wallkill, N. Y.
Hotel Waldorf Astoria, New York, N. Y.
New York Hospital, New York, N. Y.
Diplomatic and Consular Establishments, Tokio, Japan
Walton High School, New York, N. Y.
Pilgrim State Hospital, Suffolk County, Long Island, N. Y.
Brooklyn State Hospital, Creedmoor Division, Queens, N. Y.
Wassaic State School, Amenia, N. Y.
Sun Life Assurance Building, Montreal, Canada
First Plymouth Congregational Church, Lincoln, Neb.
New York Curb Exchange, New York, N. Y.
Clearview. Apartments, Philadelphia, Pa.
American Museum of Natural History, New York, N. Y.
Allegheny County Hospital, Pittsburgh, Pa.
La Isla Office Building, Colombia, South America

The CAMPBELL CASEMENT WINDOW CORPORATION is affiliated with Campbell Metal Window Corporation, Campbell Industrial Window Company, Inc. and Voightman Metal Window Corporation.

CAMPBELL INDUSTRIAL WINDOW COMPANY, INC.

DIVISION OF CAMPBELL METAL WINDOW CORPORATION

Manufacturers of Solid Section Metal Windows

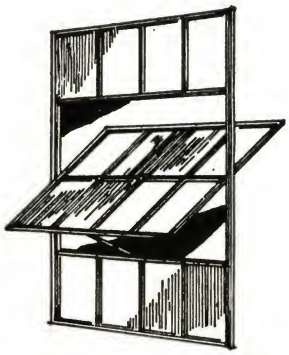
100 East 42nd Street
Pershing Square Building
NEW YORK, N. Y.

FACTORIES—BALTIMORE, MD., and KALAMAZOO, MICH.

WAREHOUSES

NEW YORK, N. Y.
NEWARK, N. J.
CHICAGO, ILL.
BALTIMORE, MD.
AKRON, OHIO
HAMMOND, IND.
NEW ORLEANS, LA.
LOS ANGELES, CALIF.
SAN FRANCISCO, CALIF.
SEATTLE, WASH.

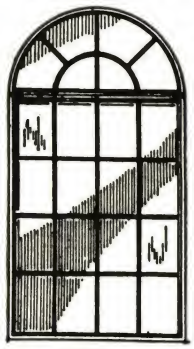
AGENTS IN ALL PRINCIPAL CITIES



Horizontally Pivoted

New Modern Plant

The new modern plant of CAMPBELL INDUSTRIAL WINDOW COMPANY, INC., located at Baltimore, Md., is without question the last word in the manufacture of steel windows and doors, and offers unlimited possibilities in window design and service. Efficiently equipped in every respect, we are in a position to fabricate correctly and render prompt deliveries on our very complete line of window and door products.



Curved Head Unit

Engineering Products

Horizontally pivoted windows
Underwriters labeled windows
Curved head windows
Side hinged windows
Vertically pivoted windows
Horizontally rolling windows

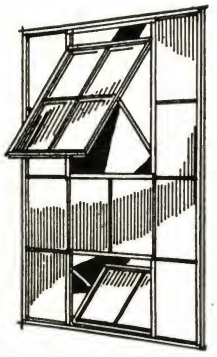
Note: *All of the above windows may be furnished in steel, aluminum, or galvanized steel.*

Pivoted Window Mechanical Operators.

Manual and Electrical Control:
Worm and gear (torsion type)
Rack and pinion (torsion type)
Commercial Projected Windows
Architectural Projected Windows:
Inside or outside glazed
Office Type Projected Windows:
For outside glazing
Continuous Windows:
Fixed or top hung swing

Continuous Window Mechanical Operators.

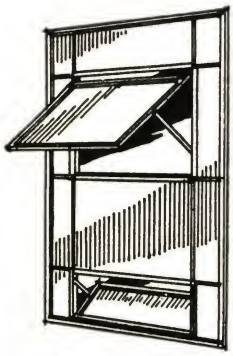
Manual or Electrical Control:
Toggle arm (tension type)
Rack and pinion (torsion type)
Industrial Doors:
Swing type
Slide type
Vertical fold
Vertical lift



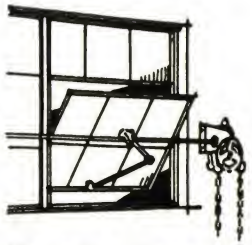
Commercial Projected



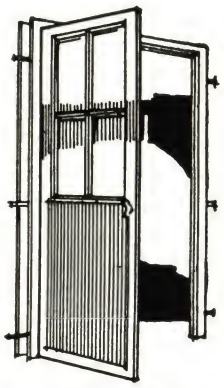
Top Hung Continuous Window



Architectural Projected



Mechanical Operators



Standard Swing Door



Standard Double Slide Doors



Standard Double Swing Doors



Industrial Doors

Tubular Rail or Structural Steel Doors—for all types for new construction and replacements

Fire Department Doors

Airplane Hangar Doors:

Curved track type

Straight slide type

Pier and Wharf Doors

Detention Windows:

Heavy and intermediate weights

Standard and special designs

Hinged ventilators

Sliding ventilators

Spring balanced types

Commodity Products—Warehouse and Dealer Distribution

Basement Windows of Cast Iron or Steel:

Four standard sizes each

Flat Type Screens for Basement Windows

Standard Pivoted Windows:

60 standard sizes

12x18 and 14x20-in. glass sizes

Standard Commercial Projected Windows:

31 standard sizes

12x18 and 14x18-in. glass sizes

Utility Windows:

Projected type

One standard size

Standard Doors and frames:

Slide or swing types

Standard Casement Windows:

Residence and apartment type

72 standard sizes

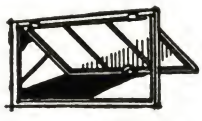
Casement Window Screens:

Thumb screw type

Flat and roll type

Pressed Steel Lintels

Ventilator Grilles for Foundation and Attic Walls



Basement Window



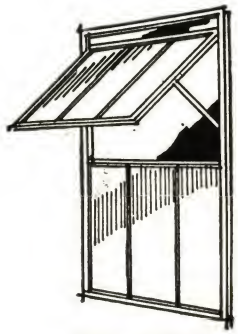
Standard Casements



Pivoted Windows



Commercial Projected



Utility Window

CAMPBELL METAL WINDOW CORPORATION

Pershing Square Building, NEW YORK, N. Y.

BALTIMORE, MD., Bush and Hamburg Streets

Campbell Solid Metal Windows

Model No. 26-MW Double Hung—All exterior parts of the sash and frame, as indicated on detail drawings, are formed of No. 12 gage blue annealed steel, the balance No. 14, 16 and 20 gages. Sash weights are single-unit castings. Chains are of steel, hot galvanized, with galvanized connectors to sash and weights. Rubbing strips are on each jamb at ends of meeting rails. Screws are of steel with standard 10-24 machine thread and heads as detailed. Cast iron sills and stools furnished for this model, if desired.

Model No. 25-MW Double Hung—Materials entering into the construction of Model No. 25-MW are essentially the same as described for Model No. 26-MW with the exception that the sash members are made of No. 14 gage steel and weight boxes and jamb cover of No. 20 gage. Sills are of No. 12 gage drawn steel.

Assembly—Sash frames have mitered and welded corners. Glazing stops are secured without screws on interior. Members forming jambs and head boxes are welded together. The frames are shipped with sash, pulleys and chains installed.

Weathering—Sill, meeting rails and head are fitted with metallic flexible weather stops. Vertical guides and sash members are fitted with metallic flexible interlocking weather stops within the boxes.

Guarantee—The amount of infiltration of air through standard double hung windows is guaranteed not to be more than ½ cu. ft. of air per foot of sash perimeter per minute when subjected to a static air pressure equivalent to the pressure exerted by a wind of 25 miles per hour.

Adjustment—Sash have concealed adjusters to prevent sash members from rubbing on exposed face of jambs and scraping paint.

Finish and Hardware—All steel in windows, except inside glass stops and inside cover plates, is galvanized after fabrication.

All finish hardware is solid bronze, polished and unlacquered.

Painting—All parts of window shall receive a coat of best quality paint, baked on.

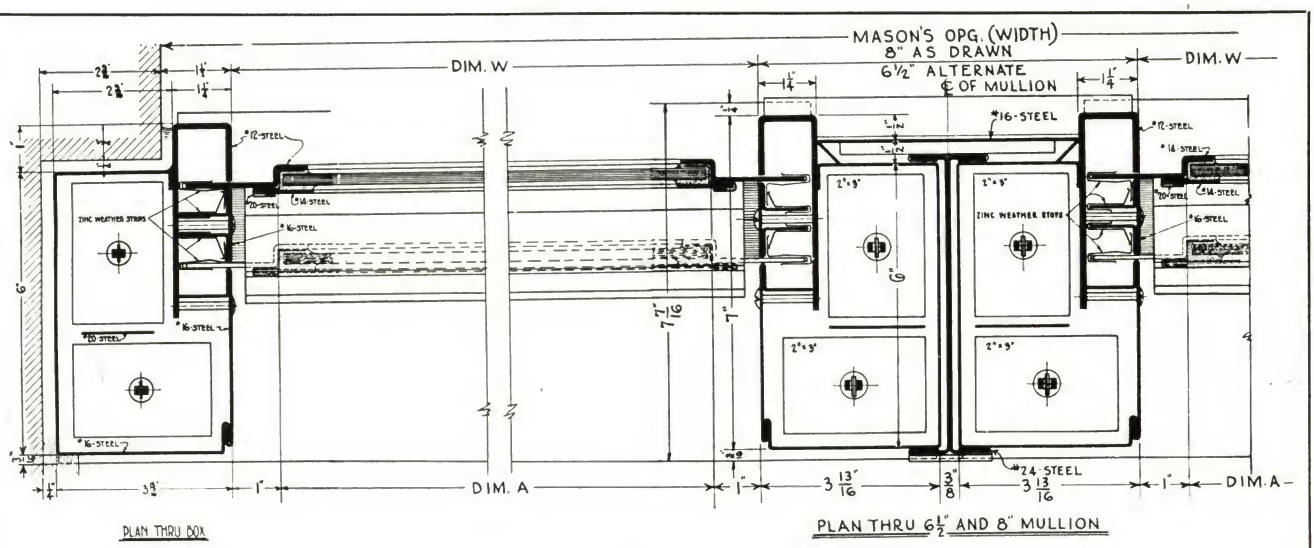
Labels—Where required, windows are made in accordance with the regulations of the National Board of Fire Underwriters and bear their label.

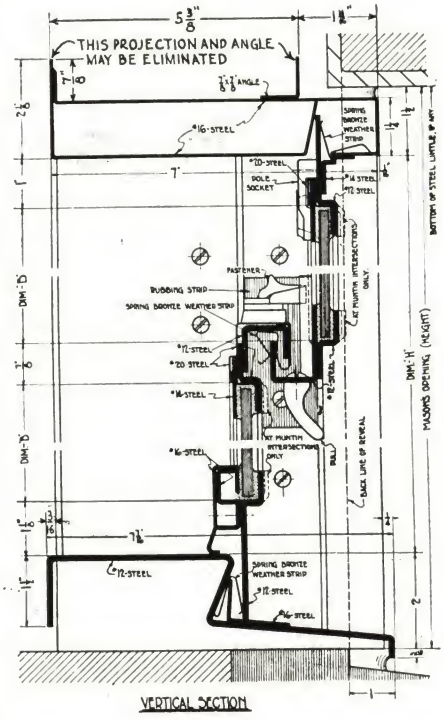
Aluminum and Bronze Windows

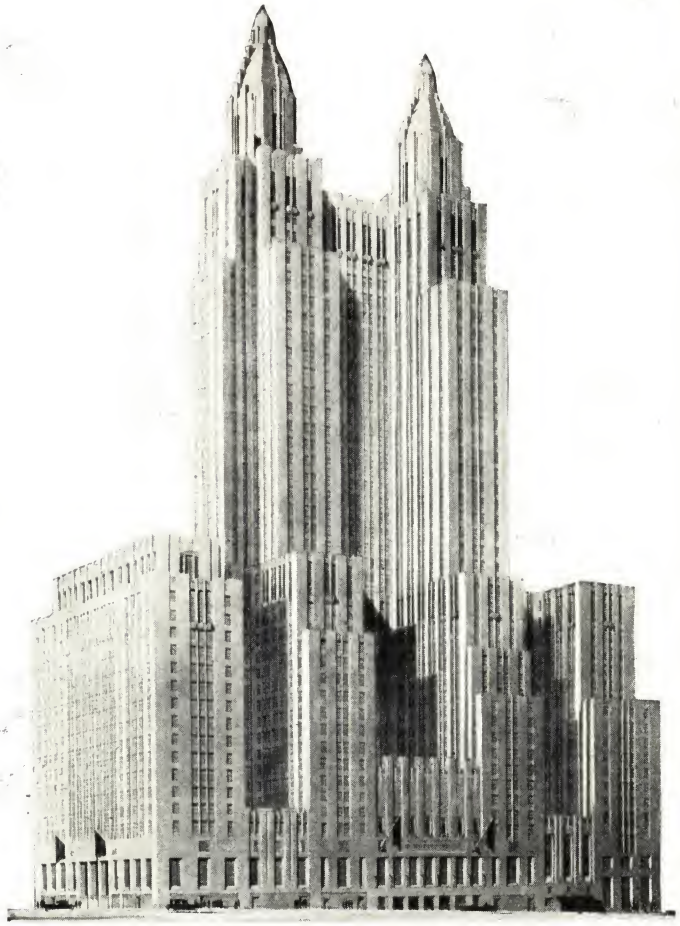
All types are made in aluminum or bronze if desired.

A Few of the Recent Prominent Buildings Equipped with Campbell Windows

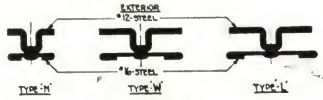
Building and Location	Architect	Builder	Windows
Radio City, New York, N. Y.	Reinhard & Hofmeister, Corbett, Harrison & MacMurray and Raymond Hood, Godley & Fouilhoux, as Joint Architects	Todd, Robertson, Todd Engineering Corporation; Todd & Brown, Inc.	28000
New York Hospital, New York, N. Y.	Coolidge, Shepley, Bullfinch & Abbott	Marc Eidlitz & Son, Inc.	7260
Columbia-Presbyterian Medical Center, New York, N. Y.	James Gamble Rogers, Inc.	Marc Eidlitz & Son, Inc.	6434
Empire State Building, New York, N. Y.	Shreve, Lamb & Harmon	Starrett Bros. & Eken, Inc.	6349
Waldorf-Astoria Hotel, New York, N. Y.	Schultze & Weaver	Thompson-Starrett Co., Inc.	5273
Twenty North Wacker Drive, Chicago, Ill.	Graham, Anderson, Probst & White	John Griffiths & Son, Inc.	4450
Lincoln Building, New York, N. Y.	J. E. R. Carpenter and Associates	Dwight P. Robinson & Co., Inc.	3602
Chrysler Building, New York, N. Y.	William Van Alen	Fred T. Ley & Co., Inc.	3554
McGraw-Hill Building, New York, N. Y.	Hood, Godley & Fouilhoux	Starrett Bros. & Eken, Inc.	3207
Internal Revenue Building, Washington, D. C.	James A. Wetmore	James Baird Co.	3136
Carew Tower, Cincinnati, Ohio	W. W. Ahlschlager and Delano & Aldrich	Starrett Bros., Inc.	3055
New York Central Building, New York, N. Y.	Warren & Wetmore	James Stewart & Co., Inc.	2967
Cities Service Building, New York, N. Y.	Clinton & Russell	James Stewart & Co., Inc.	2808
1200 Market Street Building, Philadelphia, Pa.	Howe & Lescaze	George A. Fuller Co.	2734
Forty Wall Street, New York, N. Y.	H. C. Severance, Inc., and Yasuo Matsui	Starrett Bros., Inc.	2725
New York Daily News, New York, N. Y.	Howells & Hood	Hegeman-Harris Co., Inc.	2282
Cathedral of Learning, Pittsburgh, Pa.	Charles Z. Klauder	Stone & Webster Eng. Co.	2214
500 Fifth Avenue Building, New York, N. Y.	Shreve, Lamb & Harmon	C. T. Wills, Inc.	2017
Savoy-Plaza Hotel, New York, N. Y.	McKim, Mead & White	Geo. A. Fuller Co.	1996
Gulf Building, Pittsburgh, Pa.	Trowbridge & Livingston and E. P. Mellon, Associate	Mellon-Stuart Co.	1762
Pierre Hotel, New York, N. Y.	Schultze & Weaver	Geo. A. Fuller Co.	1659
First National Bank, Oklahoma City, Okla.	Weary & Alford	Manhattan Construction Co.	1650
Chicago Daily News, Chicago, Ill.	Holabird & Root	Hegeman-Harris Co., Inc.	1584
Continental Bank Building, New York, N. Y.	Morris & O'Connor	Thompson-Starrett Co., Inc.	1465
Irving Trust Building, New York, N. Y.	Voorhees, Gmelin & Walker	Marc Eidlitz & Son, Inc.	1456
Koppers Building, Pittsburgh, Pa.	Graham, Anderson, Probst & White	Mellon-Stuart Co.	1406
Queens General Hospital, Queens, L. I., N. Y.	Jones & Kleist	John Kennedy & Co., Inc.	1373
RCA-Victor Building, New York, N. Y.	Cross & Cross	A. L. Hartridge Co., Inc.	1333
Sherry-Netherland Hotel, New York, N. Y.	Schultze & Weaver	Shroder & Koppel, Inc.	1306
Fidelity Bank & Trust Building, Kansas City, Mo.	Hoit, Price & Barnes	Thompson-Starrett Co., Inc.	1138
Brooklyn Telephone Building, Brooklyn, N. Y.	Voorhees, Gmelin & Walker	Cauldwell-Wingate Co.	1096
Carpenter-Madison Building, New York, N. Y.	J. E. R. Carpenter	Dwight P. Robinson & Co., Inc.	1035
Girard Trust Building, New York, N. Y.	McKim, Mead & White	United Eng. & Constructors, Inc.	912
Lincoln-Liberty Building, Philadelphia, Pa.	J. T. Windrim	John N. Gill Const. Co.	806







Waldorf-Astoria Hotel, New York, N. Y.
SCHULTZE & WEAVER, Architects
THOMPSON-STARRETT CO., INC., Builder
5273 Campbell Metal Windows



P.S MUNTIN SECTIONS



GLASS POCKET SECTION OF SASH FRAMES AS REQUIRED FOR LABELLED WINDOWS
BOTTOM RAIL OF LOWER SASH REMAINS AS SHOWN ON VERTICAL SECTION

STANDARD DETAILS OF CAMPBELL SOLID METAL WINDOW

DOUBLE HUNG MODEL NO. 26-MW

CONCRETE ENGINEERING CO.

Ceco Steel Windows, Doors and Mechanical Operators

GENERAL OFFICE

OMAHA, NEB.

SALES OFFICES AND WAREHOUSES

CHICAGO, Trustees System Building
CICERO, 1926 So. 52nd Avenue
CLEVELAND, 8219 Almira Avenue
DALLAS, Construction Building
DES MOINES, Hubbell Building
DETROIT, 909 Guaranty Trust Building
HOUSTON, 2814 Pease Avenue
KANSAS CITY, Walsix Building
LOS ANGELES, 1450 Mirasol Street
MILWAUKEE, Bartlett Building
MINNEAPOLIS, 2801 E. Hennepin Avenue
OKLAHOMA CITY, 502 Franklin Building
ST. LOUIS, 507 Louderman Building
SAN ANTONIO, 507 Milam Building
SAN FRANCISCO, 1280 Indiana Street

Products

PIVOTED WINDOWS, UNDERWRITER'S WINDOWS, CONTINUOUS WINDOWS, ARCHITECTURAL and COMMERCIAL PROJECTED WINDOWS, SCREENED ARCHITECTURAL and COMMERCIAL PROJECTED WINDOWS, CASEMENT WINDOWS, SCREENED CASEMENT WINDOWS, BASEMENT WINDOWS, DETENTION WINDOWS, INDUSTRIAL DOORS and MECHANICAL OPERATORS of all kinds.

For other Ceco products, see pages in this edition on Metal Weatherstrips, Metal Framed Screens, Ceco Reinforcing Bars, Meyer Steelforms, Welded and Triangle Fabric, Metal Lathing Material, Round Column Forms, Bar Chairs and Spacers, Roadstrip, Adjustable Shores and Column Clamps, as listed in Products Index.

Ceco

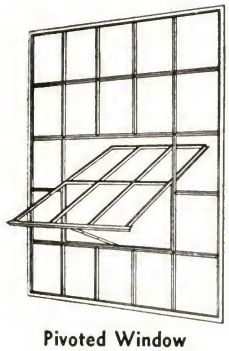
PRODUCTS

Service

Branch offices and warehouses are conveniently located in the principal cities. Trained engineers and service men are available in your locality to handle personally your window and operator problems.

Screens

Ceco Metal Frame Screens are available for Ceco Steel Windows. Windows and screens are designed so that the window and screen are a complete unit. All fitting of screens and windows is done at the factory.



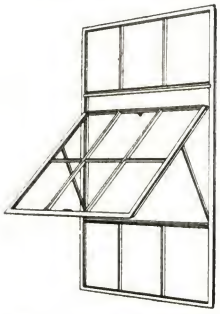
Pivoted Window

Rustproofing

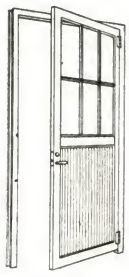
The life of a steel building product is dependent on its protection from rust. We can furnish Ceco Windows rustproofed by the Parker Rust Proof Company's "Parkerizing Process" at a slight extra charge over standard. This small initial investment will pay large dividends in increased life of the window and savings in maintenance.



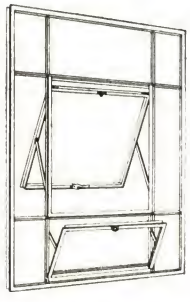
Basement Window



Commercial Projected Window



Industrial Door



Architectural Projected Window



Casement Window

Types of Ceco Products

Ceco Pivoted Windows—A sturdy, weatherproof window for general industrial use. Standard sizes.

Ceco Torsion Operator—For group control of pivoted or projected ventilators. Machine cut cast gears and cut steel worms—a lifetime operator.

Ceco Basement Windows—Brighten the basement. Do not stick, warp or swell. Weathertight.

Ceco Commercial Projected Windows—Standard and screened type available. Easily and economically screened.

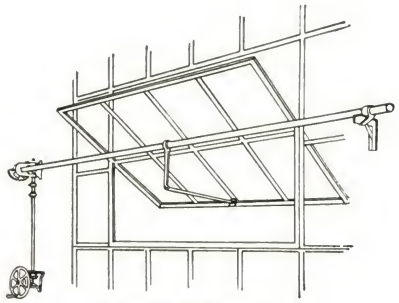
Ceco Rack and Pinion Operator—For long lines of ventilators. Cold rolled steel rack and pinions with machine cut teeth.

Ceco Industrial Doors—Heavy channel frame construction. Built to stand the wear and tear of industrial use. A permanent investment.

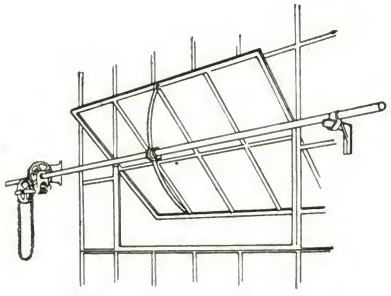
Ceco Casements—For residential buildings. Flat screens and under screen operators. Neat and attractive hardware.

Ceco Continuous Windows and Tension Operators—For use where large areas of light and ventilation are required.

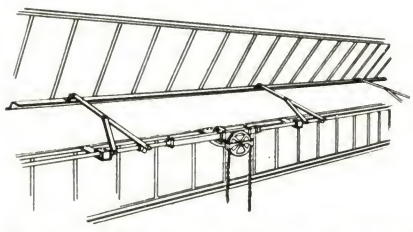
Ceco Architectural Projected Windows—Large glass lights attractively arranged. Screened type as well as standard type. Excellent for schools and hospitals.



Torsion Operator



Rack and Pinion Operator



Continuous Windows and Tension Operator



CRITTALL
METAL WINDOWS

PRODUCTS
OF
CRITTALL

•

UNIVERSAL CASEMENTS

Custom-built casements and doors of solid steel or bronze to meet the architects' sizes, designs, and most exacting specifications.

•

NORMAN CASEMENTS

Economical, heavy, standardized casements and doors of excellent quality for better class projects.

•

STANWIN CASEMENTS

Standard lightweight casements and doors stocked in warehouses for convenient distribution.

Cover Design: Caddo Parish Courthouse, Shreveport, La.
E. F. Neild, Architect
A UNIVERSAL CASEMENT INSTALLATION

CRITTALL METAL WINDOWS

of Solid Steel, Bronze and Aluminum

CRITTALL CASEMENT WINDOW COMPANY

Member Solid Section Steel Window Industry

MAIN OFFICE AND FACTORY

DETROIT, MICHIGAN

ATLANTA OFFICE.....723 Forsyth Building
CHICAGO OFFICE.....228 North LaSalle Street
DALLAS OFFICE.....621 Construction Building
LOS ANGELES OFFICE.....504 Union Insurance Building
MT. VERNON, N. Y. OFFICE.....341 North High Street
NEW YORK OFFICE.....101 Park Avenue
WASHINGTON, D. C. OFFICE.....1224 Twenty-fourth St., N. W.

REPRESENTATIVES IN ALL PRINCIPAL CITIES. WAREHOUSES AT CENTRAL DISTRIBUTING POINTS



THIS COMPLETE CATALOGUE IS IN SWEET'S 1932 EDITION

OVERSEAS ORGANIZATIONS

ENGLAND

The Crittall Manufacturing Co., Ltd., 210 High Holborn, London, W. C. 1. Factories at Braintree, Witham, Maldon, and Silver End, Essex.

GERMANY

Fenestra-Crittall, A. G., Rather-Strasse 243-61 Postfach 10031, Dusseldorf-Derendorf. Factory at Dusseldorf.

AUSTRALIA

The Crittall Manufacturing Co. Pty. Ltd., 668 Bourke St., Melbourne. Factory at Melbourne.

INDIA

The Crittall Manufacturing Co., Ltd., 918 Currimbhoy Rd., Bombay. Branches at Calcutta, Rangoon, Madras, and Karachi.

NEW ZEALAND

The Crittall Manufacturing Co., Ltd., Auckland.

SOUTH AFRICA

The Crittall Manufacturing Co., Ltd., Union House, Main Street, Johannesburg. Branches at Capetown, Durban, and Port Elizabeth.

CHINA

The Crittall Manufacturing Co. (China), Ltd., 138-142 Sassoon House, Shanghai. Branches at Hong Kong, Tientsin, and Hankow.

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Of Steel, Bronze and Aluminum*

Custom built for the finest work PAGE

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Heavy standard windows for the best type of work PAGE

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*Our decision to manufacture aluminum windows was not reached in time that we could include details and specifications in this catalogue. However, we are confident that at the time this edition is published we will be in a position to furnish aluminum casements. We invite your inquiries for complete information.

OUR GUARANTEE

AND

STANDARDS OF MATERIAL AND WORKMANSHIP

CRITTALL Casement Windows as described in the following pages are the result of many years of specialized experience and continuous improvement. Only materials which have been carefully selected and thoroughly tested are used. Experienced workmen assemble and fit them, and each window is subjected to rigid inspection before shipment. We maintain an efficient corps of mechanics in each section of the country to install our windows, and urge architects to insist on the performance of this work by the manufacturer.

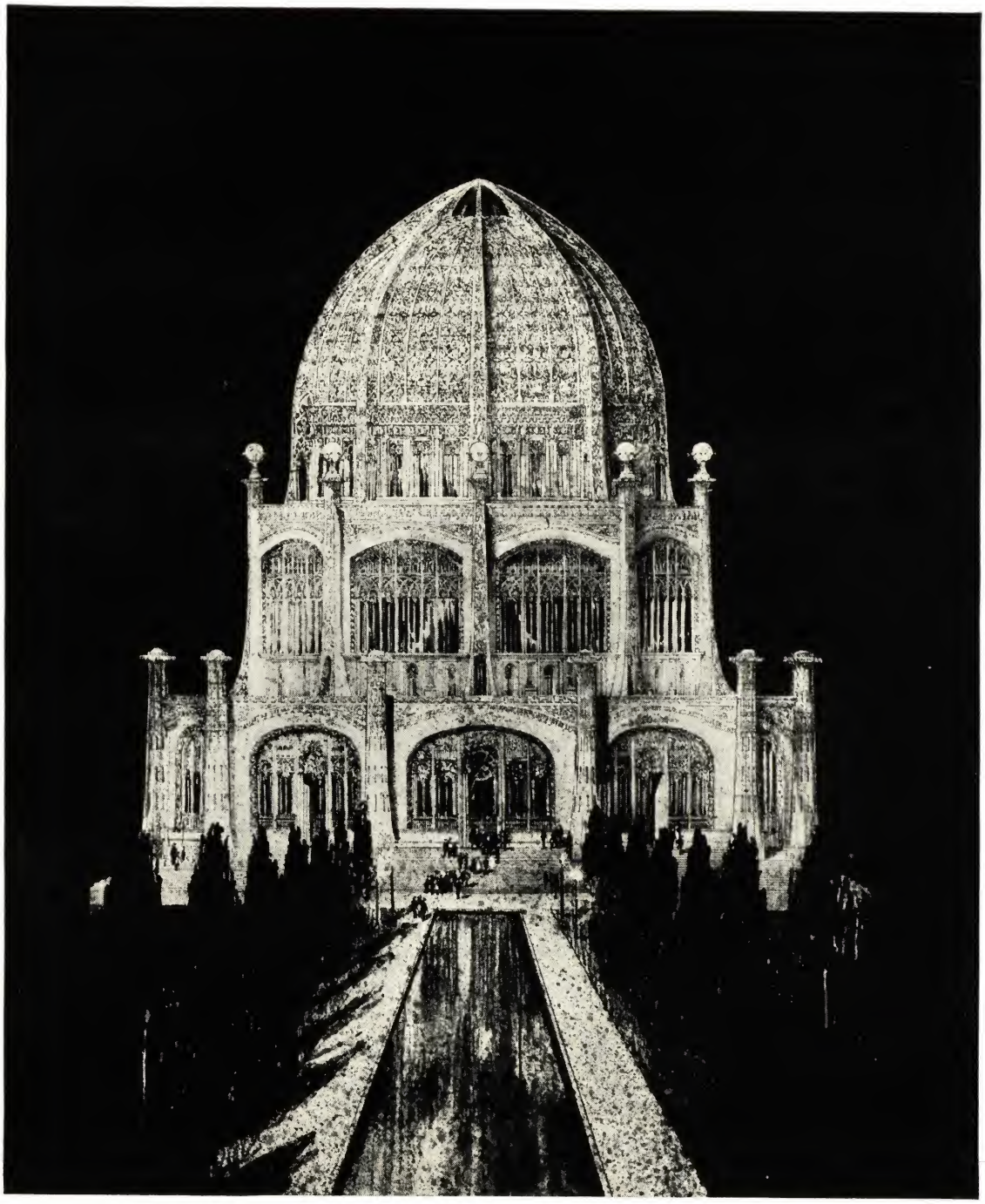
When we install Universal Casements or Norman Casements we guarantee them wind and water tight, without the use of weatherstrips of any kind. When circumstances do not permit us to perform the installation work, we pledge ourselves to deal justly with our customers; to make any necessary adjustments without charge where possible or at only nominal expense; and to interpret our responsibility in a liberal manner to the end that the customer may always be satisfied with the completed installation. Stanwin Casements are less expensive windows, produced in great quantities and designed for less particular use, so they cannot measure up to the efficiency of Universal and Norman Casements, but when properly installed we guarantee them to be absolutely weathertight and sufficiently windtight for average conditions.

V. G. CRITTALL
President

GEO. G. SHEPHERD
Vice President

KARL F. JORSS
Vice President

UNIVERSAL CASEMENTS



BAHA'I TEMPLE, WILMETTE, ILL.

Louis Bourgeois (deceased), Architect

Benjamin B. Shapiro, Consulting Engineer and in charge of completion, Research Service, Managing and Supervising Engineers, Washington, D. C.

UNIVERSAL CASEMENTS

CRITTALL CASEMENT WINDOW COMPANY

DETROIT, MICHIGAN

THE Universal Casement, in solid steel or bronze, is manufactured to meet architects' sizes, designs and most exacting specifications.

It is available in either heavy or medium weight sections, and being custom built, it may be furnished to suit any arrangement of ventilation required, within reasonable limitations.

Side hinged and top hinged outward opening casements may be fitted with detachable flat screens and hardware specially designed to permit operation without moving the screen.

All hardware is solid bronze and conforms to accepted designs for casement fittings.

The excellence of the Universal Casement is attested to by its acceptance by foremost architects for use in thousands of the country's finest buildings.

SPECIFICATIONS

Windows—All windows shall be Crittall Universal Casements as manufactured by the CRITTALL CASEMENT WINDOW COMPANY, Detroit, Michigan. They shall be custom built to the sizes and designs shown on the drawings. Shop drawings must be submitted for the architect's approval before starting fabrication. They shall be fabricated from hot rolled steel casement sections weighing not less than 3.25 lbs. per lineal foot for medium section, and 4.50 lbs. per lineal foot for large section, including the swinging leaf and outer frame, but not including glass stops or any sub-frame. The table of maximum sizes on page 5 of Crittall's catalogue in Sweet's current edition shall govern the weight of section to be used for windows covered by this specification.

All corners shall be electrically welded and exposed surfaces ground smooth. Ventilating units shall have two points of contact all around. Sections shall be so designed that in composite openings glass will be in the same plane in stationary and ventilating units and sight lines will be uniform throughout.

Paint—All steel sections shall be cleaned free from rust and scale and painted one coat of red rust-resisting primer and one coat of dark gray primer, each coat baked on separately.

Glazing—(Optional) (Casements shall be furnished with spring clips for putty glazing from the outside.) or (Casements shall be fitted with moulded steel glazing stops for glazing from the inside. These shall be carefully mitered and individually fitted to each pane, using countersunk brass screws.)

Hardware—Shall be solid bronze, polished, finished a dark coinage color. After careful fitting at the factory, hardware shall be removed from the casements and shipped separately for protection of finish.

Note: Specify handles, stays, etc., for various types of windows by number. See pages 6, 7 and 8 for standard hardware and page 9 for special hardware.

Casements 5 ft. 0 in. high or over shall have a two-throw latch.

(When casements are extremely high or they are so located that it would be awkward to operate from near the sill, a three-throw latch should be specified.)

(Optional) (Hinges shall be solid bronze butts with hardened steel pins, 3¼ in. high for medium section, and 4 in. high for large section.) or (Hinges shall be drop forged steel pivots, cadmium plated, securely welded to the frames.)

Two hinges shall be applied to casements under 6 ft. 0 in. high and three hinges to casements 6 ft. 0 in. high and over.

Note: Steel pivot hinges are less expensive than bronze butts and facilitate fitting of casements without any sacrifice of efficiency, so they will be included in estimates unless bronze butts are specifically called for.

Note: When doors are included specify which of the following items are required: Bronze thresholds, double thick steel kick plates, cylinder locks, dummy lock to match, concealed Cremorne bolt lock, door holders, friction stays, bronze top and bottom bolts.

Frames—(Optional) The window manufacturer shall furnish and deliver to the building site, frames of 12-gauge pressed metal as shown on the drawings. These shall set in place, plumb and square, and built in by the Mason Contractor. Caulking under another heading. See pages 15, 16, 17.

Fins—(Optional) Continuous angle fins shall be furnished for the head and jambs and installed with the casements. See pages 21, 27.

Erection—All windows shall be set in place and properly adjusted by the manufacturer, and all joints between the steel window and collateral construction shall be made tight with Crittall Mastic Cement, neatly pointed.

Notes to Be Included in Specifications of Others

Mason—When pressed metal frames are used, specify that the mason shall set them in place, plumb and square, and build them in. Caulking under this heading or a special heading.

Glazier—When steel glazing stops are used, insist that the glazier remove them from one pane at a time and after placing glass, screw stops back into place before proceeding with the next pane. For large lights specify that the glazier use wood wedges as directed by casement manufacturer. A good grade of steel sash putty should be specified.

Painter—Prime coats only are applied by the manufacturer. Specify that the painting contractor shall apply in the field two coats of the desired color and quality.

MAXIMUM SIZES

Note—Dimensions may be exceeded only upon consultation with manufacturer.	Large section		Medium section	
	Width	Height	Width	Height
Side hung casements.....	3′ 0″	8′ 0″	2′ 6″	6′ 0″
Vertically pivoted casements.	4′ 6″	8′ 0″	3′ 6″	6′ 0″
Folding casements and doors.	6′ 0″	8′ 0″	5′ 0″	6′ 0″
Top hung and bottom hung casements	5′ 0″	4′ 0″	4′ 0″	3′ 0″
Horizontally pivoted casements	5′ 6″	4′ 0″	4′ 6″	3′ 6″
Projected casements	5′ 0″	3′ 6″	4′ 0″	2′ 6″

Note: This table is based on our experience of the limitations of medium and large sections under usual conditions. In some cases these limits might be extended safely, but only after consulting our Engineering Department. Sizes of transoms may be increased when mechanically operated.

UNIVERSAL CASEMENTS

STANDARD HARDWARE



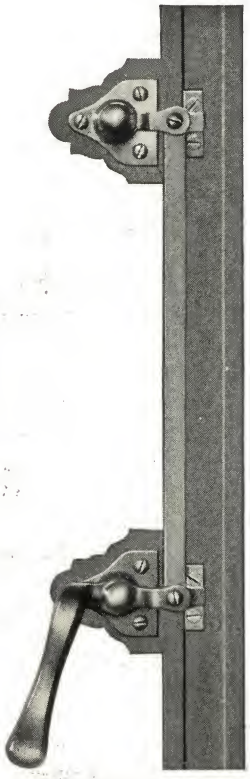
SCREENED CASEMENT
HANDLE NO. 1270



HANDLE NO. 1006
PLATE NO. 225



HANDLE NO. 1185
NO PLATE



TWO THROW LATCH
HANDLE NO 211
PLATE NO. 225

Handles Nos. 1006, 1185 and 211 are standard and included in all estimates unless otherwise specified. For inward opening casements handle No. 1185 may be applied direct to the section without a back plate when it is desirable to show as little as possible of the handle from the outside. Handle No. 1270 is the standard handle for use in connection with flat screened casements. See page 42 for further illustration and description. Any handle on this page may be furnished with two throw latches. Night latches giving a small amount of ventilation without rattling may be furnished with any handle at slight additional cost.



TWO THROW LATCH
HANDLE NO. 1185
PLATE NO. 285

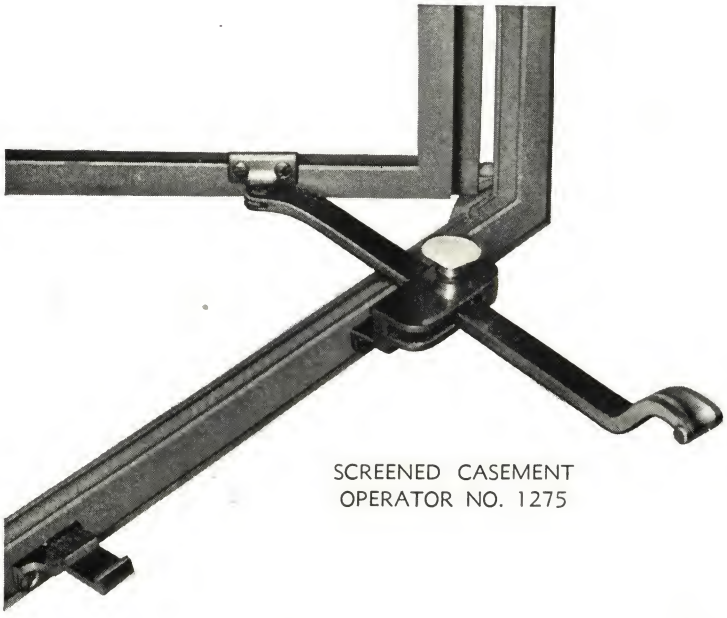
UNIVERSAL CASEMENTS

STANDARD HARDWARE



HANDLE NO. 310 FOR CREMORNE BOLT

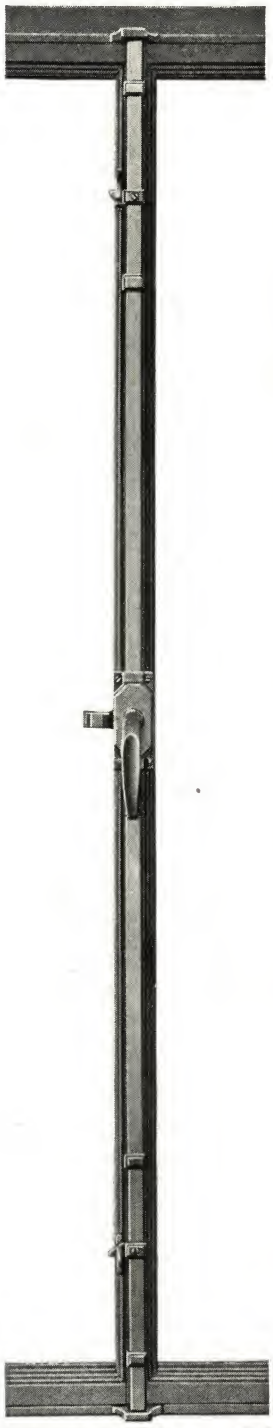
Handle No. 385 with Cremorne Bolt illustrated at right is standard for pairs of casements without fixed meeting rail, and matches handle No. 1185 used on single casements. Handle No. 310 is furnished without extra cost when desired, but does not match other single casement handles. Friction stay is the standard adjuster for casements and is applied at the head of the window. Operator No. 1275 is for use in connection with flat screened casements. See page 42 for further illustration and description.



SCREENED CASEMENT OPERATOR NO. 1275



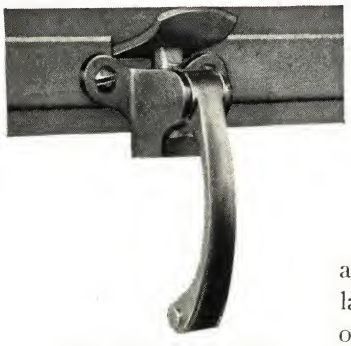
FRICTION STAY



CREMORNE BOLT WITH HANDLE NO. 385

UNIVERSAL CASEMENTS

STANDARD HARDWARE



HANDLE NO. 1260

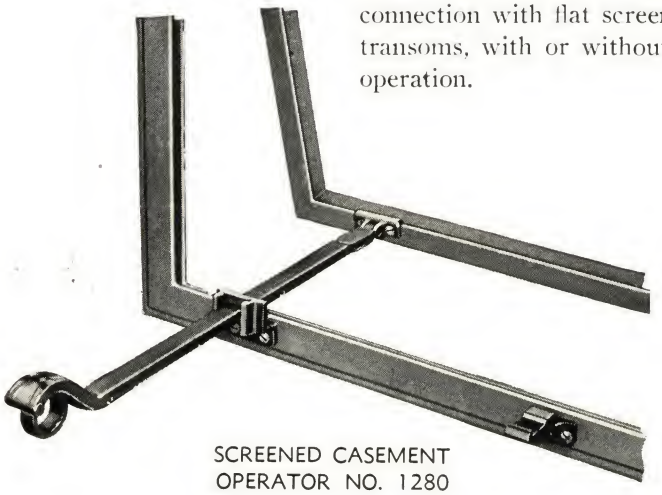


HANDLE NO. 1185

Handles Nos. 1260 and 1185 are standard for projecting in casements. The latter may also be used for projecting out casements within reach for hand operation. Spring catches No. 2-AS and No. 3-AS for pole or cord operation are standard for bottom hinged and horizontally pivoted casements. No. 2-AS may be used on projecting casements for pole operation. Peg stay No. 107 is standard for top hinged and projecting out casements. Operator No. 1280 is for use in connection with flat screened top hinged transoms, with or without ring for pole operation.



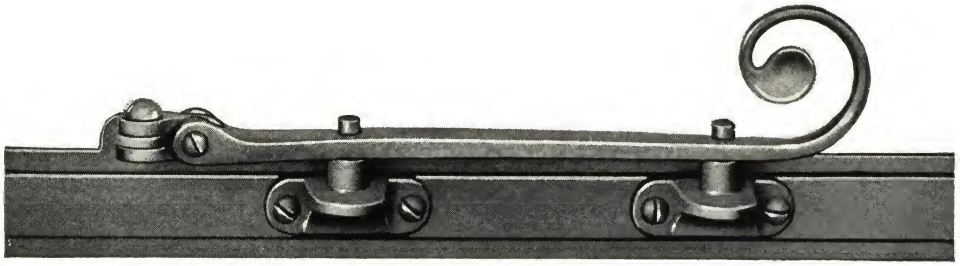
SPRING CATCH 3-AS



SCREENED CASEMENT
OPERATOR NO. 1280



SPRING CATCH 2-AS



PEG STAY NO. 107

UNIVERSAL CASEMENTS

SPECIAL HARDWARE



HANDLE NO. 206
PLATE NO. 210

Fittings illustrated here may be furnished at extra cost. Handle No. 206 for single casements matches No. 306 for double casements. Handle No. 504-N is shown as an example of hand wrought iron hardware which may be furnished by special arrangement with the architect for fine work. Sliding Stay No. 108 in solid bronze is used on side hinged casements. Cam Stay is for use on top hinged transoms for pole operation.



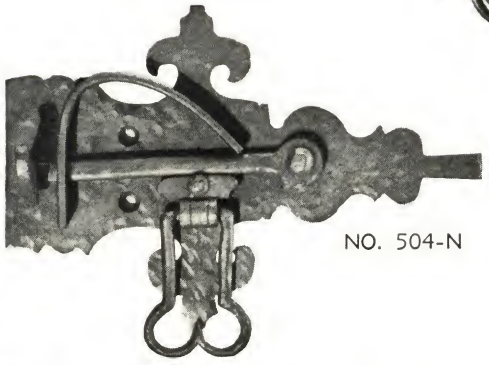
HANDLE NO. 206
PLATE NO. 229



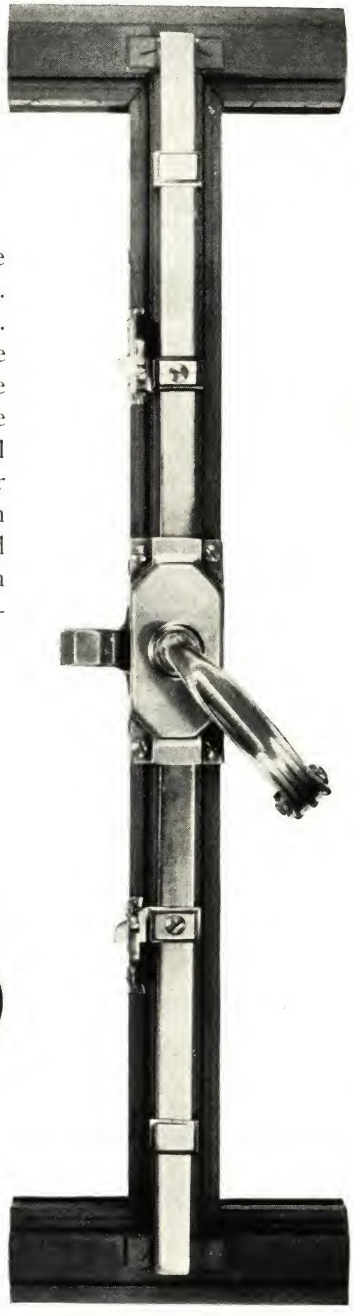
NO. 207



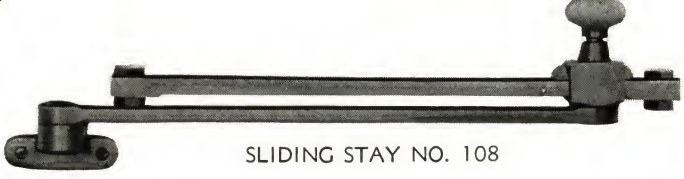
CAM STAY



NO. 504-N



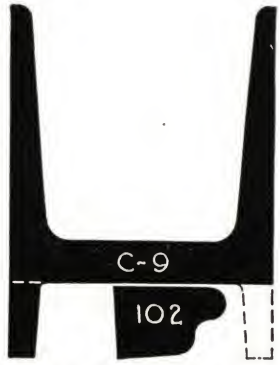
CREMORNE BOLT WITH
HANDLE NO. 306



SLIDING STAY NO. 108

UNIVERSAL CASEMENTS

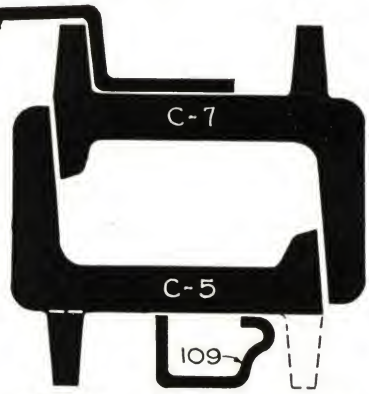
FULL SIZE HEAVY SECTIONS



HEAD - JAMB OR SILL Ⓐ
FIXED



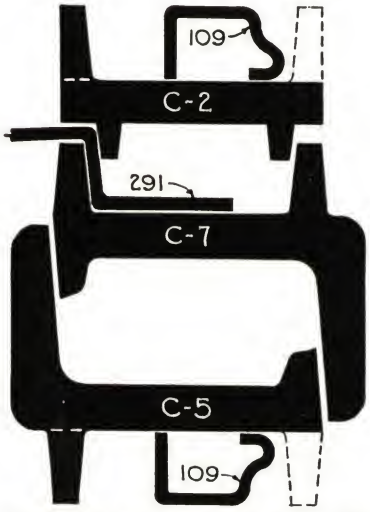
TRANSOM BAR Ⓒ
(COMBINATION SHOWN - "ACD")



HEAD OR JAMB Ⓓ



MUNTIN Ⓔ

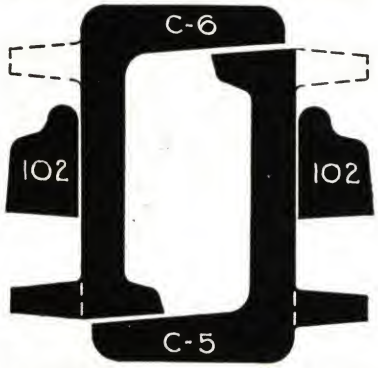


TRANSOM BAR Ⓑ
(COMBINATION SHOWN - "BD")

NOTES
GLAZING STOPS MAY BE FURNISHED IN EITHER SOLID ROLLED OR HOLLOW ROLLED TYPES AS SPECIFIED
DOTTED LINES SHOW SECTIONS USED FOR OUTSIDE PUTTY GLAZING.



SILL Ⓕ



MEETING RAIL Ⓖ
(OPEN OUT OR OPEN IN FOLDER)



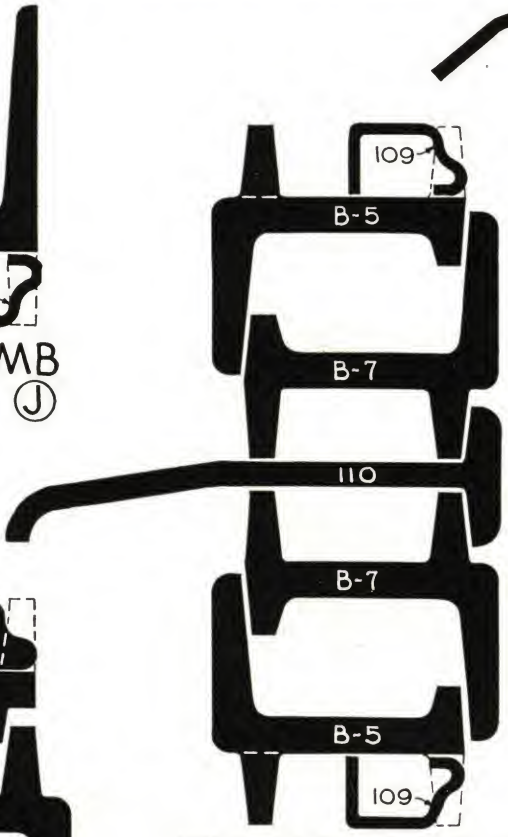
FIXED MEETING RAIL Ⓗ
(BETWEEN PAIR OF SIDE HINGED CASEMENTS)

UNIVERSAL CASEMENTS

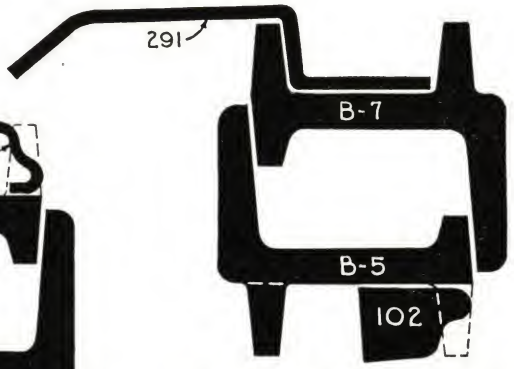
FULL SIZE MEDIUM SECTIONS



HEAD-JAMB OR SILL (J)
FIXED



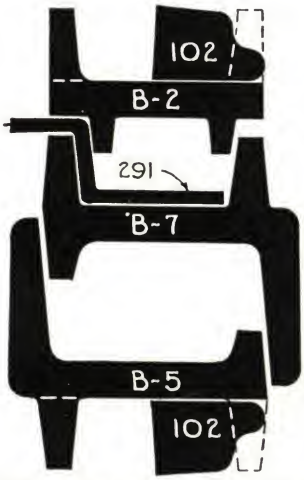
TRANSOM BAR (C)
(COMBINATION SHOWN-"MCL")



HEAD OR JAMB (L)

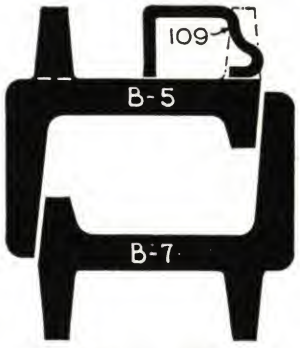


MUNTIN (E)



TRANSOM BAR (K)
(COMBINATION SHOWN-"KL")

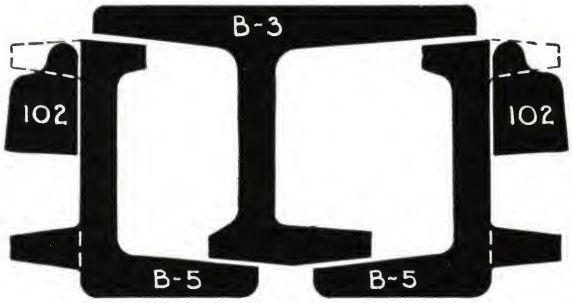
NOTES
GLAZING STOPS MAY BE FURNISHED IN EITHER SOLID ROLLED OR HOLLOW ROLLED TYPES AS SPECIFIED DOTTED LINES SHOW SECTIONS USED FOR OUTSIDE PUTTY GLAZING.



SILL (M)



MEETING RAIL (N)
(OPEN OUT OR OPEN IN FOLDER)



FIXED MEETING RAIL (O)
(BETWEEN PAIR OF SIDE HINGED CASEMENTS)

UNIVERSAL CASEMENTS

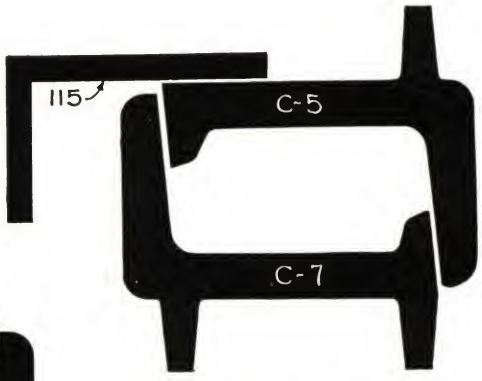
FULL SIZE HEAVY SECTIONS



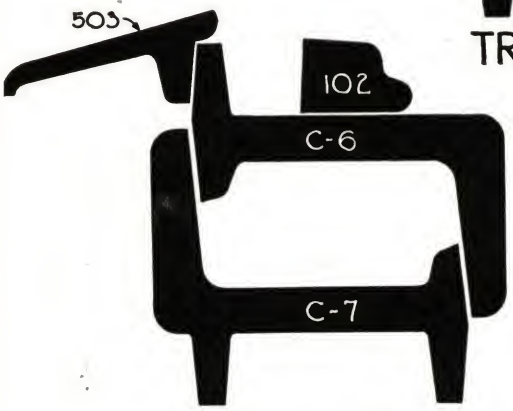
HEAD OR JAMB
Ⓟ



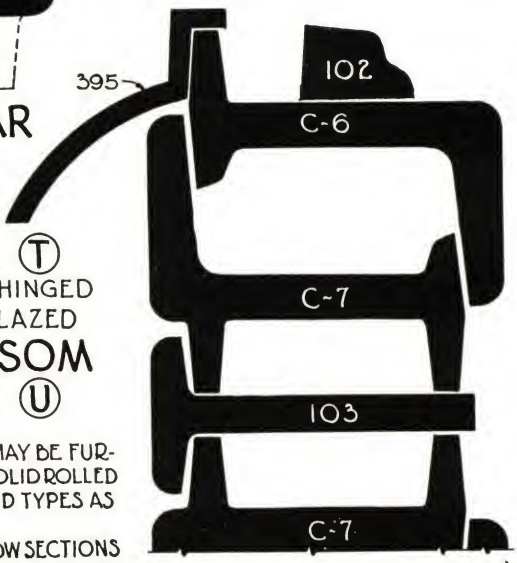
TRANSOM BAR
Ⓑ
(COMB. SHOWN - "PB")



SILL Ⓢ
BOTTOM HINGED-PUTTY GLAZED



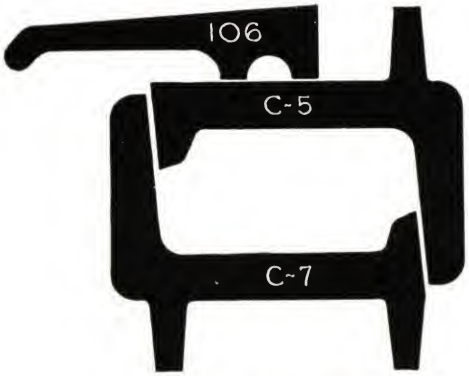
SILL Ⓠ
SIDE HINGED - BEAD GLAZED



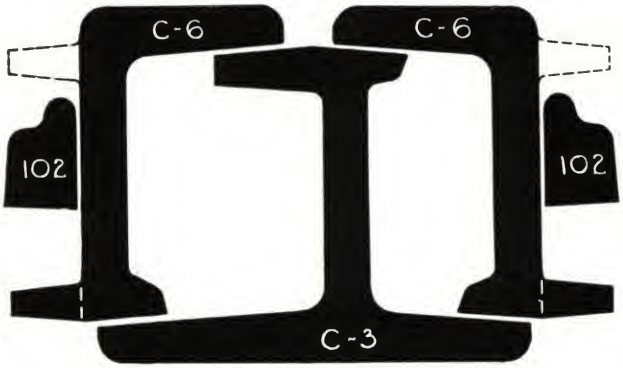
SILL Ⓣ
BOTTOM HINGED
BEAD GLAZED
TRANSOM
BAR Ⓤ

(ABOVE COMBINATION IS "TUP")

GLAZING STOPS MAY BE FURNISHED IN EITHER SOLID ROLLED OR HOLLOW ROLLED TYPES AS SPECIFIED.
DOTTED LINES SHOW SECTIONS USED FOR OUTSIDE PUTTY GLAZING



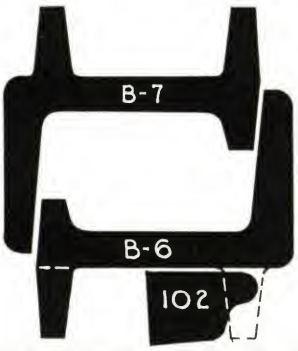
SILL Ⓡ
SIDE HINGED - PUTTY GLAZED



FIXED MEETING RAIL Ⓗ
(BETWEEN PAIR OF SIDE HINGED CASEMENTS)

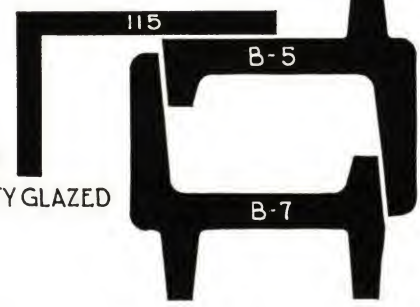
UNIVERSAL CASEMENTS

FULL SIZE MEDIUM SECTIONS



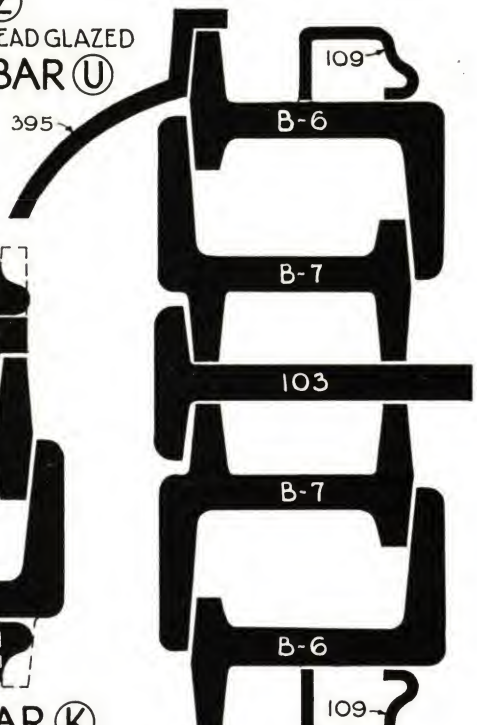
HEAD OR JAMB Ⓥ

NOTES
GLAZING STOPS MAY BE FURNISHED IN EITHER SOLID ROLLED OR HOLLOW ROLLED TYPES AS SPECIFIED
DOTTED LINES SHOW SECTIONS USED FOR OUTSIDE PUTTY GLAZING

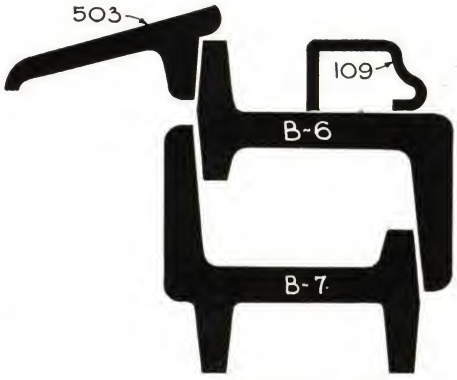


SILL Ⓨ
BOTTOM HINGED - PUTTY GLAZED

SILL Ⓩ
BOTTOM HINGED - BEAD GLAZED
TRANSOM BAR Ⓤ



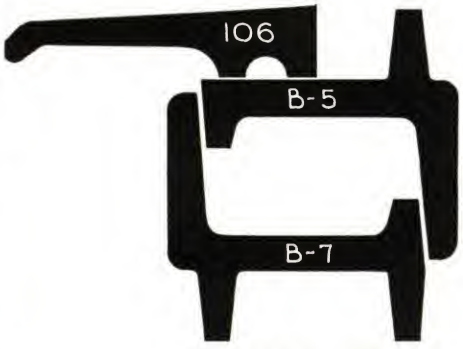
(ABOVE COMBINATION - "ZUV")



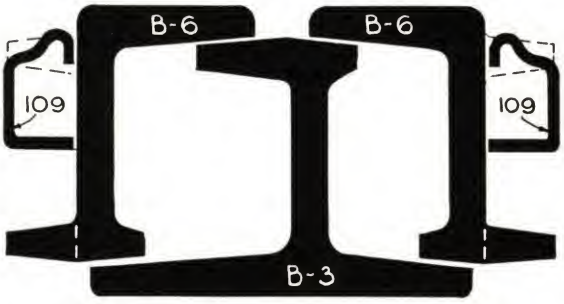
SILL Ⓦ
SIDE HINGED - BEAD GLAZED



TRANSOM BAR Ⓚ
(COMBINATION SHOWN - "KV")



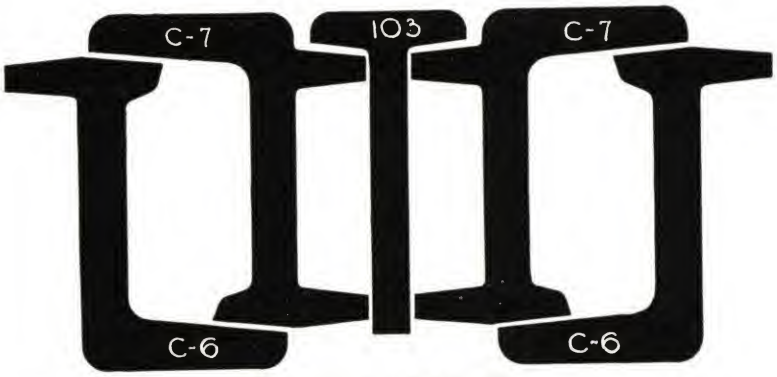
SILL Ⓧ
SIDE HINGED - PUTTY GLAZED



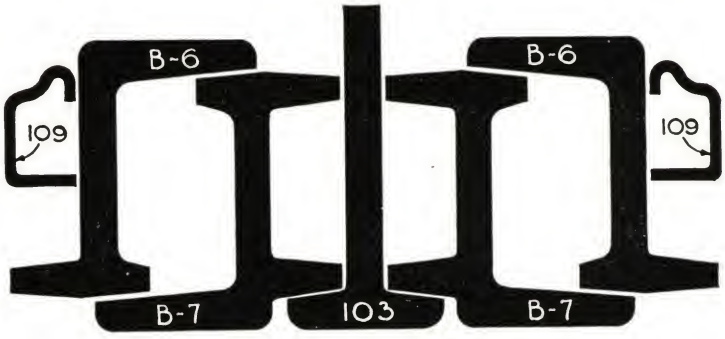
FIXED MEETING RAIL Ⓞ
(BETWEEN PAIR OF SIDE HINGED CASEMENTS)

UNIVERSAL CASEMENTS

FULL SIZE SECTIONS



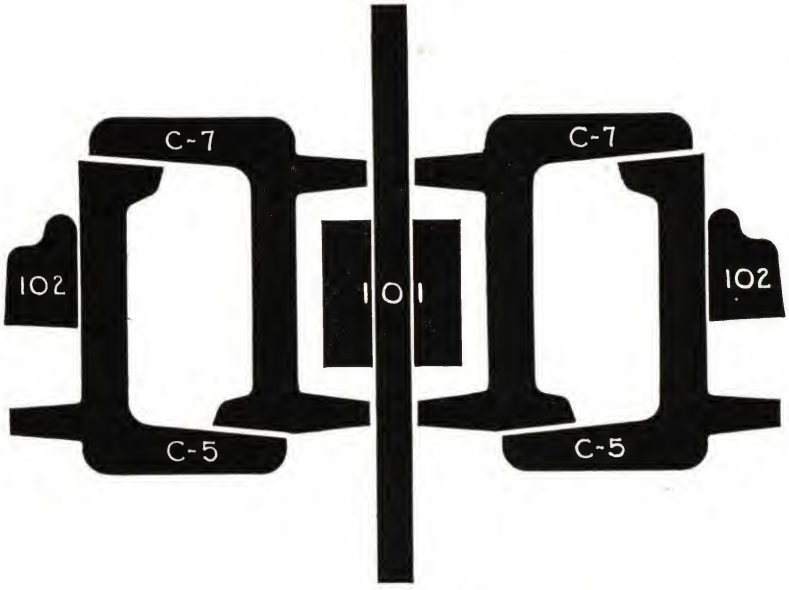
MULLION Ⓤ
WITH HEAVY SECTION - OPEN OUT



MULLION Ⓤ
WITH MEDIUM SECTION - OPEN IN



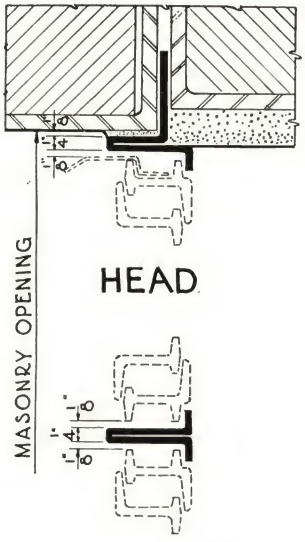
ANGLE FIN

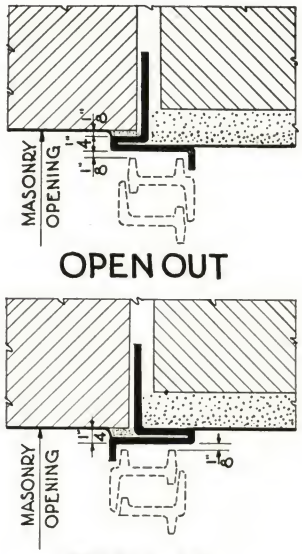


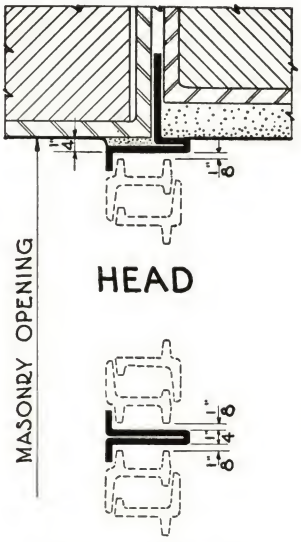
MULLION № 101
FOR GREATER STRENGTH

UNIVERSAL CASEMENTS

BUILT IN UTILITY FRAMES

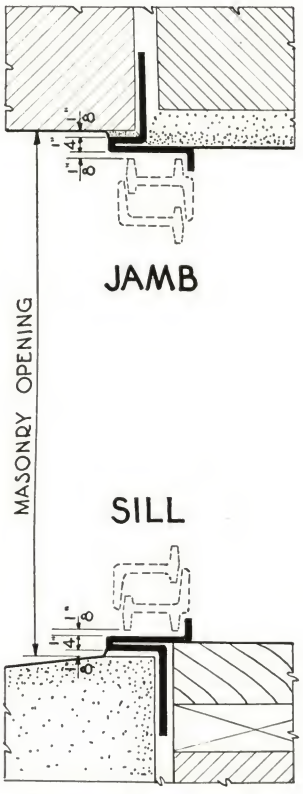




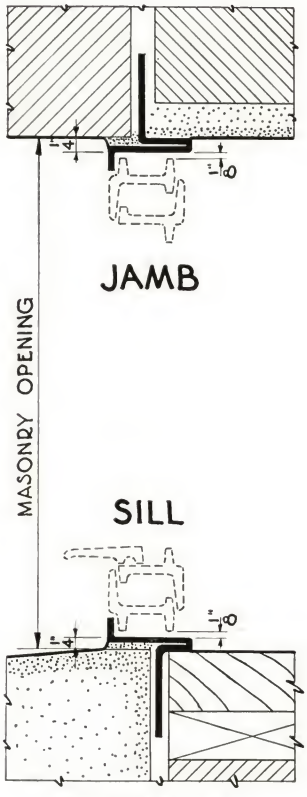


SCALE OF DETAILS - 3" = 1'-0"

TWELVE GAUGE PRESSED METAL FRAMES ARE FURNISHED BY US, DELIVERED TO THE BUILDING SITE, TO BE SET IN PLACE, BUILT IN AND POINTED BY THE MASON CONTRACTOR AS THE WALLS GO UP. NOTATION OF THIS SHOULD BE MADE IN THE MASONRY SPECIFICATIONS.

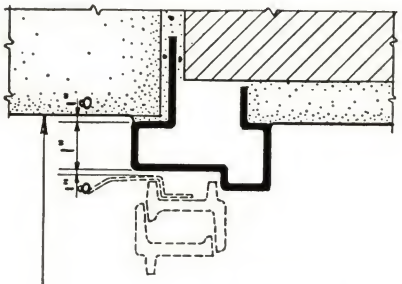






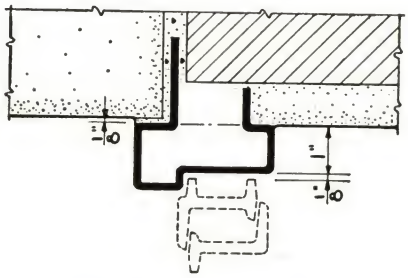
UNIVERSAL CASEMENTS

SINGLE REBATED HOLLOW METAL FRAMES



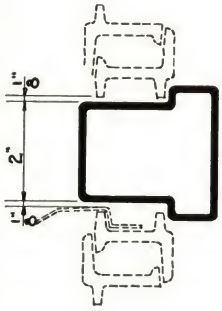
HEAD OR JAMB

SCALE-3"=1'-0"

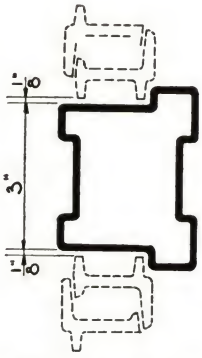


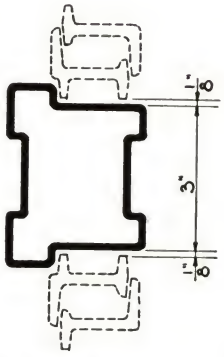
HEAD OR JAMB

MASONRY OPENING

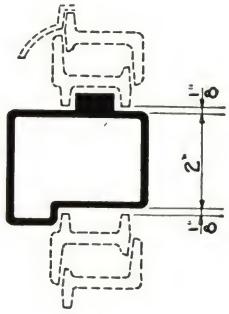


TRANSOM

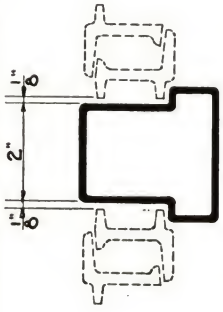




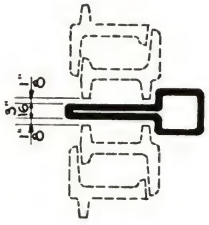
ALTERNATE TRANSOM OR MULLION
(NOTE - EITHER OR BOTH SIDES MAY BE PANELLED)

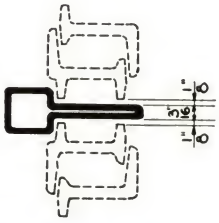


TRANSOM

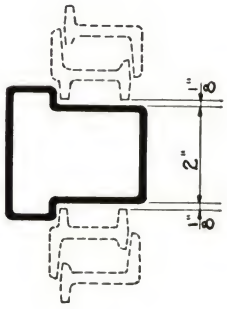


MULLION

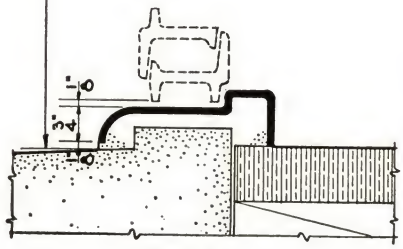




ALTERNATE TRANSOM OR MULLION



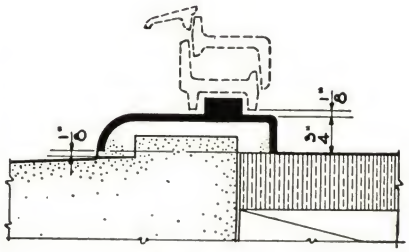
MULLION



SILL
OUT-OPENING

NOTE

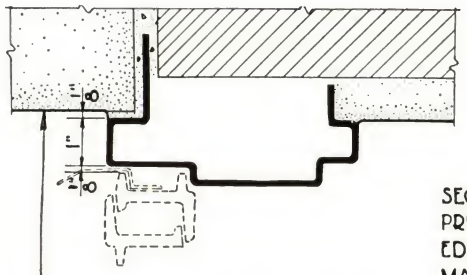
TWELVE GAUGE PRESSED METAL FRAMES ARE FURNISHED BY US, DELIVERED TO THE BUILDING SITE, TO BE SET IN PLACE, BUILT IN AND POINTED BY THE MASON CONTRACTOR AS THE WALLS GO UP. NOTATION OF THIS SHOULD BE MADE IN MASONRY SPECIFICATIONS.



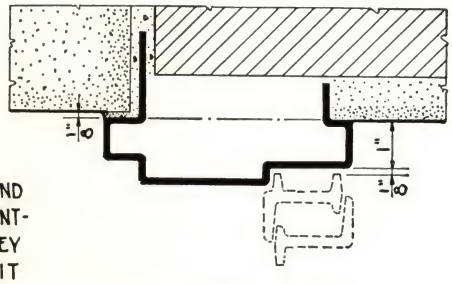
SILL
IN-OPENING

UNIVERSAL CASEMENTS

DOUBLE REBATED HOLLOW METAL FRAMES



HEAD OR JAMB

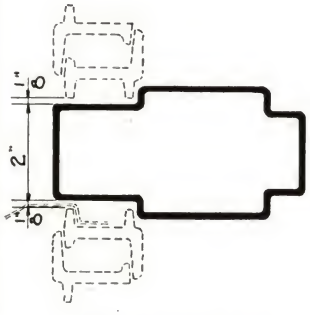


HEAD OR JAMB

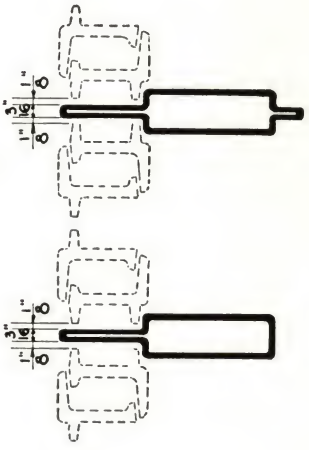
NOTE
SECTIONS SHOWN ON THIS AND PRECEDING PAGE ARE PRESENTED AS STANDARD SHAPES THEY MAY BE MODIFIED TO SUIT SPECIAL DESIGNS OR ANY PARTICULAR MASONRY DETAIL

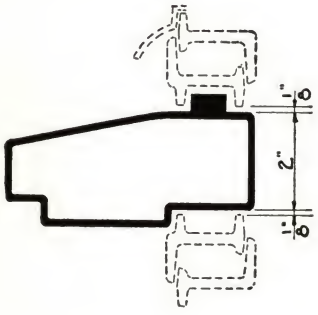
SCALE - 3"=1'-0"

MASONRY OPENING

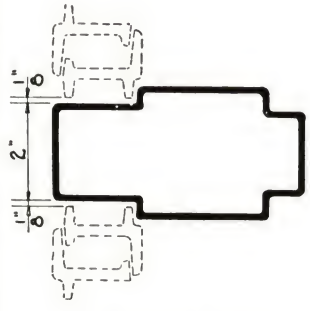


TRANSOM

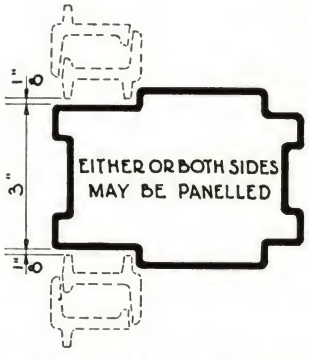


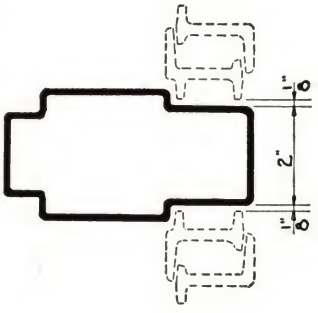


TRANSOM



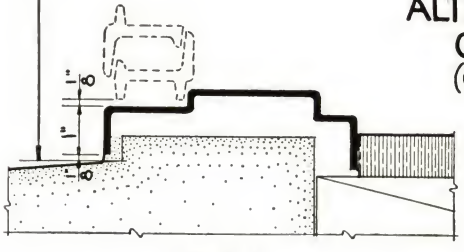
MULLION



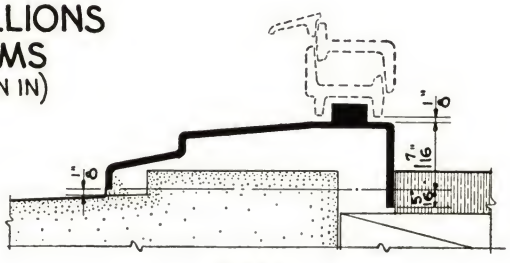


MULLION

ALTERNATE MULLIONS
OR TRANSOMS
(OPEN OUT OR OPEN IN)



SILL
OUT-OPENING



SILL
IN-OPENING

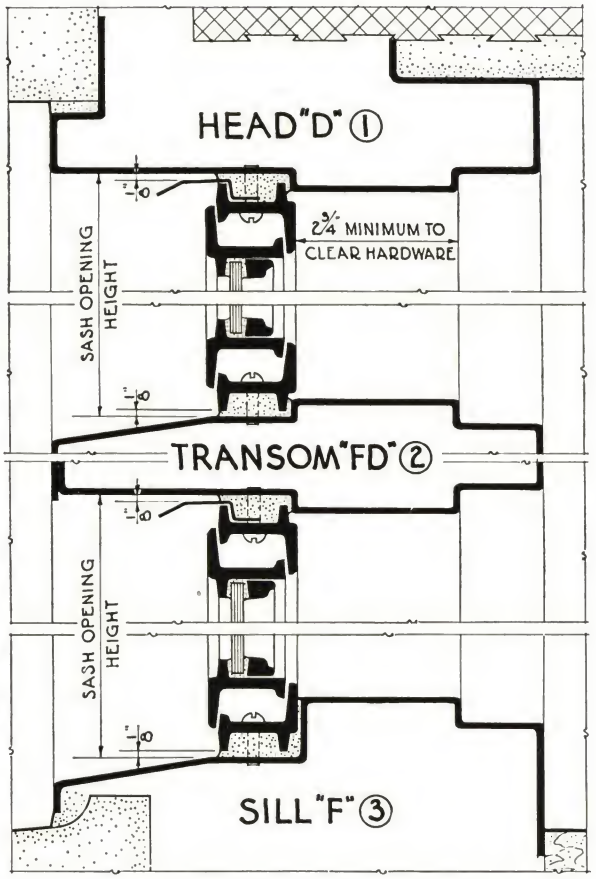
UNIVERSAL CASEMENTS

SIDE HINGED—OPEN OUT—TOP HINGED TRANSOM

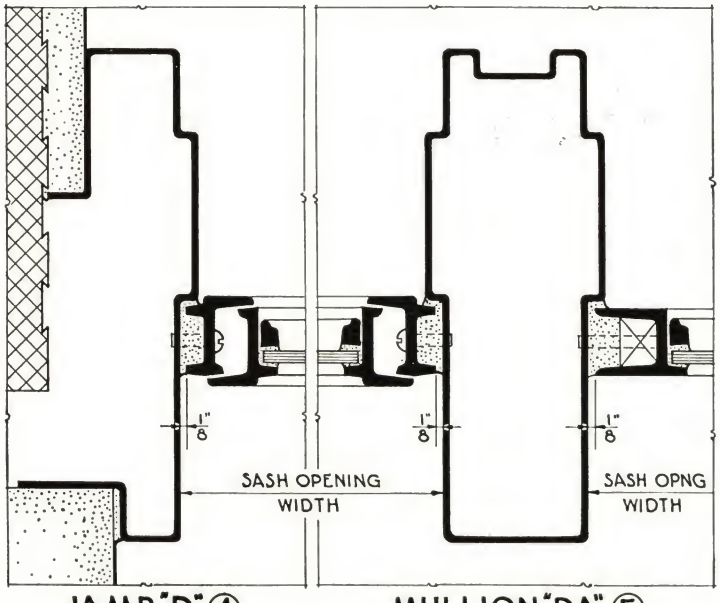


ATLANTA TOLL BUILDING - SOUTHERN BELL
TELEPHONE COMPANY ATLANTA - GA.
MARYE, ALGER AND VINOUR - ARCHITECTS.

NOTE-ILLUSTRATION SHOWS BUILDING AS IT WILL APPEAR UPON EARLY COMPLETION. LOWER FLOORS ARE NOW FINISHED AND OCCUPIED -



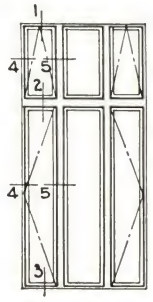
SCALE OF DETAILS - 3"= 1'-0"

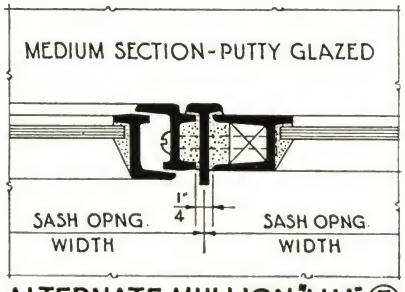


JAMB "D" ④ MULLION "DA" ⑤

NOTE

SECTION LETTERS REFER TO MARKING OF FULL SIZE SECTIONS FOR UNIVERSAL CASEMENTS NUMBERS REFER TO ⅛ SCALE ELEVATION SHOWN AT RIGHT

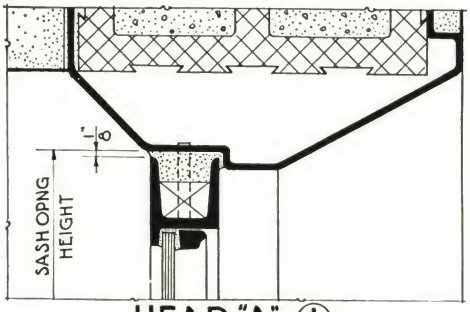




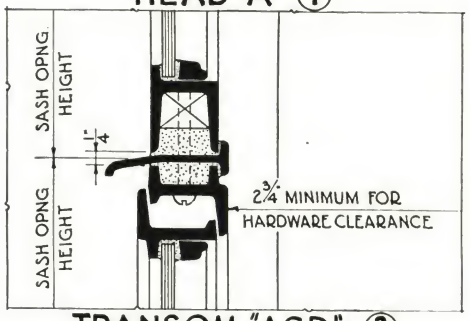
ALTERNATE MULLION "LUJ" ⑤

UNIVERSAL CASEMENTS

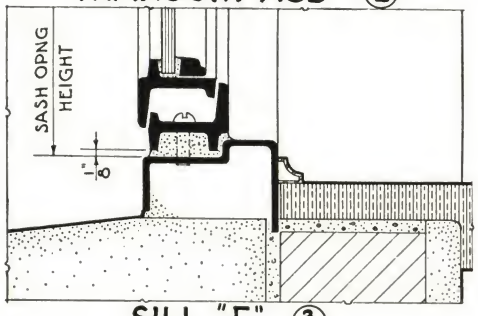
FOLDER—OPEN OUT—FIXED TRANSOM



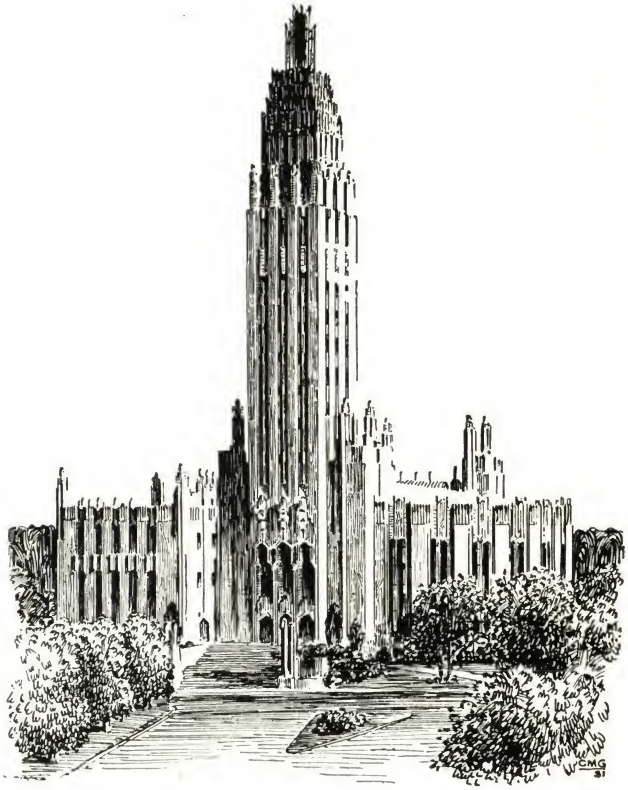
HEAD "A" ①



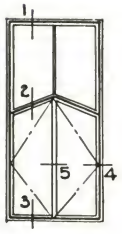
TRANSOM "ACD" ②



SILL "F" ③

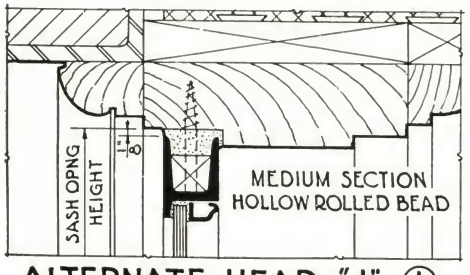


BOSTON AVENUE M.E. CHURCH
TULSA, OKLAHOMA
RUSH, ENDACOTT & GOFF - ARCHTS

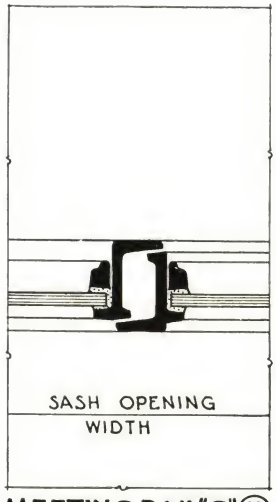


NOTE
SECTION LETTERS REFER TO MARKING OF FULL SIZE SECTIONS FOR UNIVERSAL CASEMENTS. NUMBERS REFER TO ELEVATION SHOWN AT LEFT.

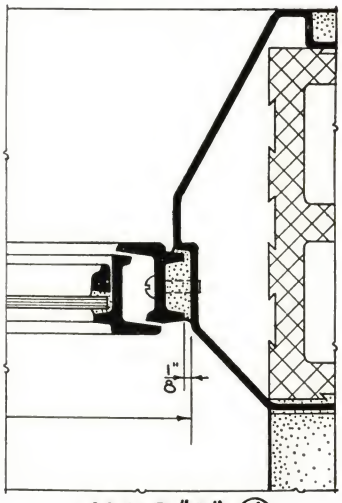
SCALE OF DETAILS - 3"-1'-0"



ALTERNATE HEAD "J" ①



MEETING RAIL "G" ⑤



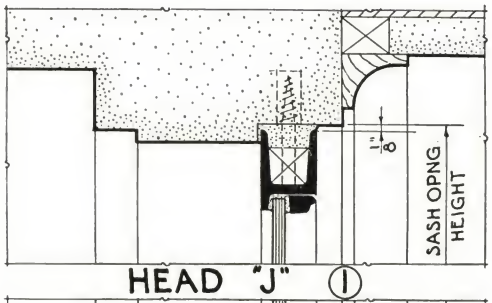
JAMB "D" ④

UNIVERSAL CASEMENTS

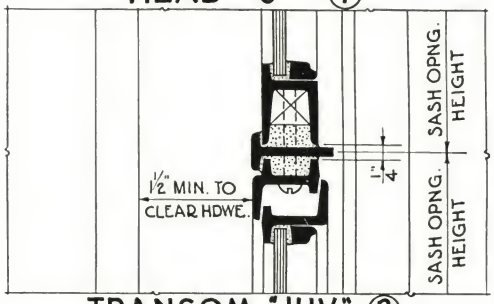
SIDE HINGED—OPEN IN—FIXED TRANSOM



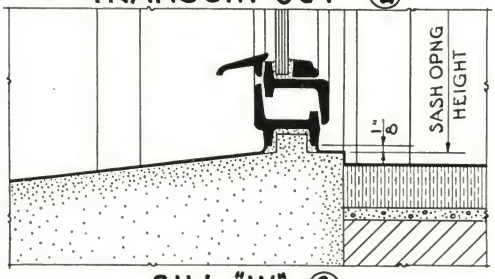
JULIUS FLEISCHMANN JR. RESIDENCE ~ MADEIRA, OHIO
STANLEY MATTHEWS AND C.W. SHORT ~ ARCHITECTS.



HEAD "J" (1)



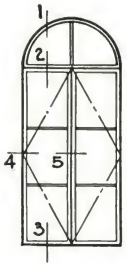
TRANSOM "JUV" (2)

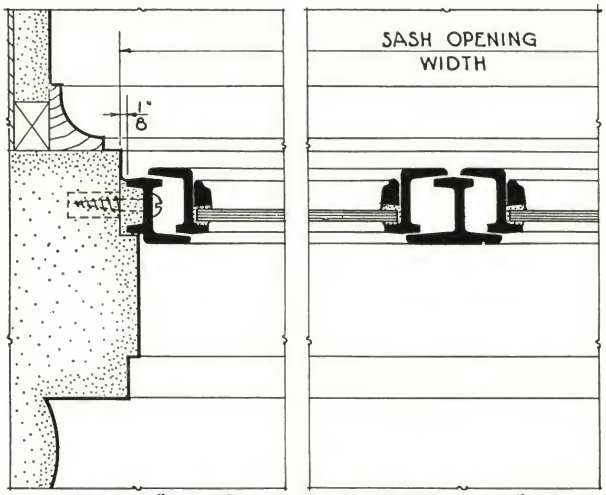


SILL "W" (3)

NOTE
SECTION LETTERS REFER TO MARKING OF FULL SIZE SECTIONS FOR UNIVERSAL CASEMENTS. NUMBERS REFER TO ELEVATION SHOWN AT RIGHT.

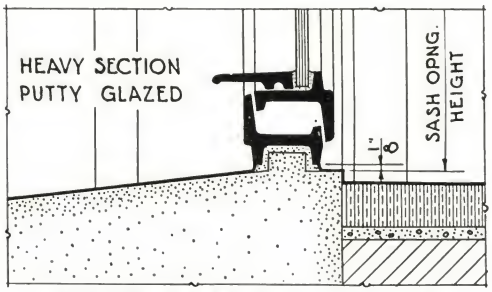
SCALE OF DETAILS - 3"-1'-0"





JAMB "V" (4)

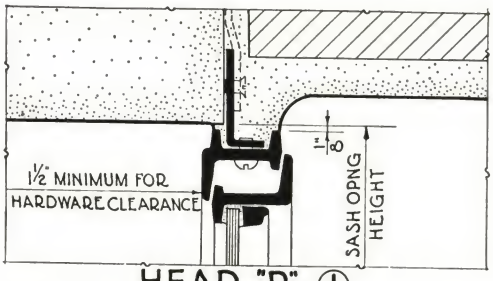
MEETING RAIL "O" (5)



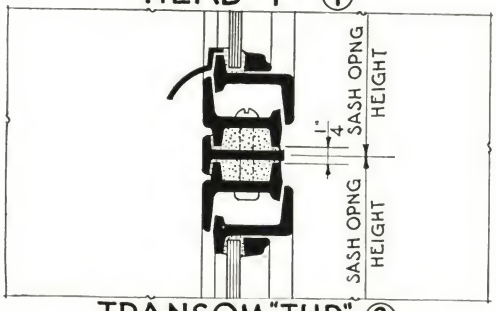
ALTERNATE SILL "R" (3)

UNIVERSAL CASEMENTS

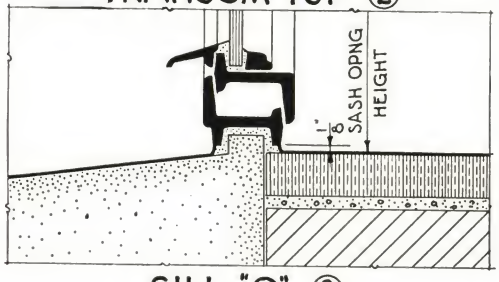
FOLDER—OPEN IN—BOTTOM HINGED TRANSOM



HEAD "P" ①



TRANSOM "TUP" ②



SILL "Q" ③

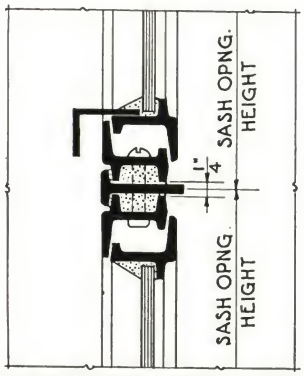


TRIBUNE TOWER CHICAGO, ILL.
JOHN M. HOWELLS & RAYMOND HOOD-ARCHTS.

NOTE

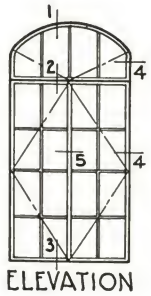
SECTION LETTERS REFER TO MARKING OF FULL SIZE SECTIONS FOR UNIVERSAL CASEMENTS - NUMBERS REFER TO ELEVATION SHOWN BELOW.

SCALE OF DETAILS - 3"=1'-0"

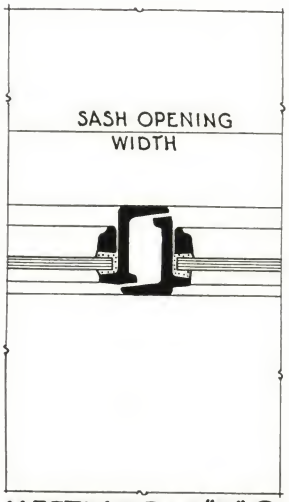


MEDIUM SECT.-PUTTY GLAZED

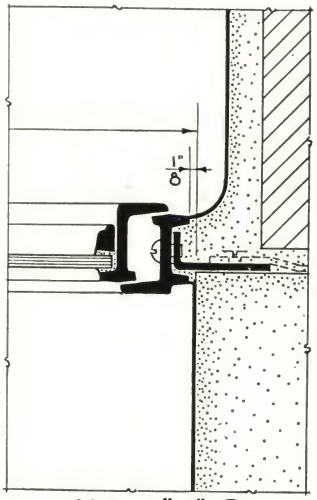
ALTERNATE TRANSOM "YUV" ②



ELEVATION



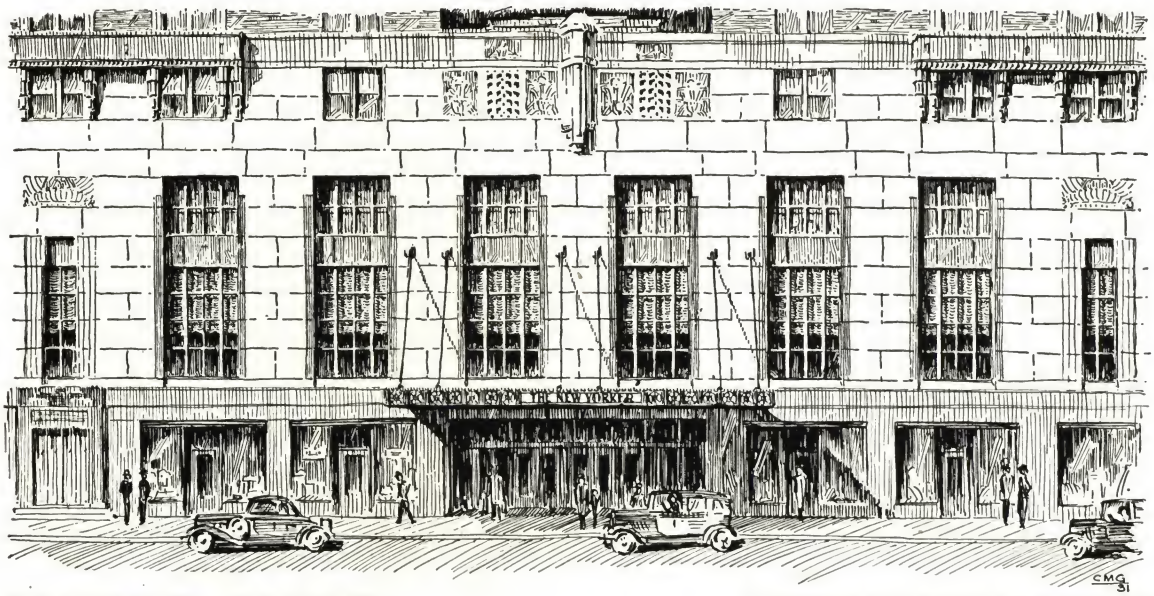
MEETING RAIL "G" ⑤



JAMB "P" ④

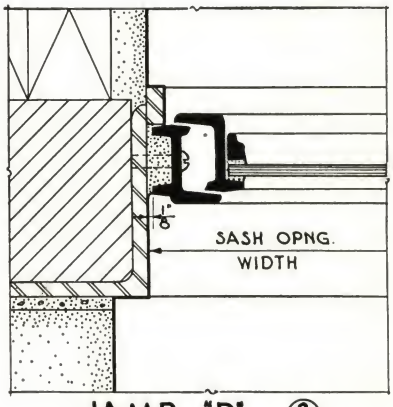
UNIVERSAL CASEMENTS

HORIZONTALLY PIVOTED CASEMENTS

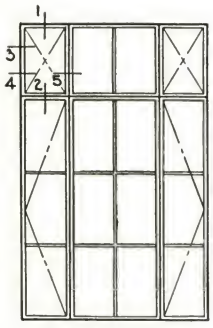


NEW YORKER HOTEL - NEW YORK CITY

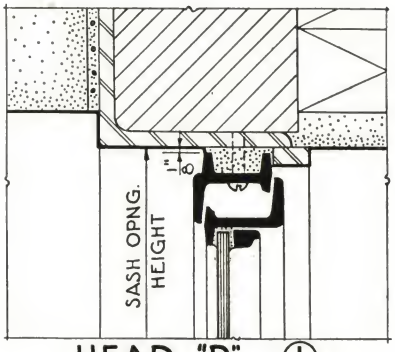
SUGARMAN AND BERGER - ARCHITECTS



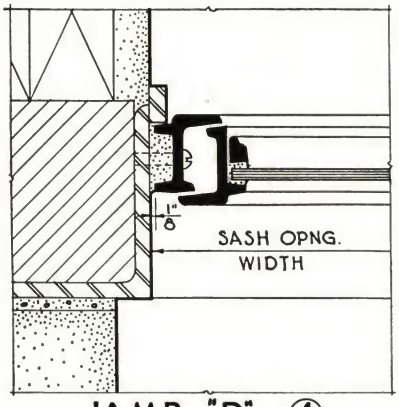
JAMB "P" ③



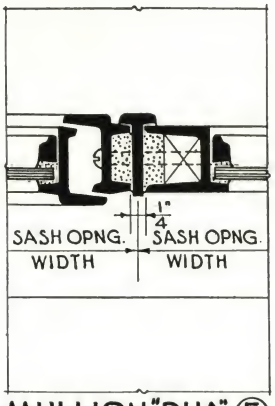
ELEVATION
(HORIZONTALLY PIVOTED CASEMENTS USED AS TRANSOM SASH)



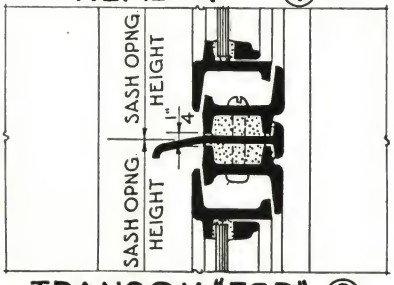
HEAD "P" ①



JAMB "D" ④



MULLION "DUA" ⑤



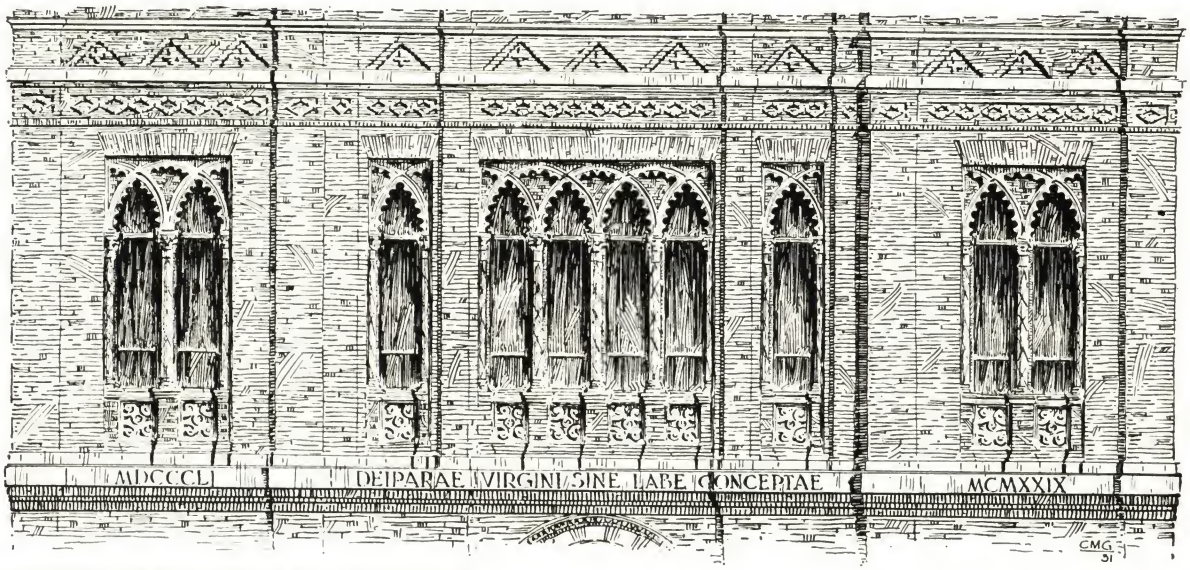
TRANSOM "FCD" ②

NOTE: SECTION LETTERS REFER TO MARKING OF FULL SIZE SECTIONS FOR UNIVERSAL CASEMENTS. NUMBERS REFER TO ELEVATION SHOWN ABOVE.

SCALE OF DETAILS - 3" = 1'-0"

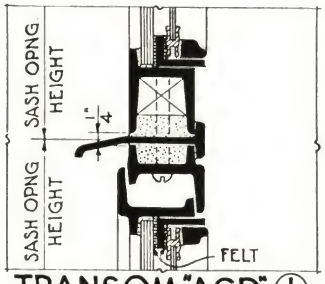
UNIVERSAL CASEMENTS

VERTICALLY PIVOTED CASEMENTS—DOUBLE GLAZING

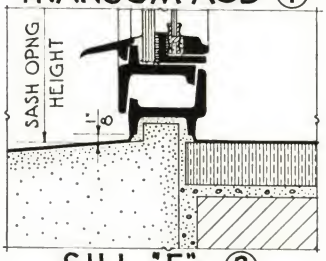


CHURCH OF THE IMMACULATE CONCEPTION
NEW ORLEANS , LA.

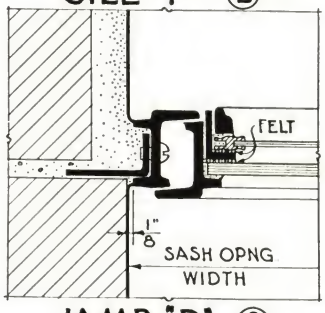
WOGAN & BERNARD
ARCHITECTS



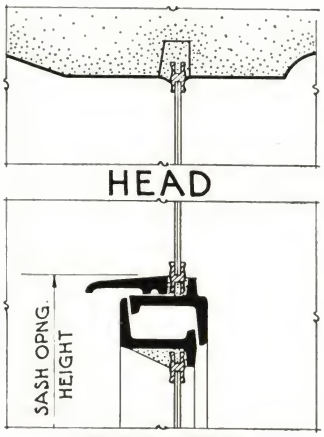
TRANSOM "ACD" (1)



SILL "F" (2)



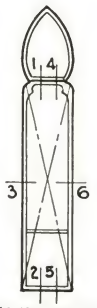
JAMB "D" (3)



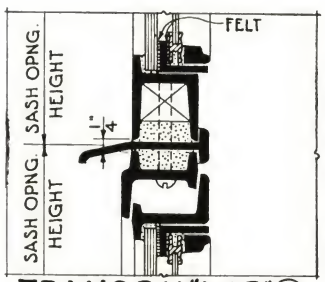
TRANSOM
DETAILS FOR GLAZING
DIRECT INTO MASONRY

NOTE
SECTION LETTERS REFER TO MARKING OF FULL SIZE SECTIONS FOR UNIVERSAL CASEMENTS NUMBERS REFER TO 1/8" SCALE ELEVATION SHOWN AT RIGHT.

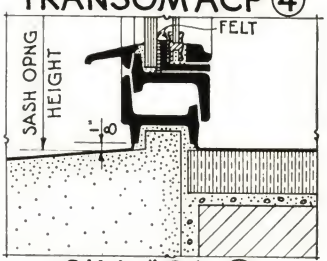
SCALE OF DETAILS
3" = 1'-0"



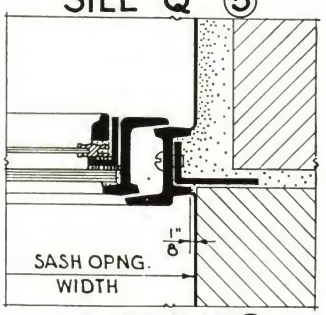
ELEVATION



TRANSOM "ACP" (4)



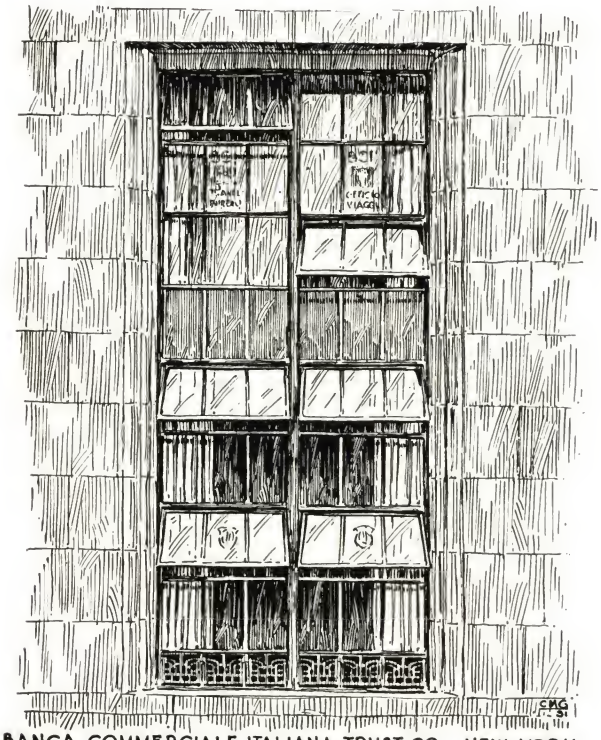
SILL "Q" (5)



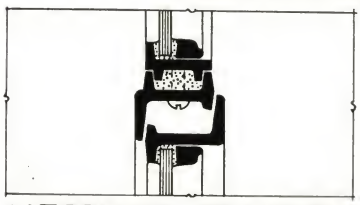
JAMB "P" (6)

UNIVERSAL CASEMENTS

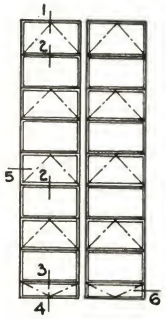
PROJECTED CASEMENTS—OPEN OUT AND IN

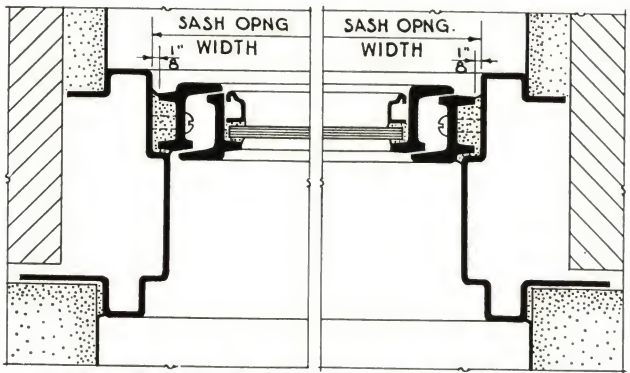


BANCA COMMERCIALE ITALIANA TRUST CO. - NEW YORK.
HARRY R. ALLEN-ARCHT.



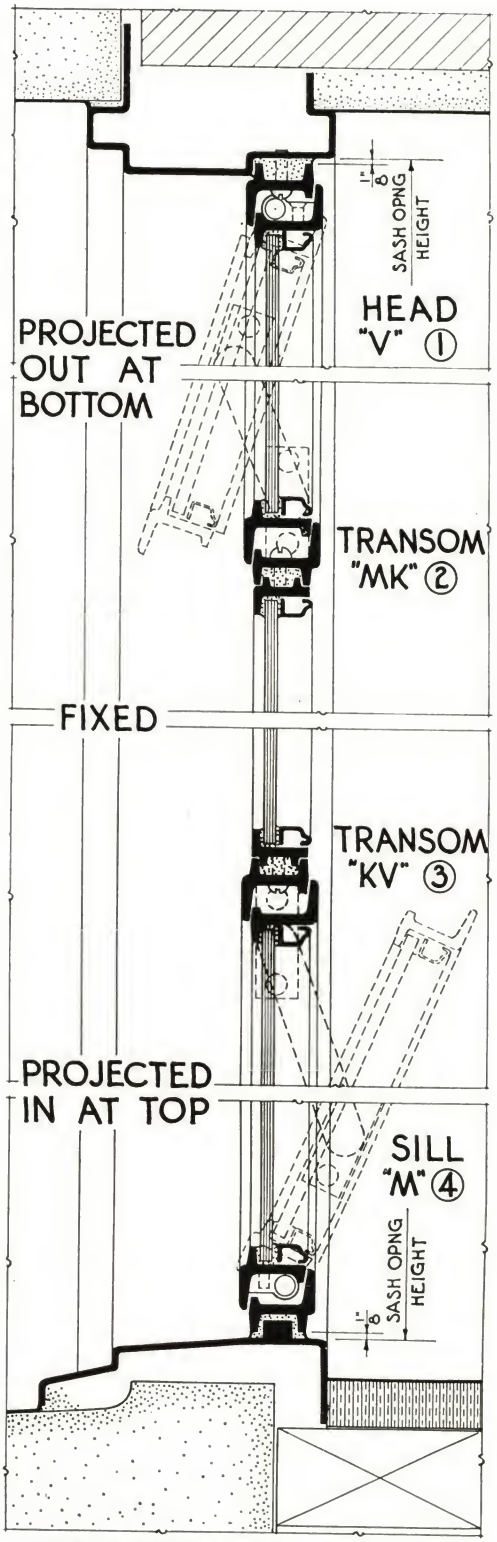
ALTERNATE TRANSOM
"BP" ③
HEAVY SECTION - SOLID BEAD





JAMB "L" ⑤
PROJECTED OUT

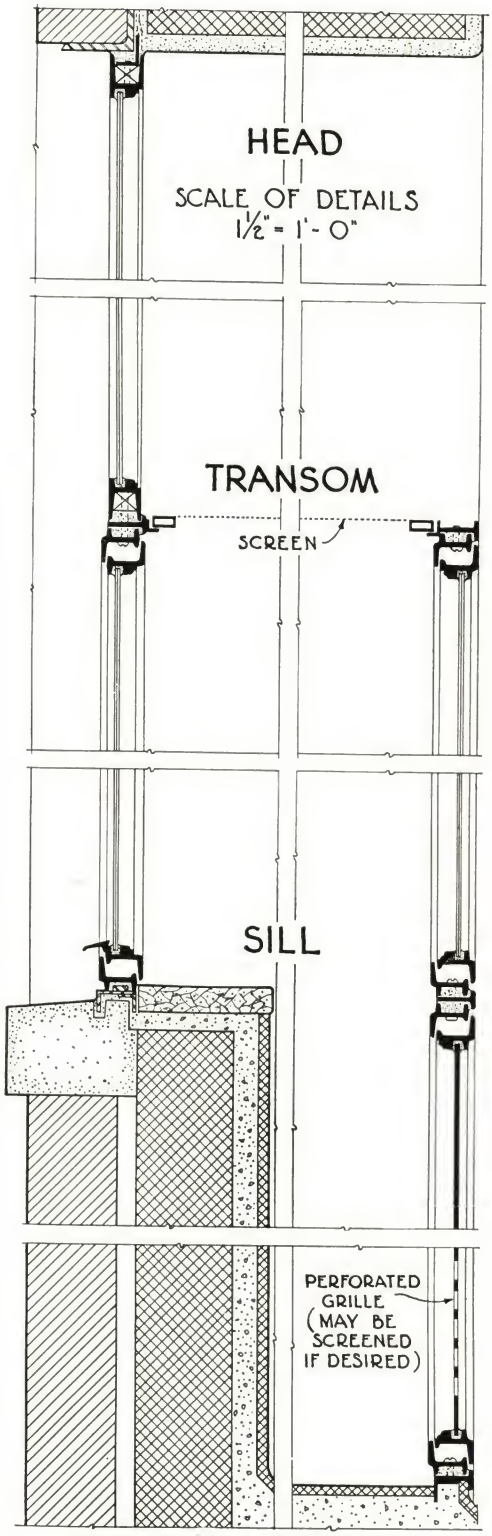
JAMB "V" ⑥
PROJECTED IN



SCALE OF DETAILS - 3" - 1' - 0"

UNIVERSAL CASEMENTS

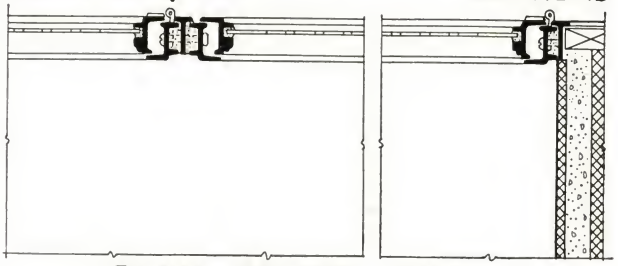
HOSPITAL OPERATING ROOM WINDOWS



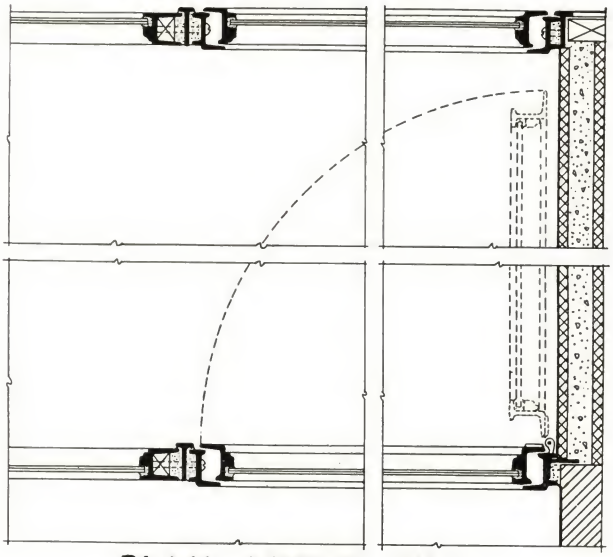
VERTICAL SECTION



HOMEOPATHIC HOSPITAL
CROW, LEWIS & WICK
EAST ORANGE N.J.
ARCHITECTS



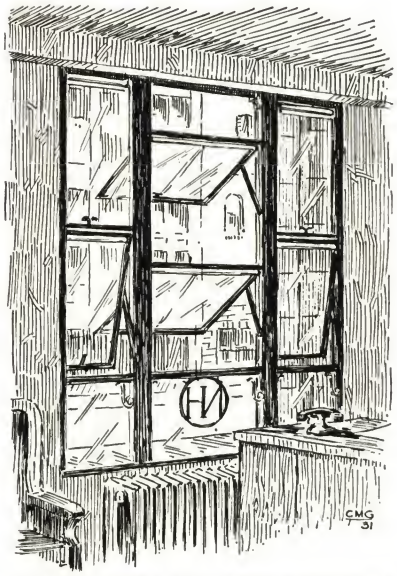
PLAN BELOW SILL



PLAN ABOVE SILL

UNIVERSAL CASEMENTS

REVERSIBLE WINDOWS

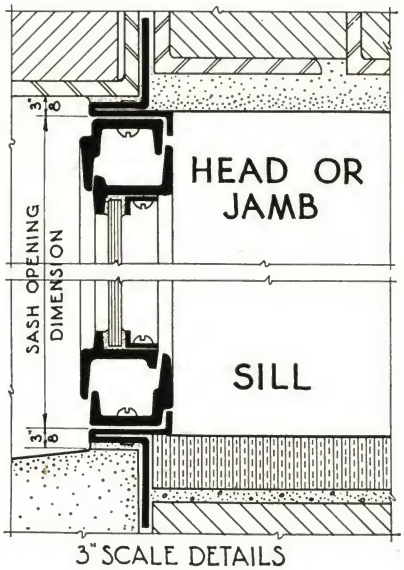


CITY HALL-UNIT Nº1 - NEW HAVEN, CONN.
EGERTON SWARTWOUT ~ ARCHITECT.

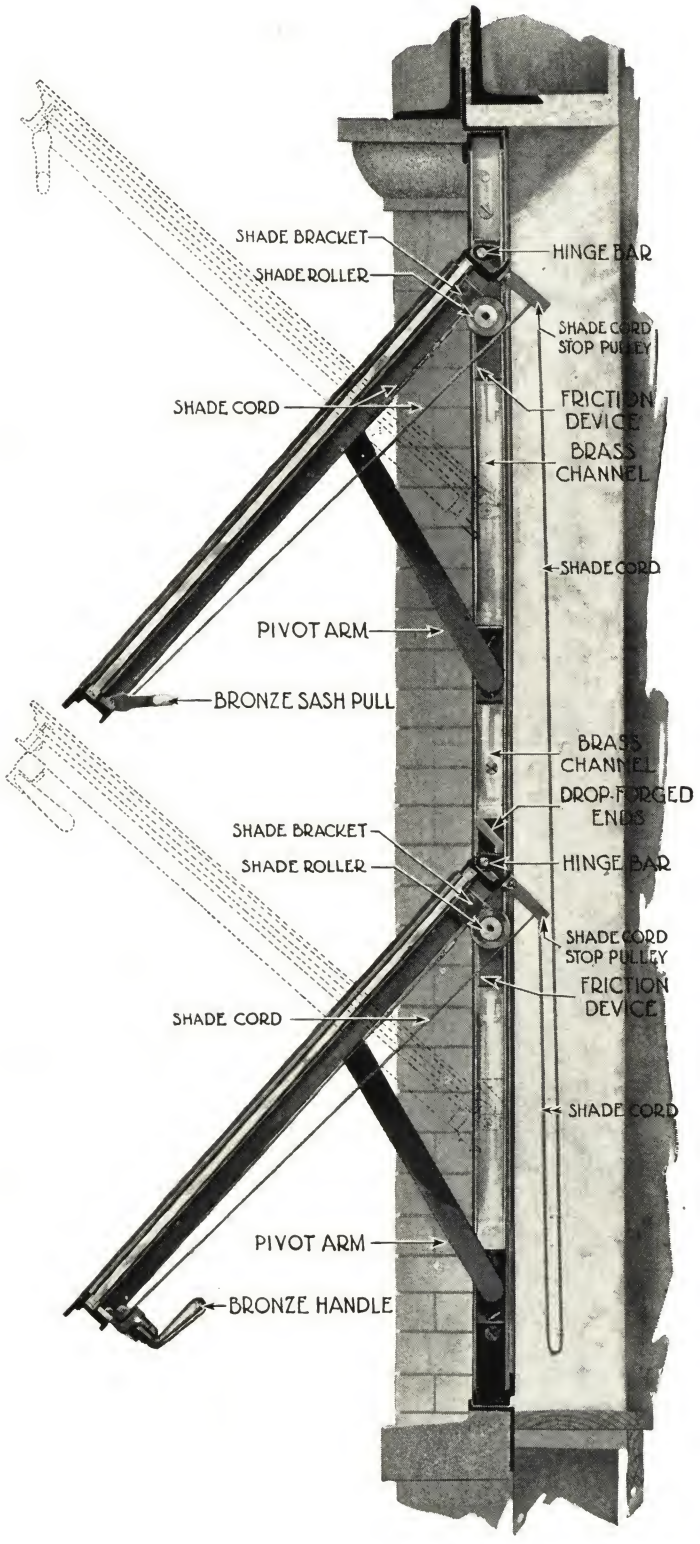
FOR OFFICE BUILDINGS OR MONUMENTAL TYPE BUILDINGS OF MORE THAN USUAL DISTINCTION WHERE A WINDOW OF THE PROJECTED TYPE IS CONTEMPLATED THE REVERSIBLE WINDOW IS RECOMMENDED. RUGGED CONSTRUCTION, SIMPLICITY OF OPERATION, EASE OF CLEANING, AND PERFECTION OF DETAIL CHARACTERIZES THIS SASH.

REVERSIBLE WINDOWS SHOULD BE INSTALLED IN SUB-FRAME CONSTRUCTION OF SIMILAR CONTOUR TO FRAMES USED FOR UNIVERSAL CASEMENTS.

THEY ARE SUPPLIED WITH UNDERWRITERS LABELS WHEN REQUIRED.

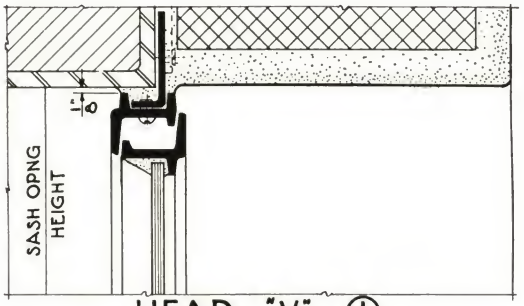


3" SCALE DETAILS

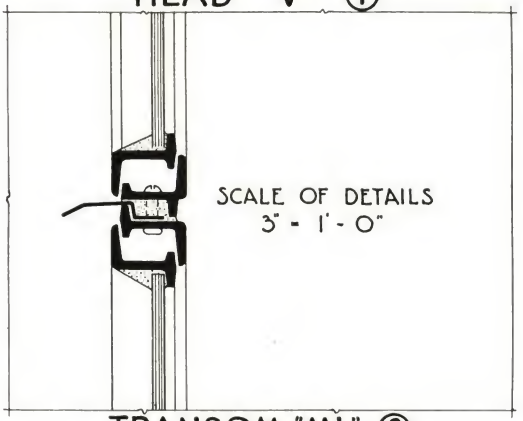


UNIVERSAL CASEMENTS

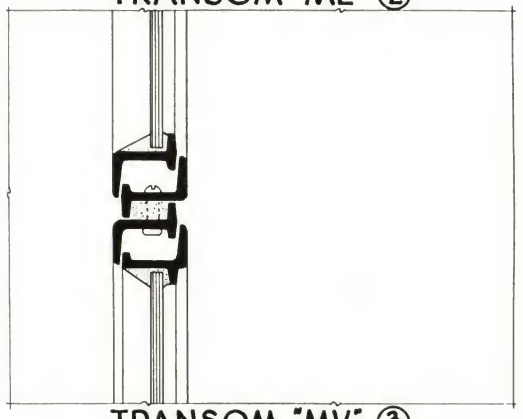
SUGGESTIONS FOR OFFICE WINDOWS & STEEL STOOL



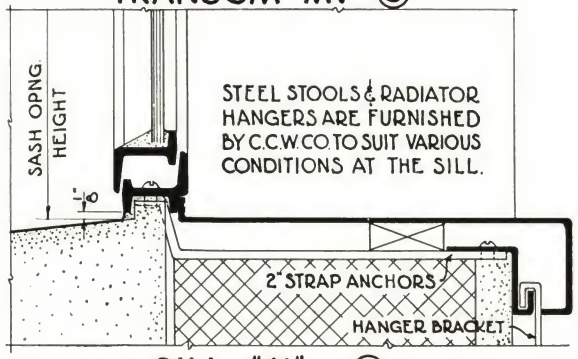
HEAD "V" ①



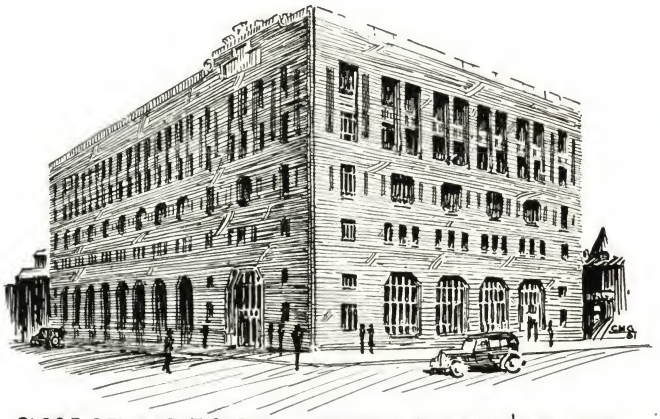
TRANSOM "ML" ②



TRANSOM "MV" ③



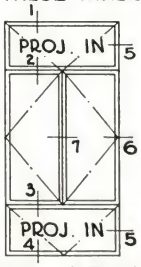
SILL "M" ④



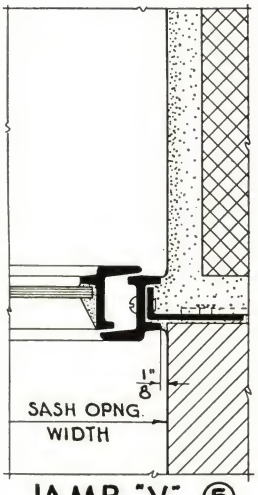
GLOBE-DEMOCRAT BLDG.
ST. LOUIS, MO.

MAURAN, RUSSELL & CROWELL
ARCHITECTS.

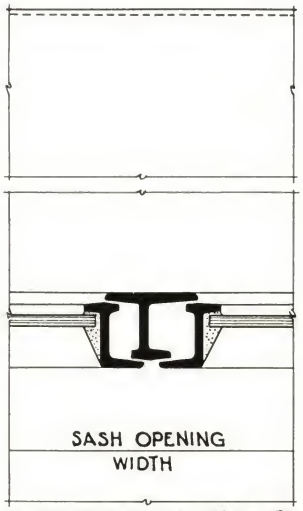
ELEVATION AND DETAILS ARE SUGGESTIONS FOR AN OFFICE BUILDING TYPE WINDOW. SIZES AND ARRANGEMENT OF VENTILATORS MAY VARY IN ACCORDANCE WITH THE ARCHITECT'S DESIGN. SPECIFICATIONS FOR UNIVERSAL CASEMENTS GOVERN MANUFACTURE OF THESE WINDOWS ~



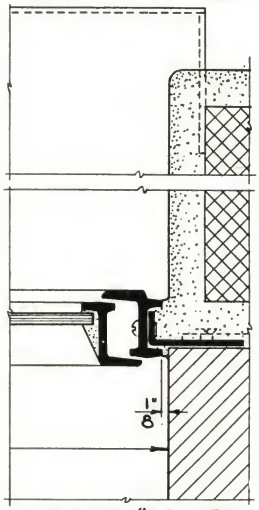
TYPICAL ELEVATION



JAMB "V" ⑤



MEETING RAIL "O" ⑦



JAMB "L" ⑥

UNIVERSAL CASEMENTS

UNIVERSAL CASEMENT DOOR HARDWARE



TOP BOLT



ATHENEUM BLDG., CALIFORNIA TECH., PASADENA, CALIF.
Gordon B. Kaufmann, Architect



BOTTOM BOLT



HANDLES AND LOCK PLATE
(Outside View)

Cylinder locks should be specified when desired. Special mention should be made if they are to be master keyed. Dummy locks should also be specified when desired. Top and bottom bolts are furnished on all double doors. Door holders and friction adjusters are furnished only when specified.

A Cremorne Bolt Lock may be furnished, with the rods concealed in the section, operative from outside and inside, and with a thumb latch inside. Cylinders may be applied on the outside or both sides at extra cost.



HANDLES AND LOCK PLATE
(Inside View)

UNIVERSAL CASEMENTS

UNIVERSAL CASEMENT DOOR DETAILS

IN - OPENING



NOTES

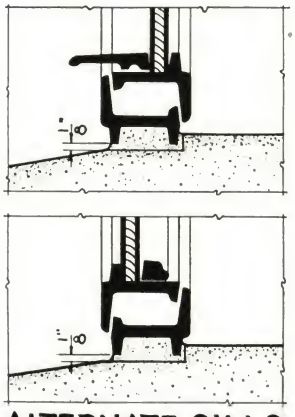
UNIVERSAL CASEMENT DOORS ARE MANUFACTURED IN ACCORDANCE WITH ARCHITECTS' DESIGNS AND SIZES.

SINGLE LEAF DOORS SHOULD NOT EXCEED 3'-0" IN WIDTH DOUBLE LEAF DOORS SHOULD NOT EXCEED 6'-0" IN WIDTH HEIGHTS SHOULD NOT EXCEED 8'0

TO PREVENT GLASS BREAKAGE LOCKS MUST ALWAYS BE FRAMED BY STEEL MUNTINS OR LEAD CAMES GLASS SHOULD NEVER BE CUT OUT TO FIT AROUND THE LOCK

HEIGHT OF THE LOCK FROM THE FLOOR MAY VARY TO PERMIT BETTER PANE ARRANGEMENT.

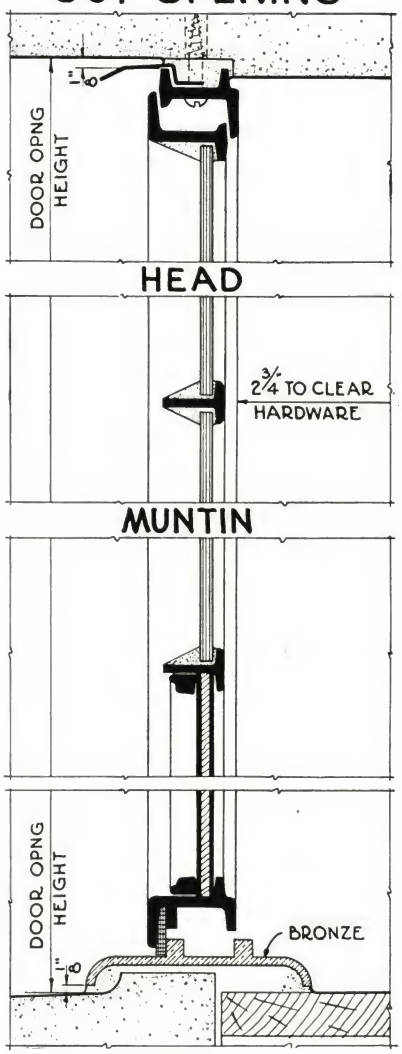
HEIGHT OF THE KICK PLATE MAY ALSO VARY, BUT DOORS OF MAXIMUM SIZE, OR CLOSE TO MAXIMUM SIZE REQUIRE A KICK PLATE NOT LESS THAN 9" HIGH



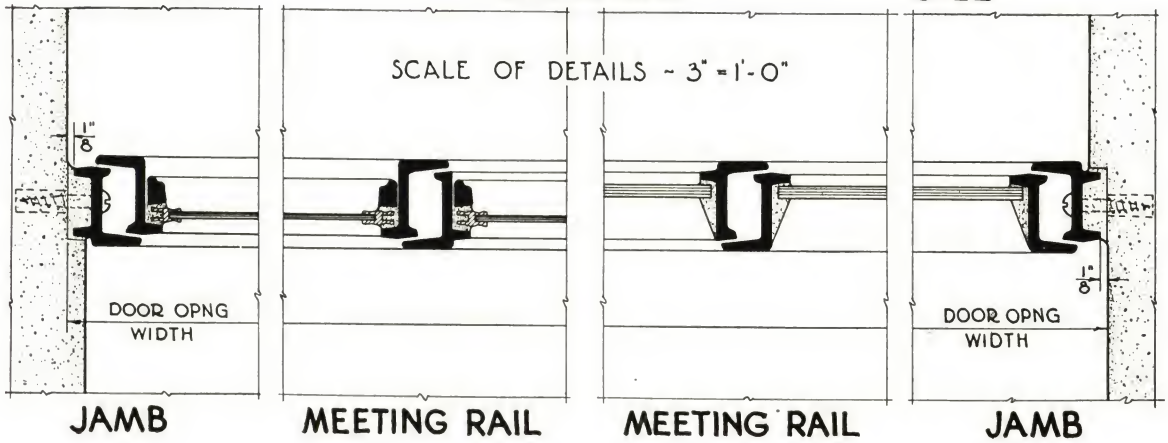
ALTERNATE SILLS

FOR USE WHERE PASSAGE THROUGH DOORS IS INFREQUENT I.E. ON BALCONIES ETC

OUT-OPENING



SCALE OF DETAILS - 3" = 1'-0"



UNIVERSAL CASEMENTS

MECHANICAL OPERATORS



FEDERAL RESERVE BANK, RICHMOND, VA.
Carneal and Johnston, Architects

Crittall Rod Gearing

Rod gearing is designed to operate a number of transoms (preferably not over four) from one station. It may be used on any type of ventilating transom except side hinged. The arms and horizontal rods are painted iron. The down rod may be either iron or polished bronze as specified. The gear box and handle are always bronze. Supplied only when specified.



Crittall Rack Openers

Substantially made of solid bronze, this fitting is for the operation of individual transom units where the projecting arm is not objectionable. It is used on either bottom hinged in-opening or top hinged out-opening transoms.

It is supplied only when specified.



Crittall Duplex Gearing

This fitting is for use on either bottom hinged in-opening or top hinged out-opening transoms, operating single units only.

Supplied only when specified.

UNIVERSAL CASEMENTS

BRONZE CASEMENTS



ALVAN MACAULEY RESIDENCE, GROSSE POINTE SHORES, MICH.
Albert Kahn Inc., Architects

Below:
JOSEPH E. WIDENER RESIDENCE, WEST PALM BEACH, FLA.
Treanor & Fatio, Architects



Below:
FOREST LAWN MAUSOLEUM, GLENDALE, CALIF.
Forest Lawn Arch'l Dept., Architects

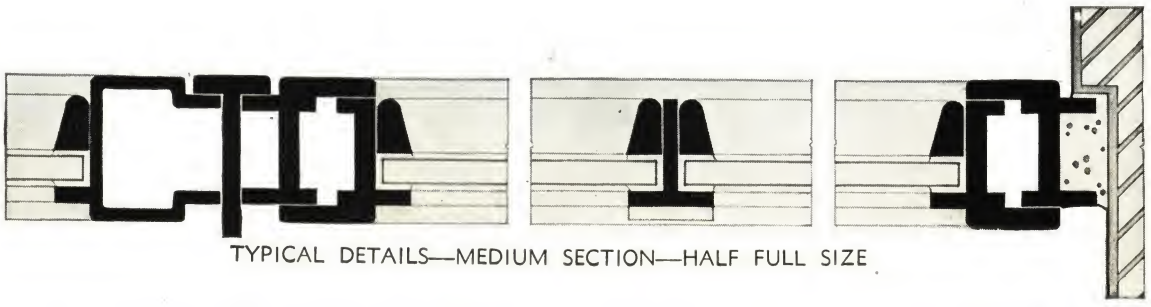


TYPICAL INSTALLATIONS

Bronze Universal Casements are constructed of extruded sections of the same design as used for steel medium and heavy weight Universal Casements, but slightly heavier in cross sectional area to compensate for the difference in the natural strength of the two metals. Fixed light sections are formed to the same contour as the combined casement sections as illustrated below, giving uniformity of appearance to the stationary and ventilating units in a composite opening.

Hardware is the same as for steel Universal Casements, except that the bronze butts have terminal ends to the phosphor bronze pins to add a touch of refinement to the general appearance of the window.

The finish required should be definitely specified. Generally these casements are furnished in natural finish, as the weather quickly tones them and gives them a much desired appearance of age that cannot be duplicated by artificial treatment. However, they can be finished a dark coinage color to match the hardware at extra cost. These finishes should be applied after installation; otherwise, they will be damaged before occupancy.



TYPICAL DETAILS—MEDIUM SECTION—HALF FULL SIZE

NORMAN CASEMENTS



WELLESLEY COLLEGE ADMINISTRATION BUILDING, WELLESLEY, MASS.
Charles Z. Klauder, Architect

NORMAN CASEMENTS

CRITTALL CASEMENT WINDOW COMPANY

DETROIT, MICHIGAN

NORMAN Casements are heavy standard windows, available in both out-opening and in-opening types in a complete range of sizes, combinations and shapes, and are adaptable to use in any type of building. They were created as a standardization of the Crittall Universal Casement, a custom built window, and possess the same characteristics of design and workmanship as does this justly famous window.



The high standards of material and workmanship incorporated in these casements enables this Company to guarantee unquestionably that they will be wind and watertight, without weatherstrips of any kind. To add to their appearance of quality, they are equipped with excellently designed and durable hardware.

Particularly for use in residence work, the Norman Screened Casement may be furnished to provide a detachable flat screen designed as an integral part of the window. Special hardware permits complete operation of the window without moving the screen.

Norman Casements, of the screened or non-screen type, may also be furnished in special sizes at slight extra cost, providing the construction and fittings remain standard, and sizes do not exceed 2 ft. 6 in. wide and 6 ft. 0 in. high.

The Norman Casement Door is made as a double door of sturdy construction in a single standard size. It is designed to open out or in, and embodies the same characteristics of construction and appearance as does the Norman Casement.

The advantages of the Norman Casement line are immediately evident as quality to please the most exacting, coupled with the economy made possible by standardization of a high grade product.

SPECIFICATIONS

Windows—All windows shall be Crittall Norman Casements as manufactured by the CRITTALL CASEMENT WINDOW COMPANY, Detroit, Michigan. All windows shall be standard sizes and types as shown on architect's drawings. Shop drawings must be submitted for the architect's approval. Casements shall be furnished complete with standard solid bronze hardware, finished in dark coinage color. Steel sections, including ventilating section and frame, but not including glass stops or sub-frames, shall weigh not less than 3.25 lbs. per lineal foot.

The casements shall be installed by the manufacturer. (If this is impractical, they can be set by local labor but care should be exercised to see that they are erected according to the manufacturer's instructions.) All joints between the steel sash and the collateral construction are to be made tight with the use of Crittall Mastic Cement neatly pointed on the exterior.

Screened Casements

Specifications for Norman Casements are to be followed for Norman Screened Casements with the following additions:

All casements shall be prepared with two anchor buttons, located on the jambs near the top to receive flat steel (bronze, if desired) frame screens, which are also included in this contract. These screens shall have 16-mesh (18-mesh, if desired) antique bronze wire cloth. Screen frames shall be painted to match the casements. (If bronze, finish to be statuary.)

Screens shall be installed under another heading. (The original installation of screens should be included in the general or carpenter's contract, as they would be damaged if installed at the time of erection of casements, and due to being especially designed for simplicity of attachment and removal, do not require the services of skilled casement workmen.)

Extras To Be Included If Desired

The casements are to set directly into prepared masonry openings, and the manufacturer shall supply continuous angle fin around the head and jambs of all openings for making a perfect joint between sash and masonry. (If casements are set in Utility or Hollow Metal Frames, specify these to be furnished under the casement contract and to be built in by the mason contractor.)

Norman Casements are made with spring clips for putty glazing from the outside. If glass stops are required, a steel angle stop may be specified, applied only on the outside and set with round head bronze screws.

NORMAN CASEMENTS
STANDARD HARDWARE

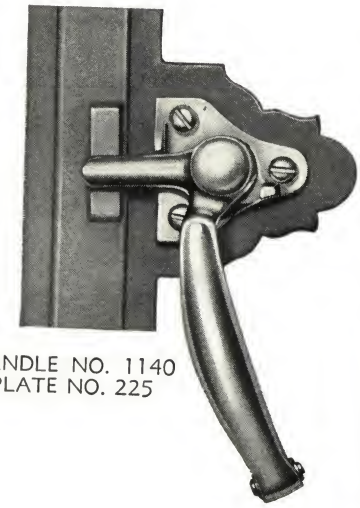


FRICTION STAY
(Supplied when specified)



SCREENED CASEMENT
HANDLE NO. 1270

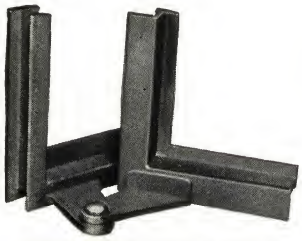
Standard hardware on Norman Casements is Handle No. 1006 or No. 1140, and friction hinges. When specified, non-friction hinges may be supplied with friction stay applied at the head of the casement. Handle No. 1270 and Operator No. 1275 are standard for all Norman Screened Casements. All handles may be furnished with two throw latches when casements are 5 ft. 0 in. high or over, or when the casement is so located that a single handle would be out of reach.



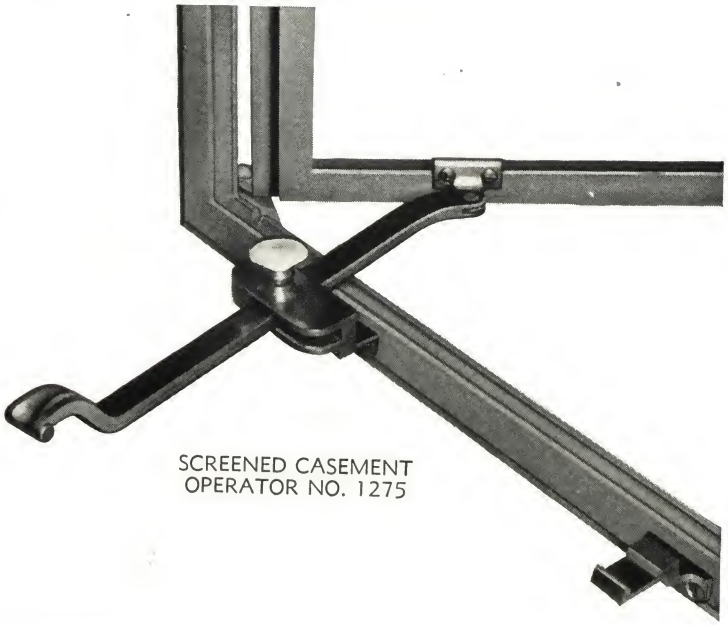
HANDLE NO. 1140
PLATE NO. 225



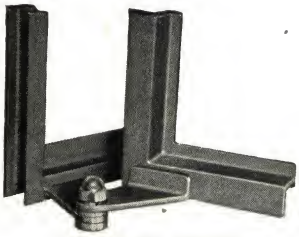
At Left:
HANDLE NO. 1006
PLATE NO. 225



NON-FRICTION HINGE



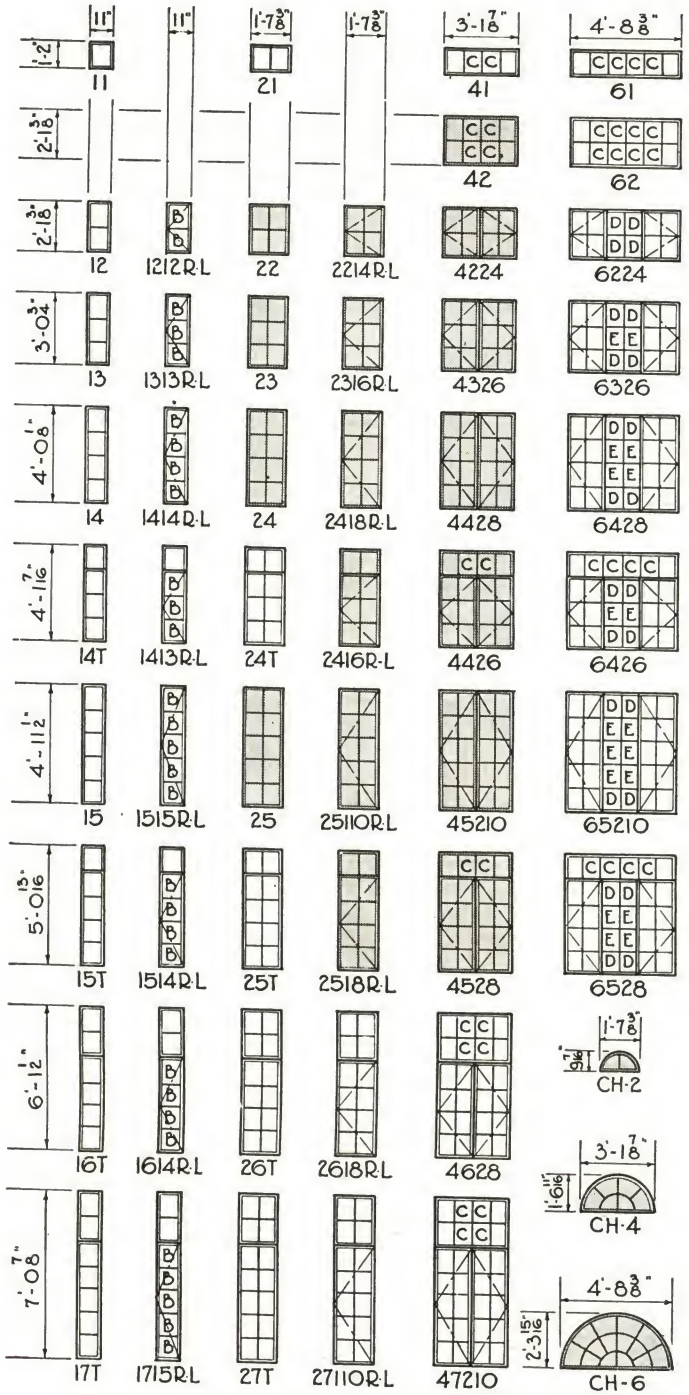
SCREENED CASEMENT
OPERATOR NO. 1275



FRICTION HINGE

NORMAN CASEMENTS

STANDARD TYPES AND SIZES



TOP AND BOTTOM HINGED TRANSOMS



ALL TYPES SHOWN SHADED ARE CARRIED IN STOCK

GENERAL NOTES

ALL VENTILATING TYPES MAY BE FURNISHED EITHER OUT-OPENING OR IN-OPENING, EXCEPT SIX LIGHT WIDE TYPES WHICH ARE OUT-OPENING ONLY. SIX LIGHT WIDE IN-OPENING TYPES MAY BE FURNISHED AS COUPLED UNITS GIVING AN OPENING WIDTH OF 4'-10⅛" THE LETTER "I" SHOULD PRECEDE THE TYPE NUMBER IN SPECIFYING IN-OPENING TYPES

ALL TYPES MAY BE FURNISHED WITHOUT MUNTINS, "X" PRECEDING THE TYPE NUMBER.

ALL OUT-OPENING VENTILATING TYPES MAY BE FURNISHED WITH DETACHABLE FLAT SCREENS WHICH ARE DESIGNED AS INTEGRAL PARTS OF THE WINDOWS

ALL SIDE HINGED SASH MAY BE FURNISHED EITHER RIGHT OR LEFT HAND HANDING OF A CASEMENT IS DETERMINED BY LOCATION OF HINGES VIEWED FROM OUTSIDE

DIMENSIONS GIVEN ARE OPENING SIZES. ⅛" CLEARANCE HAS BEEN INCLUDED FOR ALL FOUR SIDES ACTUAL SASH SIZES ARE ¼" LESS IN BOTH WIDTH AND HEIGHT

ACTUAL GLASS SIZES

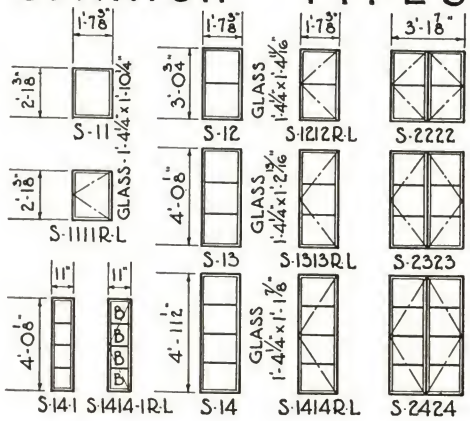
NO ALLOWANCE NECESSARY FOR CUTTING.
ALL LIGHTS ARE 8"×11" UNLESS OTHERWISE NOTED.
MARKED "B" - 7⅞"×11" MARKED "D" - 8⅝"×11 1/16"
MARKED "C" - 9"×11" MARKED "E" - 8⅝"×11"
CIRCULAR HEAD TYPES - SEE TEMPLATES

LEADED GLASS SIZES

CH-2, CH-4 AND CH-6 - SEE TEMPLATES.

11 - 7⅞"×11"	21 - 1'-4¼"×11"
41 - 2'-10¾"×11"	61 - 4'-5¼"×11"
42 - 2'-10¾"×1'-10¼"	62 - 4'-5¼"×1'-10¼"
12¢1212 - 7⅞"×1'-10¼"	13¢1313 - 7⅞"×2'-9⅝"
14¢1414 - 7⅞"×3'-9"	15¢1515 - 7⅞"×4'-8⅝"
6224 (FIXED) 1'-5½"×1'-11½"	6326 (FIXED) 1'-5½"×2'-10⅛"
6428 (FIXED) 1'-5½"×3'-10¼"	65210 (FIXED) 1'-5½"×4'-9⅝"
22, 2214, 4224 AND 6224 (VENTS) - 1'-4¼"×1'-10¼"	
23, 2316, 4326 AND 6326 (VENTS) - 1'-4¼"×2'-9⅝"	
24, 2418, 4428 AND 6428 (VENTS) - 1'-4¼"×3'-9"	
25, 25110, 45210 AND 65210 (VENTS) - 1'-4¼"×4'-8⅝"	
2214-TH AND BI-2214	1'-4¼"×1'-10¼"
4218-TH AND BI-4218	2'-10¾"×1'-10¼"

SPANISH TYPES

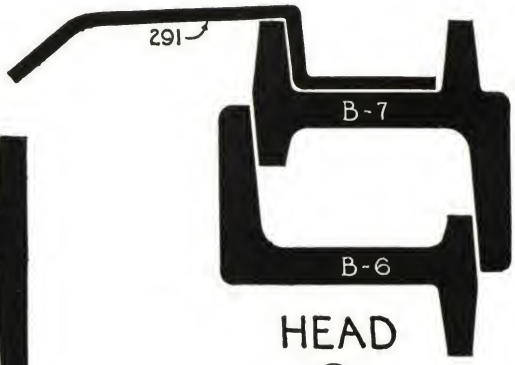


NORMAN CASEMENTS

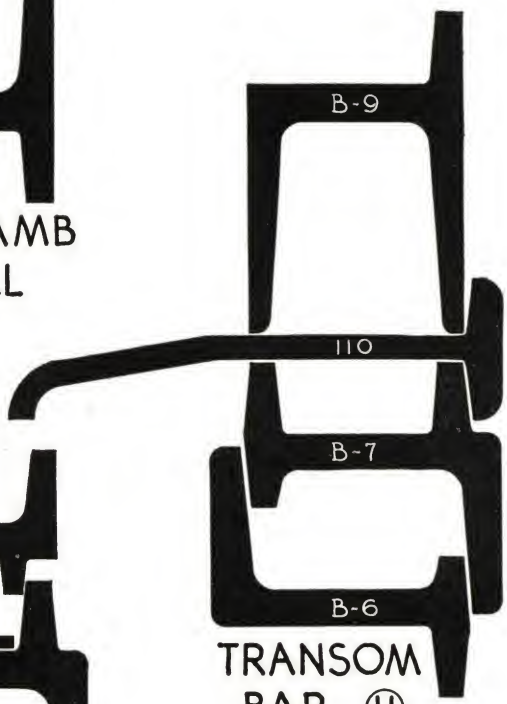
FULL SIZE SECTIONS



HEAD - JAMB OR SILL
Ⓕ
FIXED



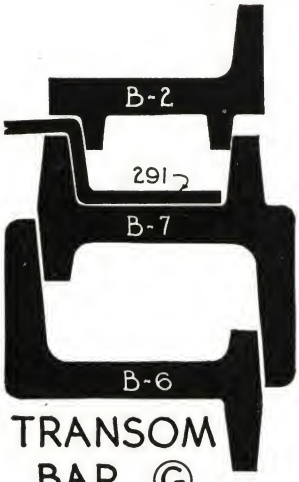
HEAD
Ⓐ
OPEN OUT



TRANSOM BAR Ⓗ
OPEN OUT - FIXED TRANSOM
(COMBINATION SHOWN - "FHA")



MUNTIN
Ⓔ



TRANSOM BAR Ⓖ
OPEN OUT - FIXED TRANSOM
(COMBINATION SHOWN - "GA")



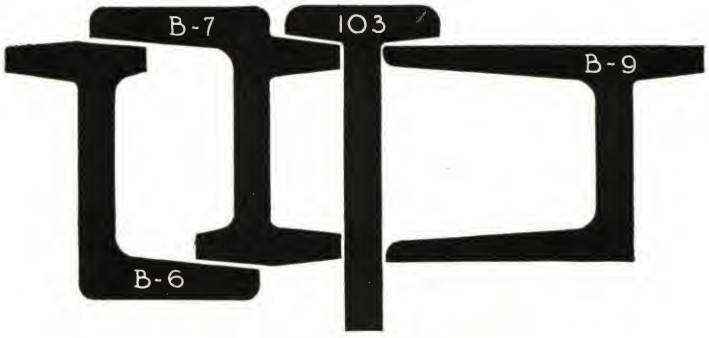
ANGLE FIN Ⓛ



SILL Ⓑ
OPEN OUT



JAMB Ⓒ
OPEN OUT



MULLION Ⓓ
OPEN OUT - (COMBINATION SHOWN - "CDF")

NORMAN CASEMENTS

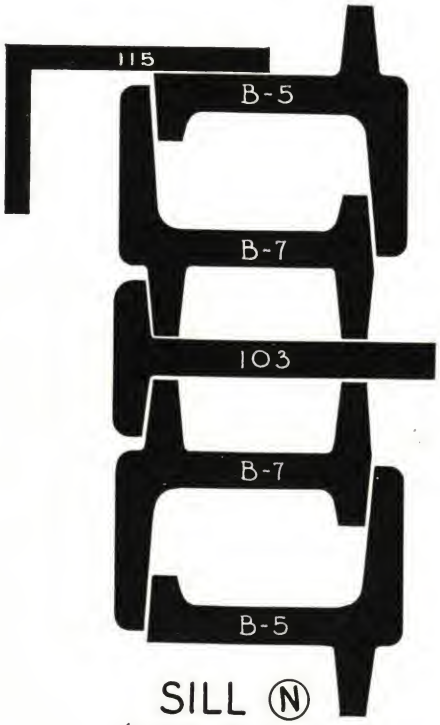
FULL SIZE SECTIONS



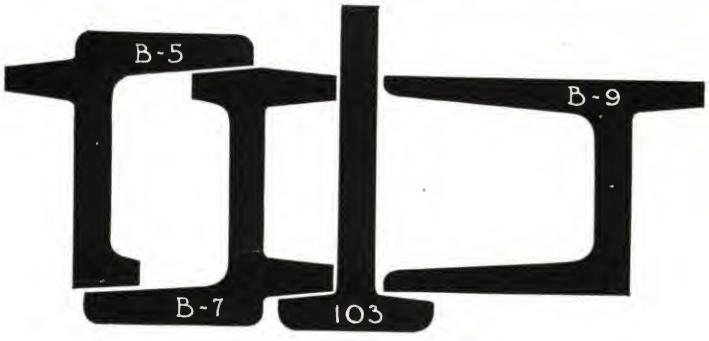
HEAD OR JAMB (J)
OPEN IN



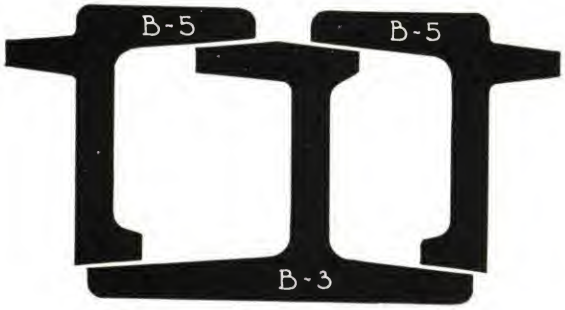
TRANSOM BAR (G)
OPEN IN - FIXED TRANSOM
(COMBINATION SHOWN - "GJ")



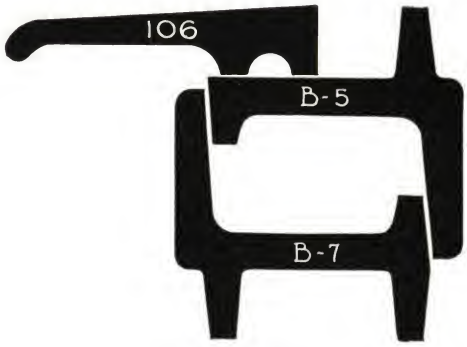
SILL (N)
(BOTTOM HINGED)
OVER TRANSOM BAR (D)
OPEN IN
(COMBINATION SHOWN - "NDJ")



MULLION (D)
OPEN IN - (COMBINATION SHOWN "JDF")



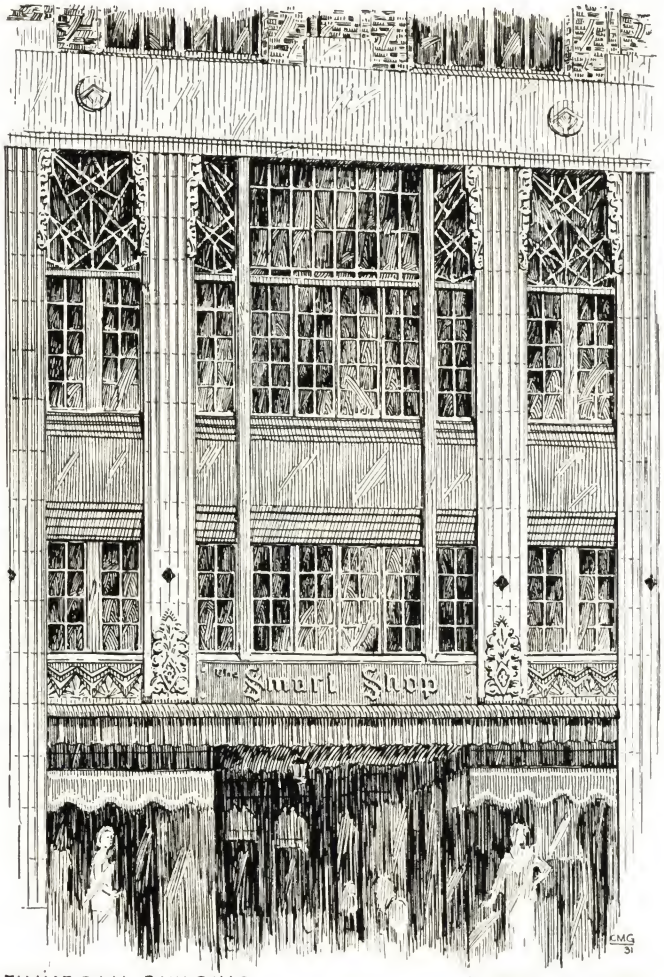
MEETING RAIL (M)
OPEN IN OR OPEN OUT
(OPEN IN SHOWN)



SILL (K)
OPEN IN

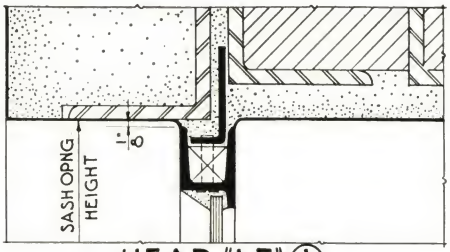
NORMAN CASEMENTS

SIDE HINGED—OPEN OUT—FIXED TRANSOM

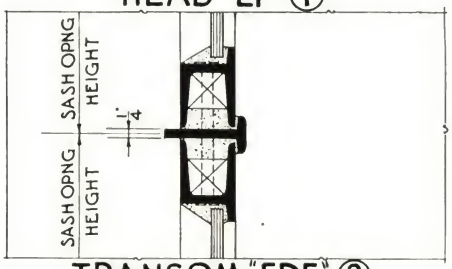


FINNEGAN BUILDING
HOUSTON, TEXAS

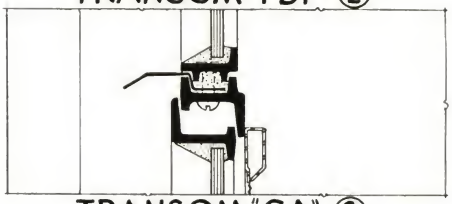
ALFRED C. FINN
ARCHITECT



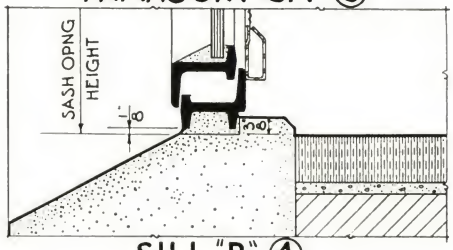
HEAD "LF" ①



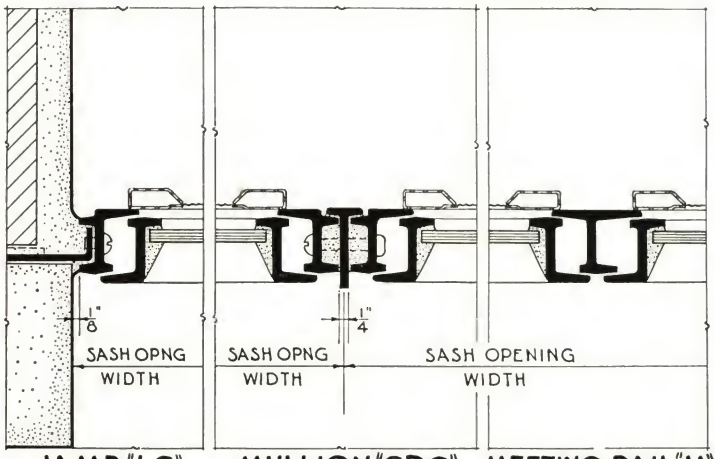
TRANSOM "FDF" ②



TRANSOM "GA" ③



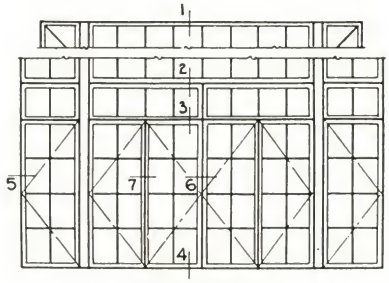
SILL "B" ④



JAMB "LC" ⑤

MULLION "CDC" ⑥

MEETING RAIL "M" ⑦



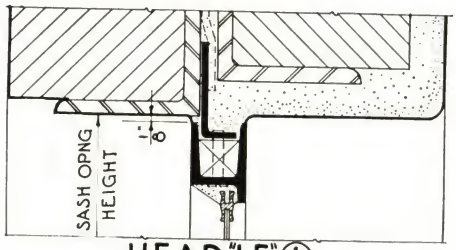
ELEVATION

NOTE: SECTION LETTERS REFER TO MARKING OF FULL SIZE SECTIONS FOR NORMAN CASEMENTS NUMBERS REFER TO ELEVATION SHOWN ABOVE.

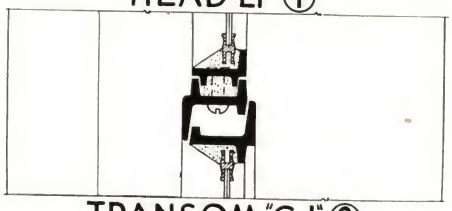
SCALE OF DETAILS ~ 3" = 1'-0"

NORMAN CASEMENTS

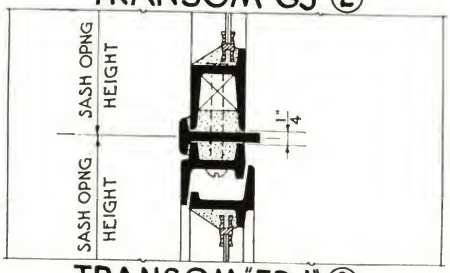
SIDE HINGED—OPEN IN—FIXED TRANSOM



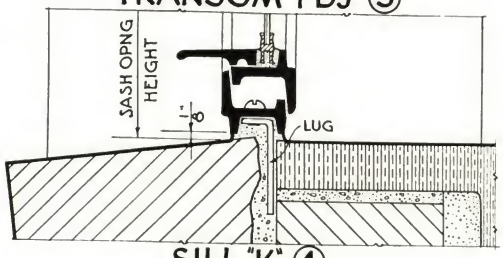
HEAD "LF" ①



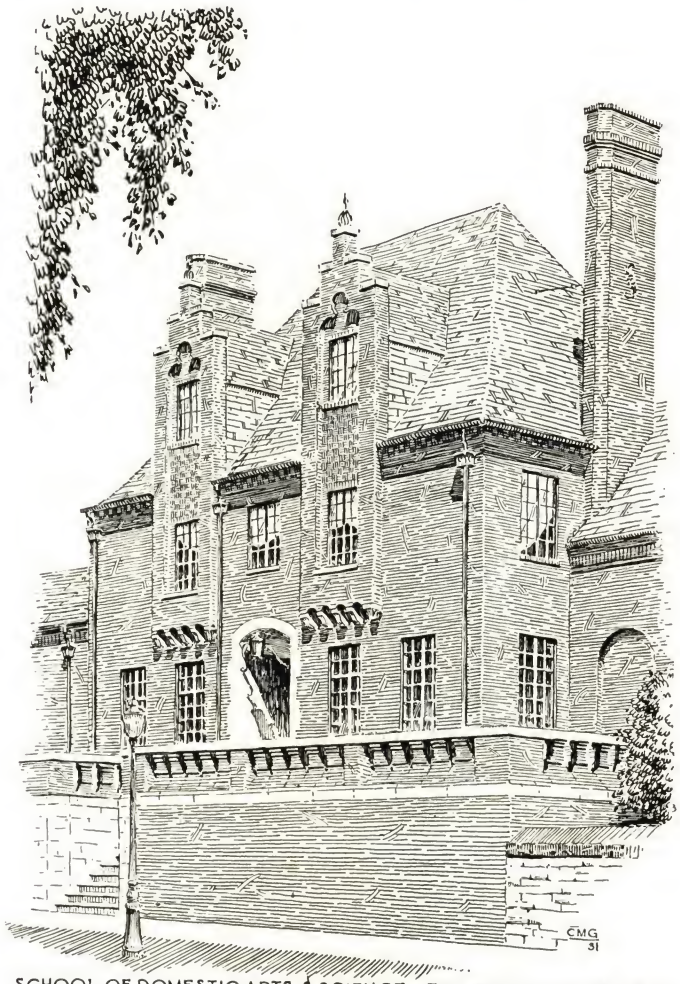
TRANSOM "GJ" ②



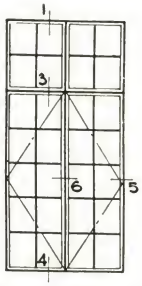
TRANSOM "FDJ" ③



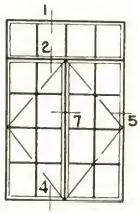
SILL "K" ④



SCHOOL OF DOMESTIC ARTS & SCIENCE - THE MODEL HOUSE UNIT
CHICAGO, ILL. GRANGER & BOLLENBACHER-ARCHTS

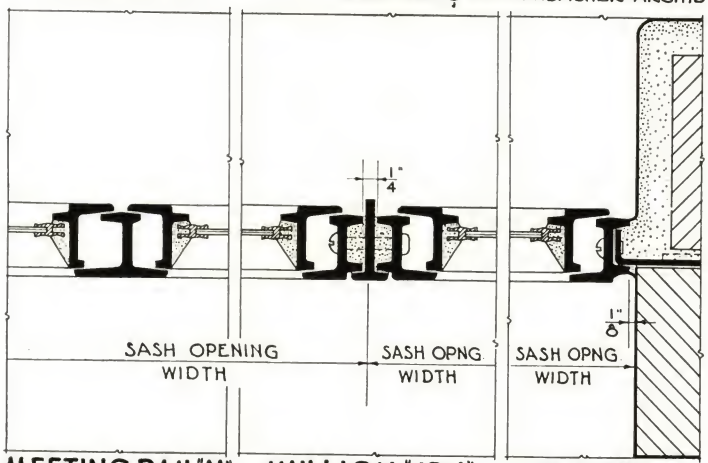


ELEVATION OF TYPICAL OPNG.



ELEV. SHOWING DOUBLE CASEMENT WITH FIXED MEETING RAIL & FIXED TRANSOM.

NOTE: SECTION LETTERS REFER TO MARKING OF FULL SIZE SECTIONS FOR NORMAN CASEMENTS. NUMBERS REFER TO ELEVATIONS SHOWN ABOVE.



MEETING RAIL "M" ⑦ MULLION "JDJ" ⑥ JAMB "LJ" ⑤

SCALE OF DETAILS ~ 3" = 1'-0"

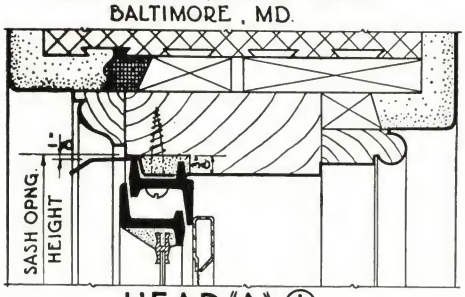
NORMAN CASEMENTS

SIDE HINGED—OPEN OUT—TOP HINGED TRANSOM



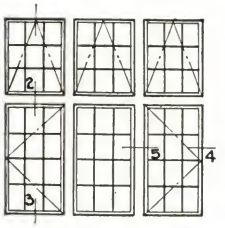
CHARLES H. SCHNEPFE RES.
BALTIMORE, MD.

PALMER, WILLIS & LAMDIN
ARCHITECTS

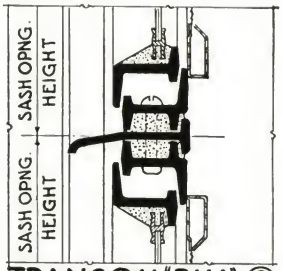


HEAD "A" ①

SCALE OF DETAILS
3"-1'-0"

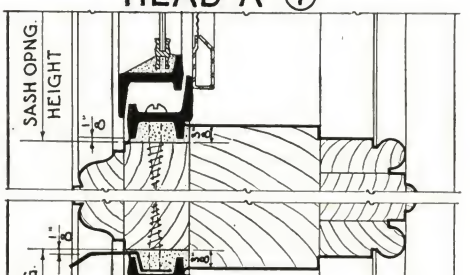


ELEVATION

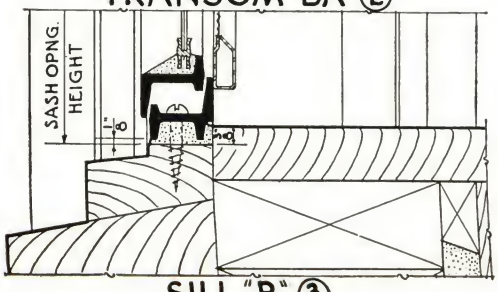


TRANSOM "BHA" ②
(ALTERNATE IN STEEL)

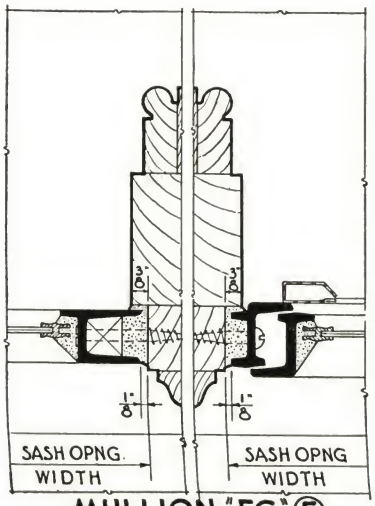
NOTE: SECTION LETTERS REFER TO MARKING OF FULL SIZE SECTIONS FOR NORMAN CASEMENTS ~



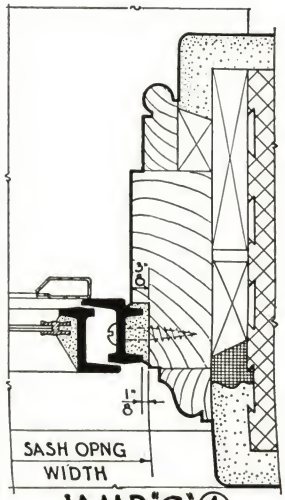
TRANSOM "BA" ②



SILL "B" ③



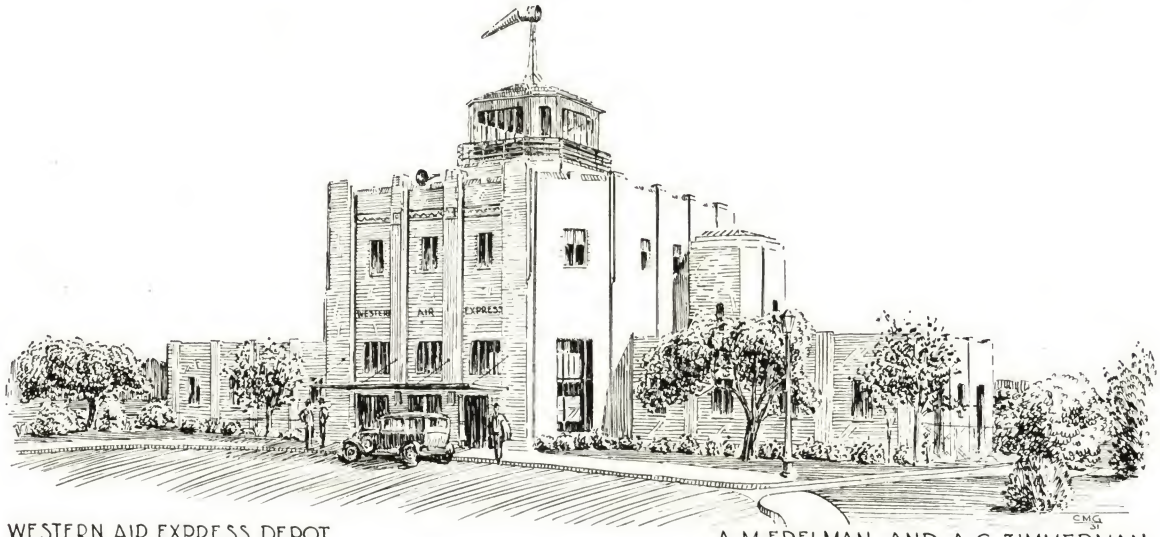
MULLION "FC" ⑤



JAMB "C" ④

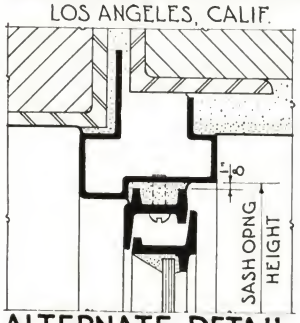
NORMAN CASEMENTS

OPEN IN—BOTTOM HINGED TRANSOM—SUB-FRAMES



WESTERN AIR EXPRESS DEPOT
LOS ANGELES, CALIF.

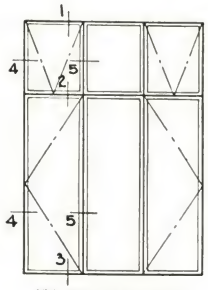
A M EDELMAN AND A C ZIMMERMAN
ASSOCIATED ARCHITECTS



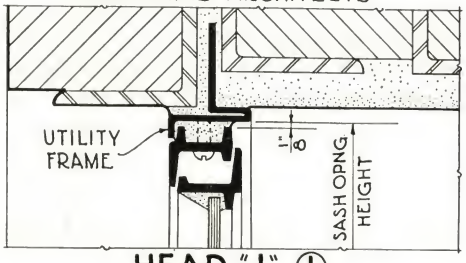
ALTERNATE DETAIL
(HOLLOW METAL FRAME)

NOTE : SECTION LETTERS REFER TO MARKING OF FULL SIZE SECTIONS FOR NORMAN CASEMENTS ~

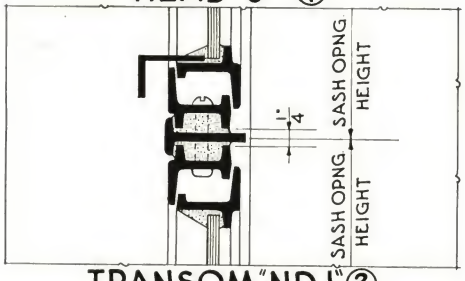
SCALE OF DETAILS
3" = 1'-0"



ELEVATION



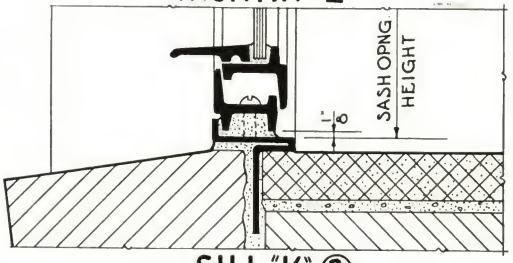
HEAD "J" ①



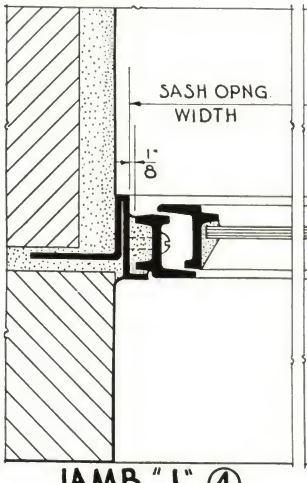
TRANSOM "NDJ" ②



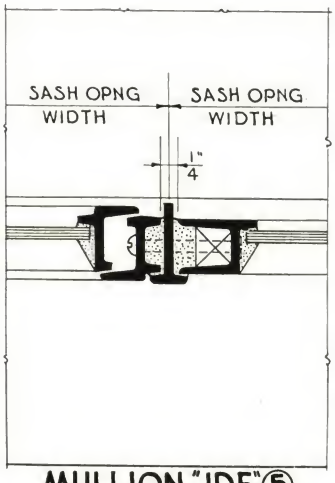
MUNTIN "E"



SILL "K" ③



JAMB "J" ④



MULLION "JDF" ⑤

NORMAN SCREENED CASEMENTS



THE Norman Screened Casement is the result of careful study and experimentation, directed toward producing a compact unit, combining beauty and utility. The screen is available in either steel or bronze with antique bronze cloth. The rigid frame lies perfectly flat against the casement and, having a beveled return to the screen cloth, does not provide a ledge for dust. It is held securely on the casement by the hardware brackets at the bottom, and by two anchor buttons near the top. Complete operation of the casement—opening, closing, and locking—is accomplished without moving the screen. For cleaning windows or storage purposes, the screen is quickly removed and readily replaced.

The very simplicity that gives easy operation contributes to the attractiveness of the solid bronze fittings, which were created to conform with the generally accepted design of casement hardware. The fitting at the sill not only serves to operate the window, but also holds it open in any desired position by thumb screw adjustment; and, in addition, by engaging it in the bracket rest when the window is closed, the casement is effectually locked. A handle of pleasing appearance, engaging in a beveled strike plate, pulls the sections snugly together, insuring perfect wind and weather tightness.

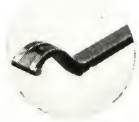
Operators are completely of bronze and have no mechanical parts that will loosen with normal usage. They are designed for attaching to the frame without cutting away the sections and risking air infiltration.



OPERATOR FOR
SIDE HINGED CASEMENT



AT RIGHT:
HANDLE



OPERATOR BAR FOR
HAND OPERATION ONLY

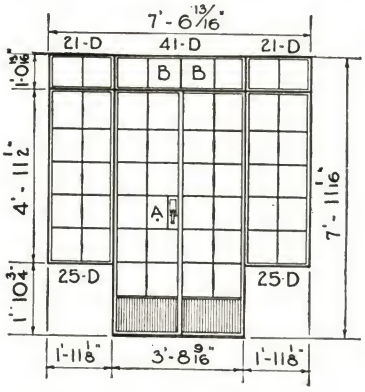
The solid bronze locking handle is attached to the outer frame with sufficient clearance for trim and plaster. Note that the window sections are not cut any place to accommodate the handle, so none of the weathering of the casement is lost.



OPERATOR FOR
TOP HINGED CASEMENT
(With ring for pole operation, or may also be operated by hand)

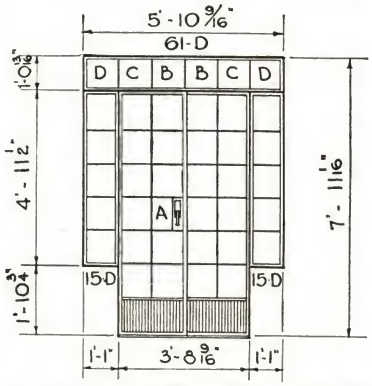
STANDARD CASEMENT DOOR

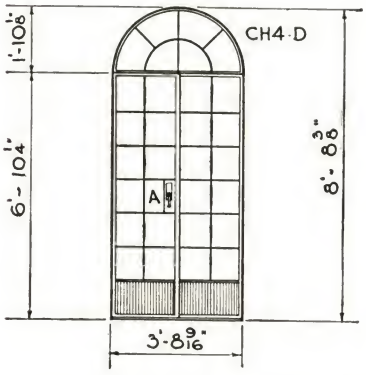
SIDELIGHTS & TRANSOMS OF NORMAN FIXED SECTION

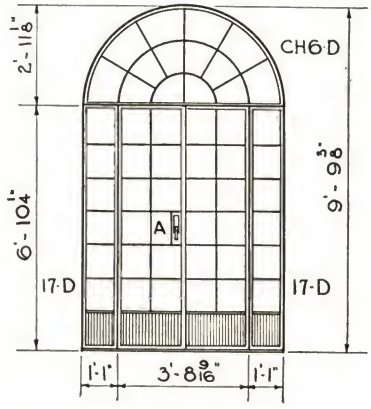




DOOR OPENING DIM.-3'-8 9/16" × 6'-10 1/4"







STANDARD DOORS ARE FITTED WITH STEEL 'T' MUNTINS, SOLID BRONZE THRESHOLDS, ENCLOSED TOP & BOTTOM BOLTS, STEEL KICK PLATES, AND SOLID BRONZE HANDLES. A BRONZE THUMB-TURN ON THE INSIDE IS FURNISHED FOR LOCKING PURPOSES. CYLINDER LOCKS ON OUTSIDE, OR BOTH OUTSIDE AND INSIDE, ARE FURNISHED AT AN EXTRA

GLASS SIZES

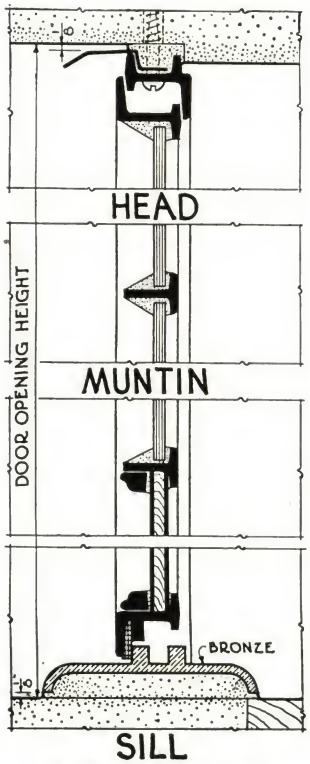
UNLESS OTHERWISE NOTED ALL LIGHTS ARE 9 7/8" × 11"

A - 6 3/4" × 11" C - 11 5/16" × 11"

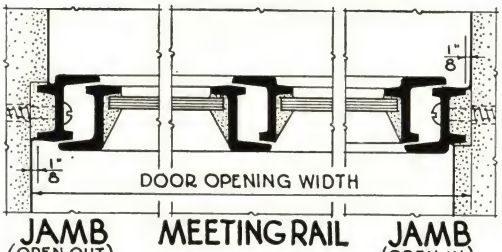
B - 10 3/8" × 11" D - 11 1/4" × 11"

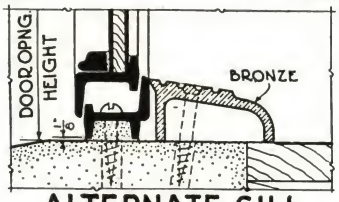
CIRCULAR - SEE TEMPLATES.

SCALE OF DETAILS - 3" = 1'-0"

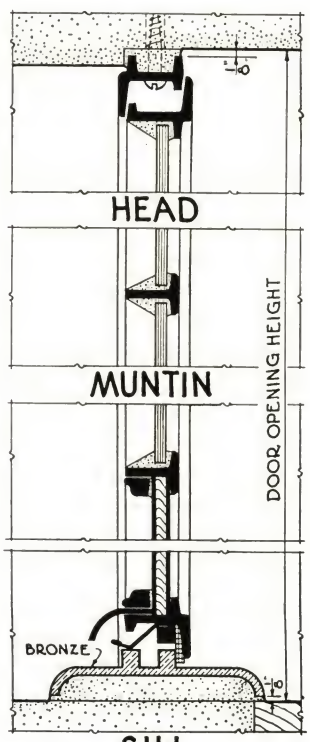


SILL
OPEN OUT





ALTERNATE SILL
HALF THRESHOLD - MAY BE USED ON BOTH OPEN OUT AND IN DOORS



SILL
OPEN IN

STANWIN CASEMENTS



KENT SCHOOL DORMITORY,
KENT, CONN.
Shreve, Lamb & Harmon,
Architects



RESIDENCE AT FOX MEADOWS,
SCARSDALE, N. Y.
Lorillard Wise, Architect



BARBIZON PLAZA HOTEL,
NEW YORK, N. Y.

Laurence Emmons,
Architect

Below:
DR. LEONARD JOHNSON RESIDENCE,
ENGLEWOOD, N. J.
Polhemus & Coffin, Architects



Below:
FIRST M. E. CHURCH, SOUTH,
FORT WORTH, TEX.
W. G. Clarkson & Co., Architects



STANWIN CASEMENTS

CRITTALL CASEMENT WINDOW COMPANY

DETROIT, MICHIGAN

THE Stanwin Casement is a standard light weight window which is stocked in a complete range of types and sizes, and is most suitable for use in residences, apartment houses, hotels, institutional type buildings and similar structures.

The Stanwin Casement, though of lighter section than the Universal and Norman Windows, maintains the same thoroughness in manufacture and careful inspection as do these other products of Crittall. They will be found suitable in every respect to meet the most exacting weather conditions, as well as to present an excellent appearance.



Where screens are necessary the Stanwin Screened Casement is recommended. This provides a detachable flat screen designed as an integral part of the window. Specially designed hardware permits complete operation of the casement without moving the screen.

Due to the inadequacy of light weight sections for door construction, the Crittall Standard door, using medium weight section is used in conjunction with Stanwin installations. These may open out or open in. Side lights and transoms are also made of medium section.

Stocks of Stanwin Casements and Doors in standard types and sizes are held at principal distributing centers, insuring prompt delivery.

SPECIFICATIONS

Windows—All windows shall be Crittall Stanwin Casements as manufactured by the CRITTALL CASEMENT WINDOW COMPANY, Detroit, Michigan. All windows shall be standard sizes and types as shown on architect's drawings. Casements shall be furnished complete with malleable iron handles and sill adjusters with bronze slide bars. Friction hinges may be substituted for sill adjusters. Steel sections, including ventilating section and frame shall weigh not less than 2.0 lbs. per lineal foot. Casements shall receive one coat of primer before shipment.

The casements shall be installed by the manufacturer. (If this is impractical they can be set by local labor but care should be exercised to see that they are erected according to the manufacturer's instructions.) All joints between the steel sash and the collateral construction are to be made tight with the use of Crittall Mastic Cement neatly pointed on the exterior.

Screened Casements

Specifications for Stanwin Casements are to be followed for Stanwin Screened Casements with the following changes:

Hardware shall be standard die cast handles and sill operators with dull black finish, designed to operate the casements without moving the screens.

Casements shall be suitably prepared to receive flat steel (bronze, if desired) frame screens, which are also included in this contract. These screens shall have 16-mesh (18-mesh, if desired) antique bronze wire cloth. Screen frames shall be painted to match the casements. (If bronze, finish to be statuary.)

Screens shall be installed under another heading. (The original installation of screens should be included in the general or carpenter's contract, as they would be damaged if installed at the time of erection of casements, and due to being especially designed for simplicity of attachment and removal, do not require the services of skilled casement workmen.)

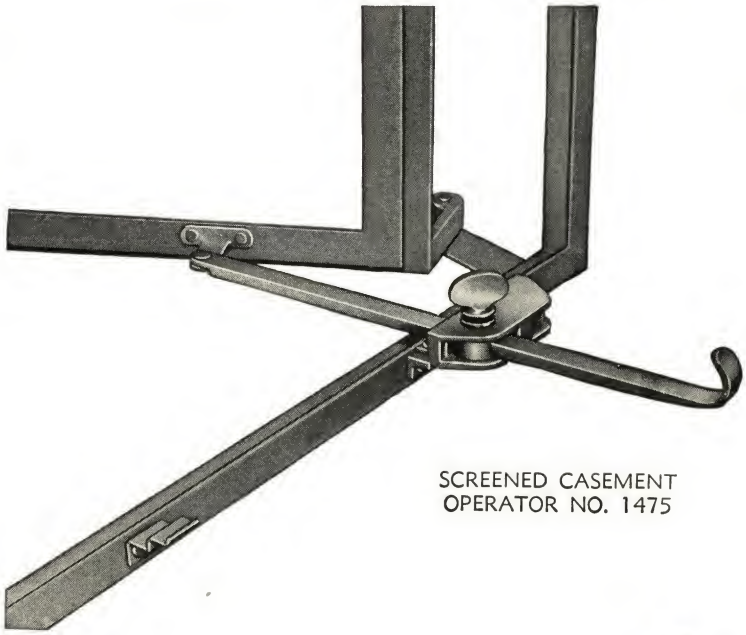
Extras to Be Included if Desired

The casements are to set directly into prepared masonry openings, and the manufacturer shall supply continuous angle fin around the head and jambs of all openings for making a perfect joint between sash and masonry.

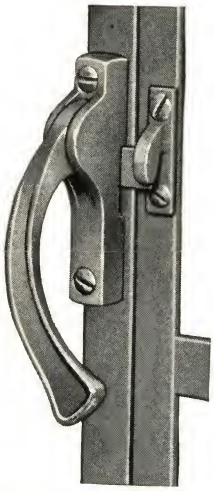
The manufacturer shall supply wood surrounds of Clear Heart Redwood, kiln dried, for all openings. These shall be cut to exact length to fit casements, and shall have mitred overlapping joints. They shall be delivered to the job in cartons, with the necessary screws, ready for attaching to the casements at the time of erection.

STANWIN CASEMENTS

STANDARD HARDWARE



SCREENED CASEMENT
OPERATOR NO. 1475

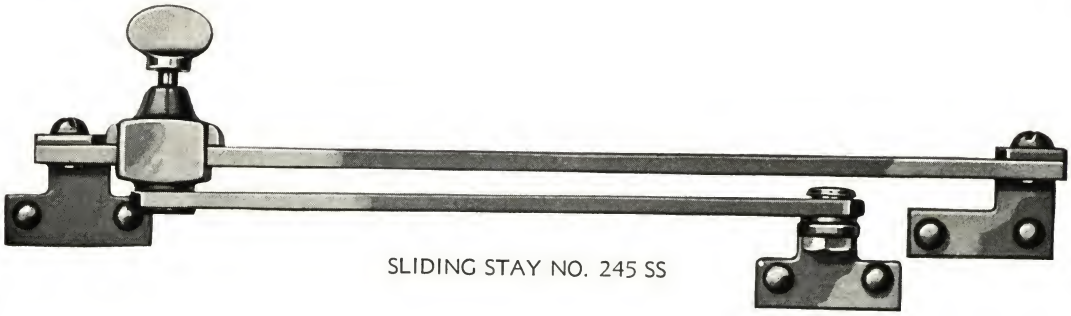


SCREENED CASEMENT
HANDLE NO. 1470

Handle No. 1377 is standard for Stanwin Casements; Sliding Stay No. 245 SS is furnished when friction hinges are not used. These are furnished in malleable iron with bronze working parts. Handle No. 1470 and Operator No. 1475 are standard for Stanwin Screened Casements. These are die cast with dull black finish. All hardware may be furnished in bronze at an extra cost.



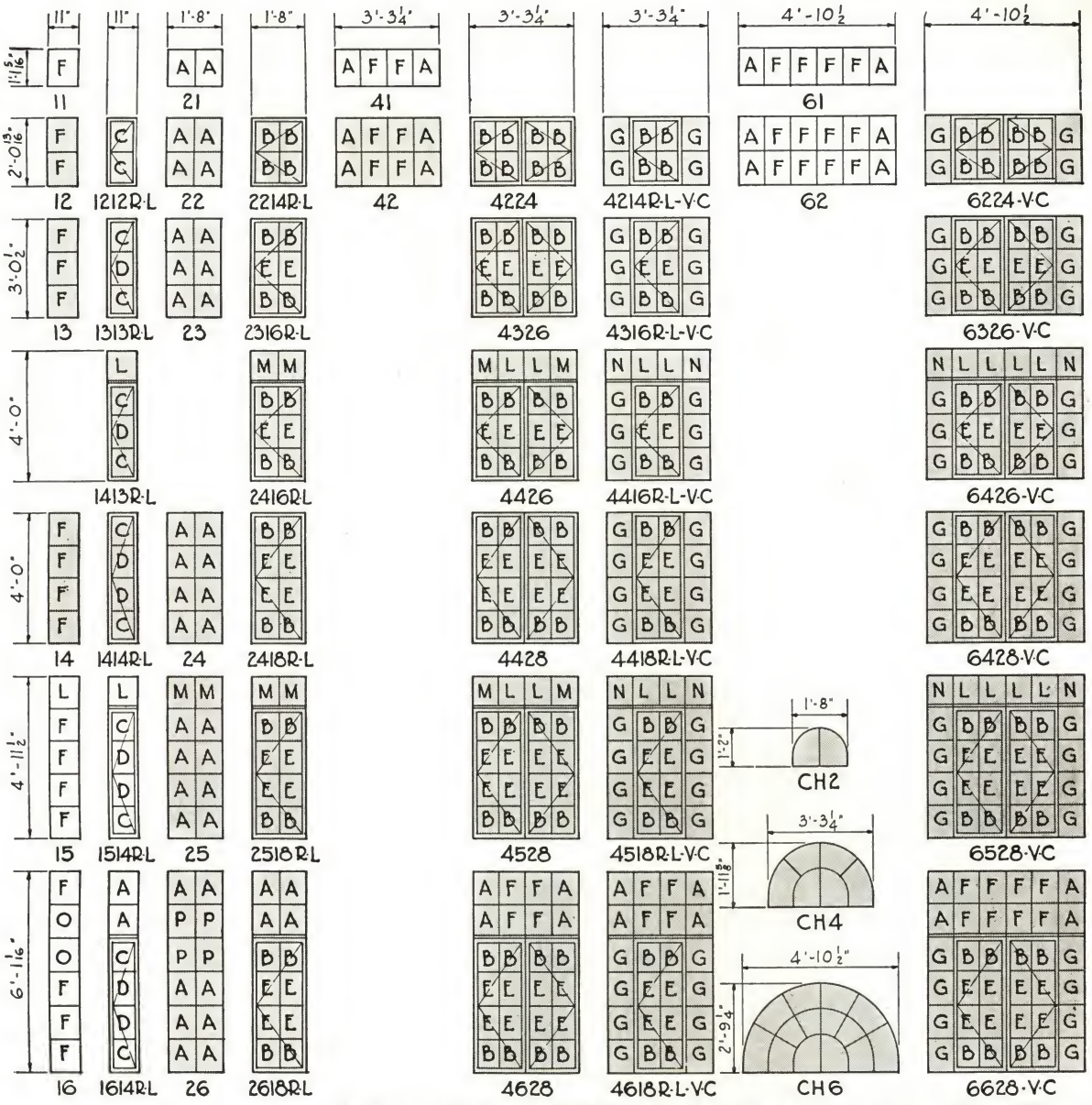
HANDLE
NO. 1377



SLIDING STAY NO. 245 SS

STANWIN CASEMENTS

STANDARD TYPES AND SIZES



NOTE· ALL SIDE HINGED SASH MAY BE FURNISHED EITHER RIGHT OR LEFT HAND HANDING OF A CASEMENT IS DETERMINED BY HINGE LOCATION VIEWED FROM OUTSIDE

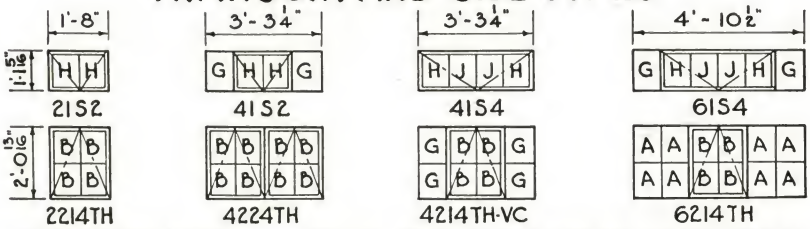
GLASS SIZES

A - $9\frac{1}{16}" \times 11\frac{3}{8}"$
B - $8\frac{7}{16}" \times 10\frac{13}{16}"$
C - $8\frac{3}{16}" \times 10\frac{13}{16}"$
D - $8\frac{3}{16}" \times 11\frac{3}{8}"$
E - $8\frac{7}{16}" \times 11\frac{3}{8}"$
F - $9\frac{3}{8}" \times 11\frac{3}{8}"$
G - $8\frac{3}{4}" \times 11\frac{3}{8}"$
H - $8\frac{7}{16}" \times 10\frac{1}{2}"$
J - $9\frac{3}{8}" \times 10\frac{1}{2}"$
K - $8\frac{7}{16}" \times 10\frac{5}{16}"$
L - $9\frac{3}{8}" \times 10\frac{13}{16}"$
M - $9\frac{1}{16}" \times 10\frac{13}{16}"$
N - $8\frac{3}{4}" \times 10\frac{13}{16}"$
O - $9\frac{3}{8}" \times 12\frac{3}{16}"$
P - $9\frac{1}{16}" \times 12\frac{3}{16}"$

CIRCULAR TYPES - SEE TEMPLATES

ALL TYPES MAY BE FURNISHED WITHOUT MUNTINS WHEN REQUIRED.

TRANSOM AND SILL TYPES

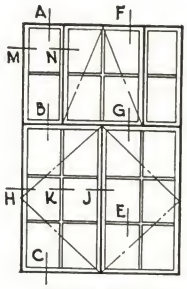


TYPES SHOWN SHADED ARE CARRIED IN STOCK

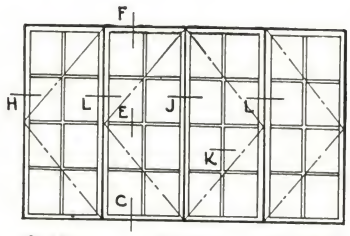
CERTAIN TYPES CAN BE SUPPLIED INWARD OPENING FOR FURTHER INFORMATION INQUIRE FACTORY

STANWIN CASEMENTS

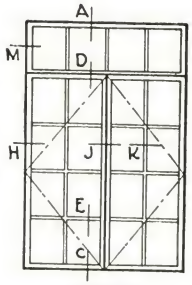
FULL SIZE SECTIONS



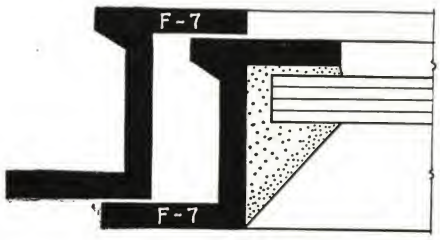
4214 THVC
4326



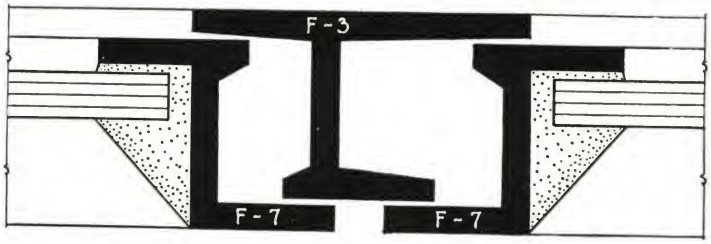
2418-L 4428 2418-R



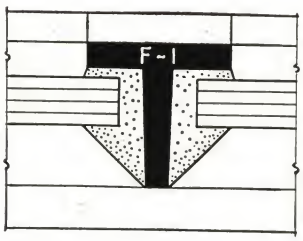
4528



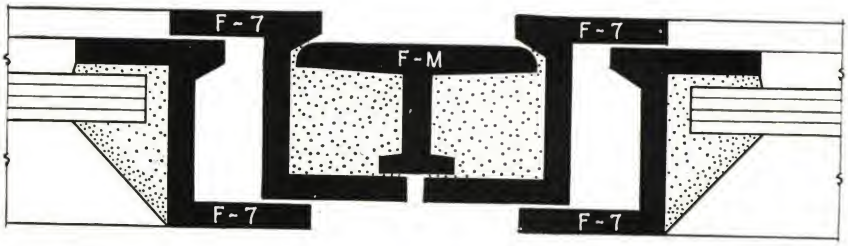
JAMB (H)



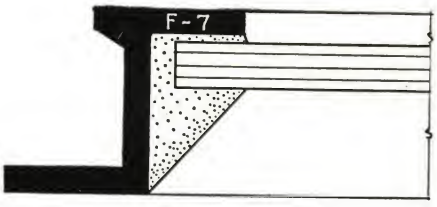
MEETING RAIL (J)



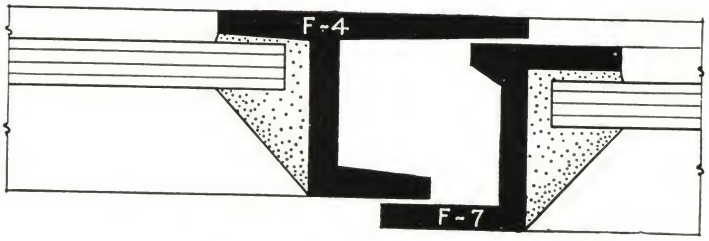
MUNTIN (K)



MULLION (L)



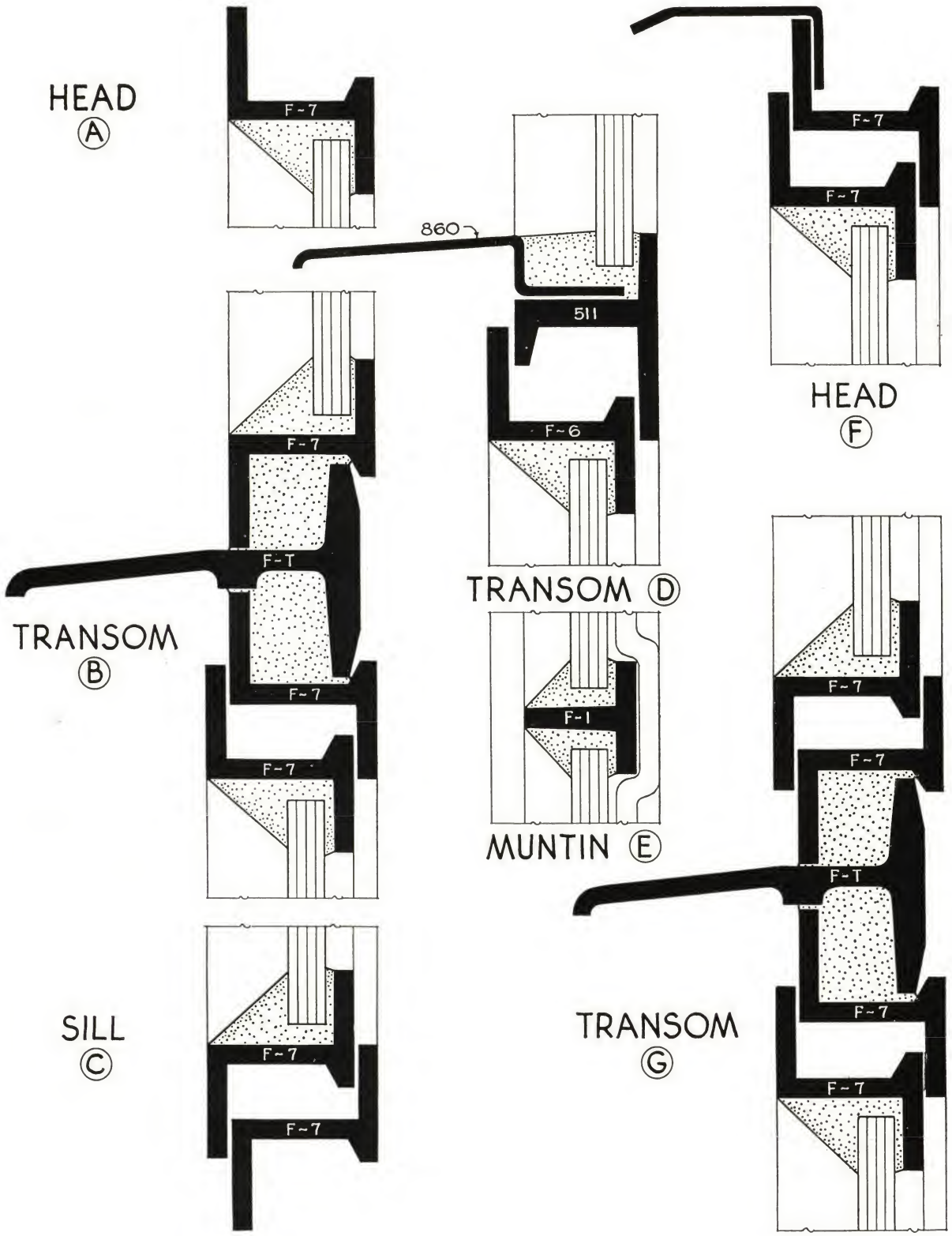
JAMB (M)



MEETING RAIL (N)

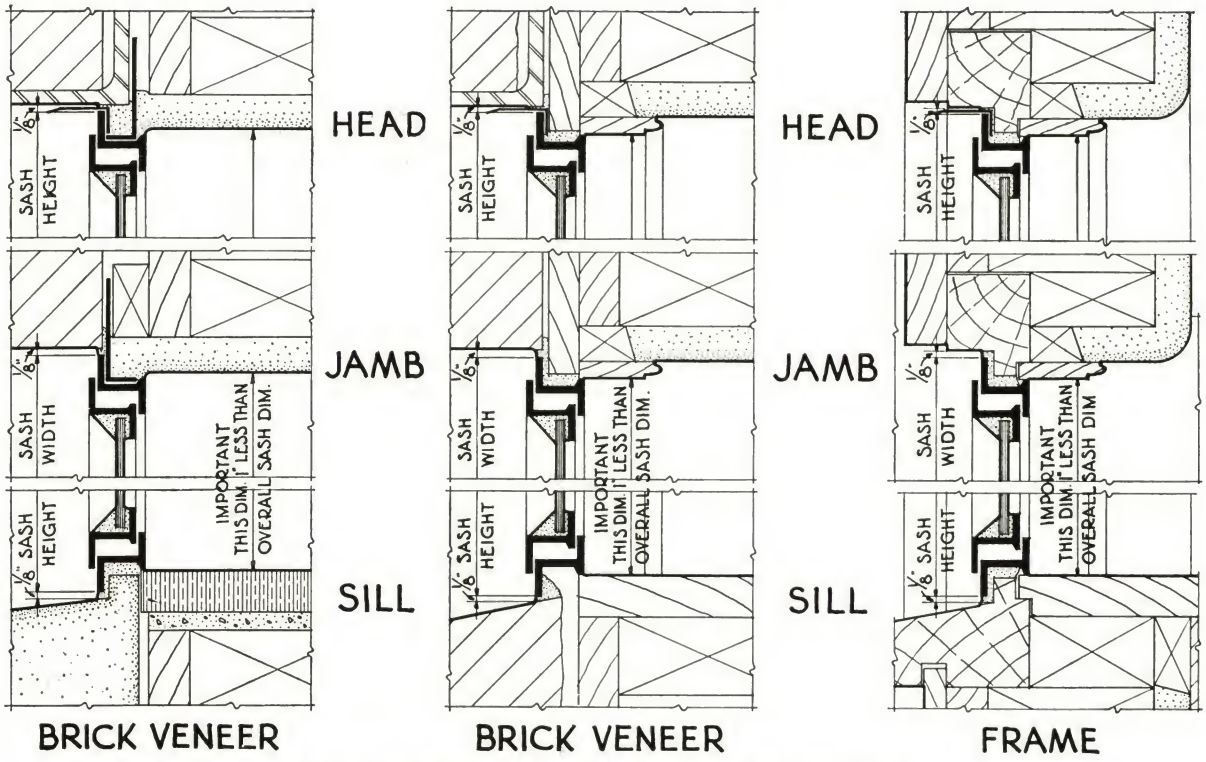
STANWIN CASEMENTS

FULL SIZE SECTIONS

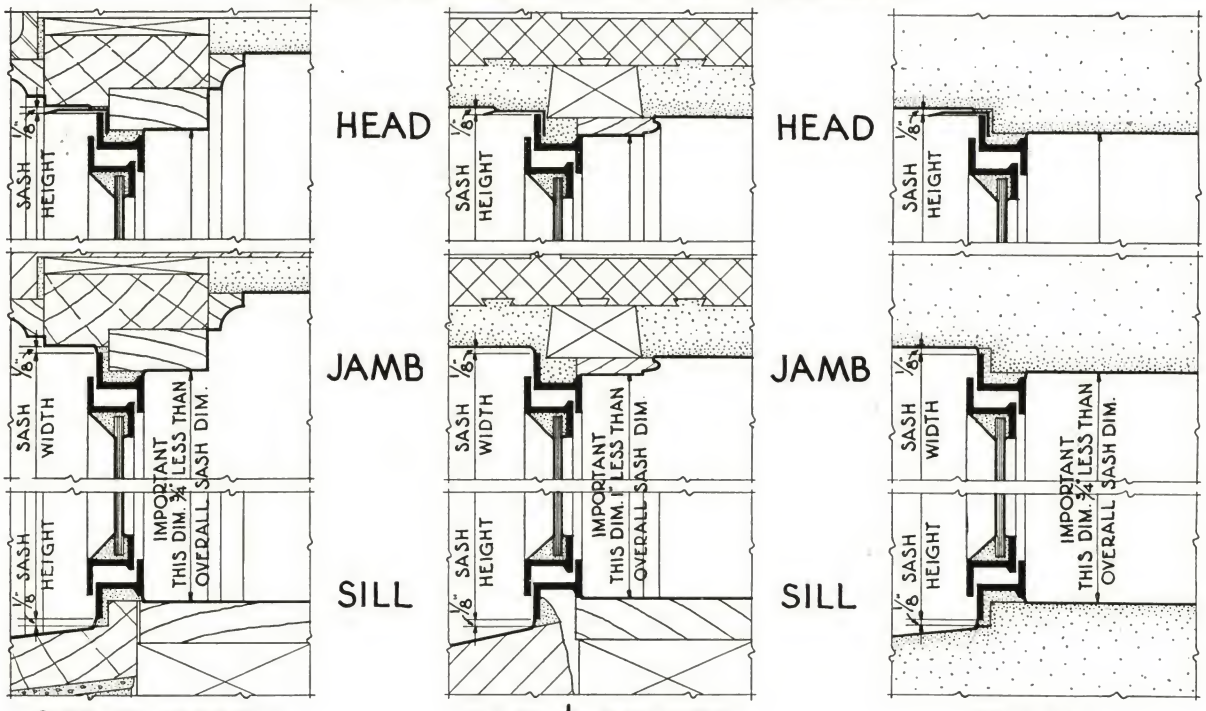


STANWIN CASEMENTS

INSTALLATION DETAILS



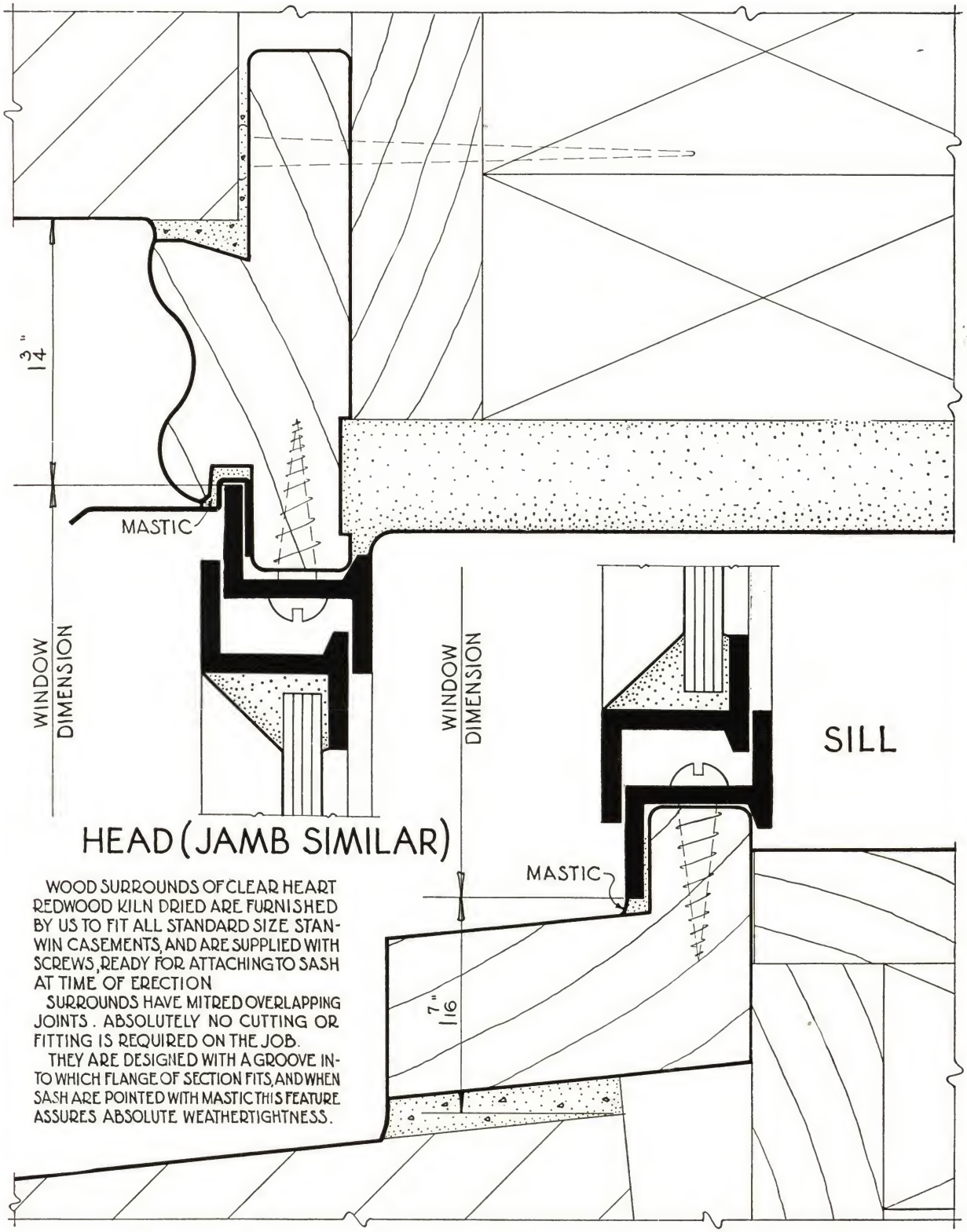
NOTE-WHEN CRITTALL SCREENS ARE USED, INTERIOR HEADS, JAMBS AND SILLS MUST BE KEPT CLEAR OF SASH FRAME AS SHOWN.



SCALE OF DETAILS - 3"-1'-0"

STANWIN CASEMENTS

FULL SIZE DETAILS OF WOOD SURROUND



HEAD (JAMB SIMILAR)

WOOD SURROUNDS OF CLEAR HEART REDWOOD KILN DRIED ARE FURNISHED BY US TO FIT ALL STANDARD SIZE STANWIN CASEMENTS, AND ARE SUPPLIED WITH SCREWS, READY FOR ATTACHING TO SASH AT TIME OF ERECTION

SURROUNDS HAVE MITRED OVERLAPPING JOINTS. ABSOLUTELY NO CUTTING OR FITTING IS REQUIRED ON THE JOB.

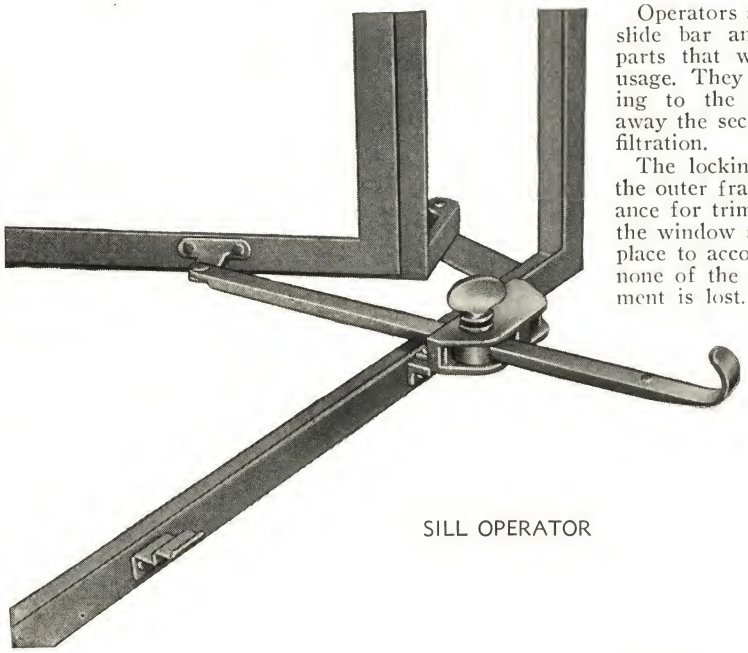
THEY ARE DESIGNED WITH A GROOVE INTO WHICH FLANGE OF SECTION FITS, AND WHEN SASH ARE POINTED WITH MASTIC THIS FEATURE ASSURES ABSOLUTE WEATHERTIGHTNESS.

STANWIN SCREENED CASEMENTS



THE Stanwin Screened Casement is the result of careful study and experimentation, directed toward producing a compact unit, combining beauty and utility. The screen is available in either steel or bronze with antique bronze cloth. The rigid frame lies perfectly flat against the casement and, having a beveled return to the screen cloth, does not provide a ledge for dust. It is held securely on the casement by the hardware brackets at the bottom, and by two clips near the top. Complete operation of the casement—opening, closing, and locking—is accomplished without moving the screen. For cleaning windows or storage purposes, the screen is quickly removed and readily replaced.

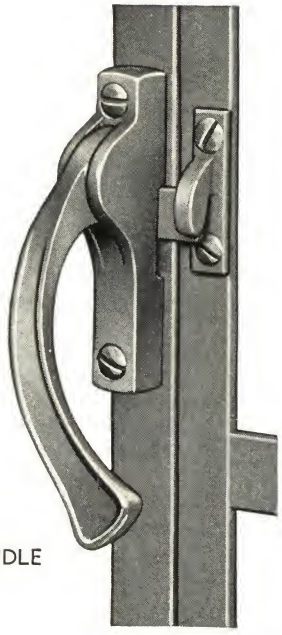
The very simplicity that gives easy operation contributes to the attractiveness of the fittings, which were created to conform with the generally accepted design of casement hardware. The fitting at the sill not only serves to operate the window but also holds it open in any desired position by thumb screw adjustment; and, in addition, by engaging it in the bracket rest when the window is closed, the casement is effectually locked. A handle of pleasing appearance, engaging in a beveled strike plate, pulls the sections snugly together, insuring perfect wind and weather tightness.



SILL OPERATOR

Operators are die cast with bronze slide bar and have no mechanical parts that will loosen with normal usage. They are designed for attaching to the frame without cutting away the sections and risking air infiltration.

The locking handle is attached to the outer frame with sufficient clearance for trim and plaster. Note that the window sections are not cut any place to accommodate the handle, so none of the weathering of the casement is lost.



HANDLE

PRODUCTS
OF
CRITTALL

•

UNIVERSAL CASEMENTS

Custom-built casements and doors of solid steel or bronze to meet the architects' sizes, designs, and most exacting specifications.

•

NORMAN CASEMENTS

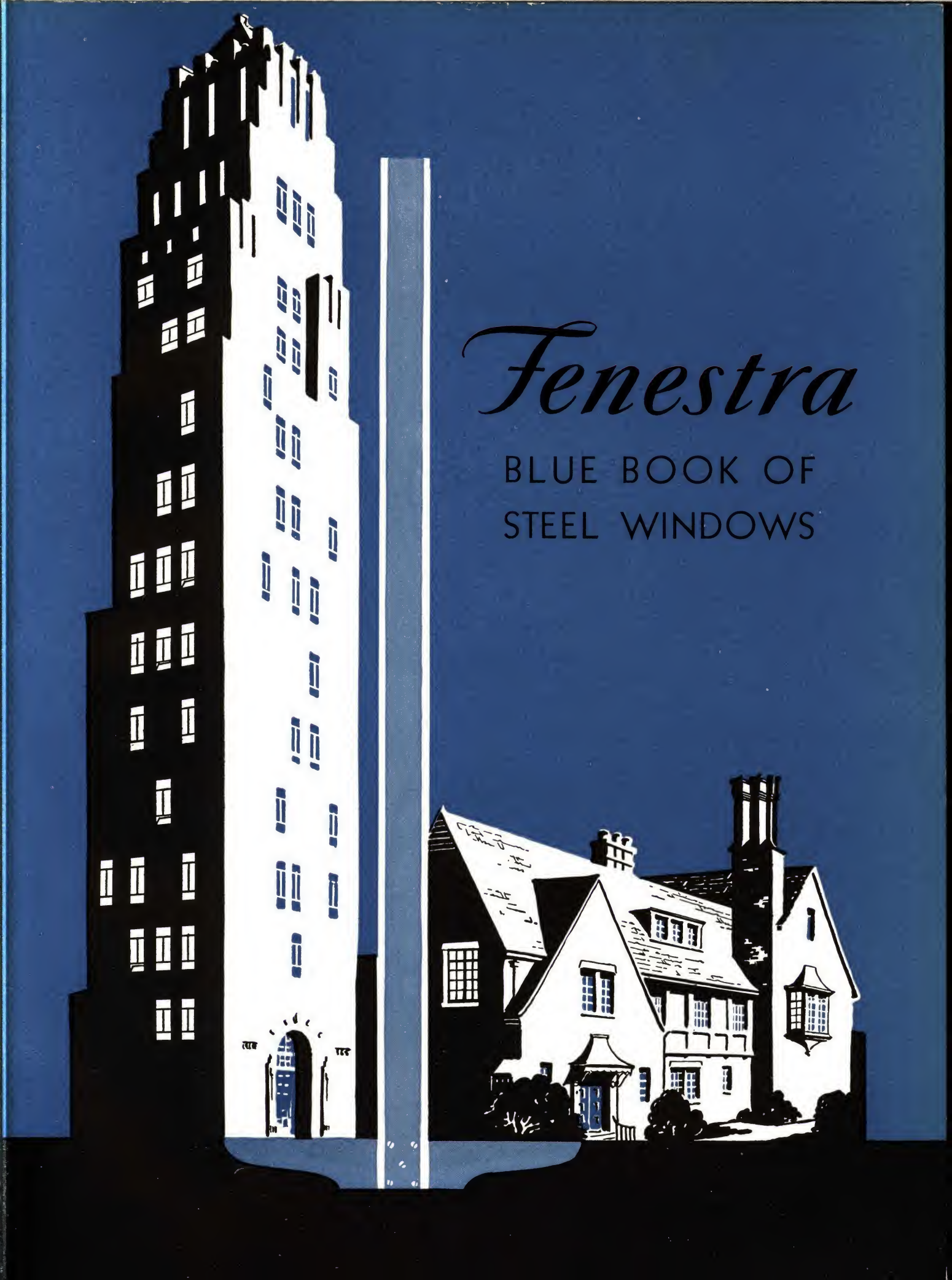
Economical, heavy, standardized casements and doors of excellent quality for better class projects.

•

STANWIN CASEMENTS

Standard lightweight casements and doors stocked in warehouses for convenient distribution.


CRITTALL



Fenestra

BLUE BOOK OF STEEL WINDOWS

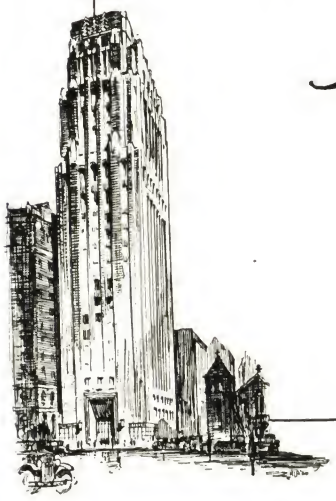
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Fenestra
WINDOWS OF STEEL

DETROIT STEEL PRODUCTS COMPANY

Factories: Detroit, Michigan, Cleveland, Ohio and Oakland, California
General Offices: 2250 East Grand Boulevard, Detroit, Michigan
Local Offices in 217 Cities

(Member Solid Section Steel Window Industry)

FENESTRA ARCHITECTURAL SERVICE

TO ASSIST the architect in visualizing Fenestra Windows as they actually will appear in the building he is designing, Detroit Steel Products Company maintains an Architectural Service Department with architects trained in the correct use of Fenestra in monumental structures.

Without charge or obligation to you, this department will be glad to work up drawings showing exactly how Fenestra Windows may be detailed into the type of construction you are using and made to harmonize with your own architectural design.

It has been our privilege to work with some of the largest architects in the country with very gratifying results. Sometimes we are able to indicate a saving through the use of standard types. Almost always there are problems of appearance, arrangement of ventilators, amount of light or ventilation, on which our knowledge of steel window application to architectural requirements is helpful.

The men in the Architectural Service Department all know how to use a pencil. They talk an architect's own language. They are not salesmen. Their service is available for the asking. A word to your local Fenestra representative or to the Home Office at Detroit will enlist their immediate co-operation.

FENESTRA "FENMARK" WINDOWS

SPECIFICATIONS

1 GENERAL

1a ALL windows shall be Fenestra "Fenmark" as manufactured by Detroit Steel Products Company.

2 MATERIAL AND CONSTRUCTION

2a FRAME sections shall have a minimum depth of 1½" from front to back and shall be designed with equal or unequal legs as specified. Frame and ventilator sections shall be of hot rolled, solid steel, providing continuous, two-point, flat weathering contact between ventilators and frames.

2b ALL sections shall be re-rolled cold to make them true and straight and shall be individually electrically tested, for straightness.

2c FRAMES shall be mortise and tenon, air hammer riveted and electrically welded at all corners. Swing leaves shall be mitered at all corners and electrically welded. All welds shall be ground to a smooth finish.

(Mullions or transom bars are provided between adjacent units where specified.)

(Heavy, electro-galvanized steel head drip is supplied above all swing leaves.)

(Sill and jamb anchor clips with bolts for attachment to frame are supplied where required.)

3 ATTACHED HARDWARE

3a ALL side hung swing leaves shall open out on two heavy friction hinges of solid rolled, sherardized steel with heavy re-entrant angle fillets. Each hinge shall be equipped with two friction washers. Washers and hinge members shall be held by lock washers and bronze studs with acorn nuts, so that friction may be increased or decreased by adjusting the nut.

3b PROJECTING open-in ventilators shall be supported by two heavy, spring steel arms on steel brackets, double riveted to the vertical members. Each ventilator shall be hung on two brass, sliding U-shaped shoes riding inside the jamb sections, tension being retained by two coil springs completely enclosed in brass housings. Ventilators to tilt in at the top while sliding up from the bottom.

(In projecting open-out ventilators, the action is reversed.)

3c AN ornamental locking handle bracket of solid rolled steel, shall be electrically welded to the stile of each open-out swing leaf.

3d BRASS strikes and wrought steel keepers shall be supplied attached to the window frame as required.

4 DETACHED HARDWARE

4a ALL locking handles shall be U. S. Government specification solid bronze, of ornamental design and coinage finish, obtained without the use of plating or chemicals and equipped with friction springs, (or) same equipped with friction clevices.

(Swing leaf handles 1119 or 699. Sill ventilator handles 1122 or 1071. Special hardware at extra cost.)

4b SWING leaf operating hardware shall consist of a finger pull solidly attached to the sill of each swing leaf (used with friction hinges when specified) (or) solid bronze thumb screw operator (with non-friction hinges).

(Finger pull 1130 or 1230. Thumb screw operator 1101 or 203.)

4c PROJECTED open-out ventilator hardware shall consist of a solid bronze pole ring at the head of the ventilator and a solid bronze locking handle equipped for pole operation at the sill.

(Pole ring 151. Handle 1214 or 914.)

4d PROVIDE solid bronze handle for all projecting open-out transoms and a solid bronze automatic spring catch for all projecting open-in transoms.

(Transom handles 733 or 914. Spring catch 739.)

5 PAINTING

5a ALL windows shall be given one dip coat of gray lead and oil paint at the factory.

(Provide for an additional coat of paint by the painting contractor after erection of windows and before glazing. Final painting should be deferred until three weeks after glazing to permit putty to set. Where desired, Fenestra Construction Co. will do field painting under a separate contract.)

6 ERECTION

6a THE window manufacturer shall erect all windows, caulk with mastic and form a weather-tight union between window frames and mullions or transom bars. Caulking, at head or jambs, where windows abut the building construction, shall be supplied and applied by others, after erection. Sill caulking to be supplied by window manufacturer.

(Include in the masonry specifications that all masonry openings shall be constructed in accordance with Fenestra installation details so that the windows may be installed after masonry is completed. Also include in the masonry specifications that all mortar grouting, pointing, etc., shall be done by the mason contractor after the windows have been erected.)

7 GLASS AND GLAZING

7a ALL glass shall be bed puttied and face puttied, and further secured by copper-plated spring glazing clips supplied by the window manufacturer.

(Putty should be a high grade, quick-setting steel window putty. Ordinary wood window putty cannot be used. Glass should be ⅛" or ¼" plate. Single or double strength glass is not recommended. Glass and glazing labor supplied by Fenestra Construction Co. if desired, under a separate contract.)

8 SHADING

(All shades must be located at least 2½" from the inside face of the window to clear hardware. Each "Fenmark" window is drilled at both jambs near the head for the attachment of standard shade brackets.)

9 METAL STOOLS, SUBFRAMES

(Metal stools and rolled steel or pressed metal subframes can be supplied if specified. Consult nearest Fenestra office.)

PROJECTED "FENMARK" WINDOWS

SPECIFICATIONS

1 GENERAL

1a ALL windows shall be Fenestra Projected "Fenmark" as manufactured by Detroit Steel Products Company.

2 MATERIAL AND CONSTRUCTION

(*Same as "Fenmark" windows 2a, 2b, 2c, except that head drip is unnecessary and, therefore, not supplied.*)

3 ATTACHED HARDWARE

3a ALL ventilators shall be designed to slide down from the top while swinging out from the bottom (or) tilt in from the top while sliding up from the bottom. Each ventilator shall be supported by two heavy, spring steel arms, on steel brackets, double riveted to the vertical members, and shall be hung on two brass, U-shaped shoes, sliding in the jamb sections. Tension shall be retained by two coil springs, completely enclosed in brass housings.

3b VENTILATORS where specified shall be so designed and arranged that all glass may be washed on the outside from within the building.

(*Handle brackets, strikes and keepers are the same as in "Fenmark" windows.*)

3c EACH open-out ventilator shall be equipped with two shouldered, alignment-control, bronze springs, riveted to the channel jambs.

(*The shoulders of these springs are so designed and located as to limit the downward travel of the friction shoes and stop all open ventilators in uniform alignment of approximately 45 degrees. When it is desired to open the ventilator to a greater angle for washing, light pressure on the springs permits the friction shoes to slide past. As the ventilator returns to a closed position, the action of the springs is automatic.*)

4 DETACHED HARDWARE

4a ALL locking handles shall be U. S. Government specification solid bronze, of ornamental design and coinage finish, obtained without the use of plating or chemicals, and shall be equipped with friction clevices.

(*Open-out ventilator handles 733 or 914.*)
(*Open-in ventilator handle 1071.*)

4b VENTILATORS out of reach from the floor shall be equipped with solid bronze pole rings or spring catches except where mechanical operator is specified.

(*Pole ring 151. Spring catch No. 739.*)

5 PAINTING, ERECTION

(*Same as "Fenmark" windows 5 and 6.*)

6 GLASS, GLAZING, SHADING

(*Same as "Fenmark" windows 7 and 8.*)

7 SCREENS

(*Screens can be supplied where specified. Consult the nearest Fenestra office.*)

8 METAL STOOLS, SUBFRAMES

(*Metal stools and rolled steel or pressed metal subframes can be supplied where specified. Consult the nearest Fenestra office.*)

SCREENED "FENMARK" WINDOWS

SPECIFICATIONS

1 GENERAL

1a ALL windows shall be Fenestra Screened "Fenmark" as manufactured by the Detroit Steel Products Company.

2 MATERIAL AND CONSTRUCTION

(*Same as "Fenmark" windows—2a, 2b, 2c.*)

3 ATTACHED HARDWARE

3a ALL side hung swing leaves shall open out on two heavy (cleaning) hinges of solid rolled, sherardized steel with heavy re-entrant angle fillets. Hinge pins shall be solid bronze accurately fitted into flanged bronzed bushings.

3b PROJECTING open-in ventilators shall be supported by two heavy, spring steel arms, on steel brackets, double riveted to the vertical members. Each ventilator shall be hung on two brass, U-shaped shoes, riding inside the jamb sections, tension being retained by two coil springs completely enclosed in brass housings. Ventilators to tilt in at the top while sliding up from the bottom.

(*In projecting open-out ventilators, the action is reversed.*)

3c BRASS strikes and wrought steel keepers shall be supplied attached to the window frame as required. Provision for screen attachment and operator attachment shall be included.

4 DETACHED HARDWARE

4a LOCKING handles and handle brackets together with all operators shall be so designed that each swing leaf may be opened, closed and locked through the screen but without touching it. Locking handle bracket shall be ornamental in design, accommodating and entirely concealing the locking cam.

4b LOCKING handles shall be U. S. Government specification solid bronze, of ornamental design and coinage finish, obtained without the use of plating or chemicals and equipped with concealed coil springs (or) solid bronze with oxidized finish.

(*Swing leaf handle 1222 or 1023. Sill ventilator handle 1122 or 1223.*)

4c EACH swing leaf operator shall consist of a bronze arm, bronze locking lever and bronze or alloy housing so designed as to operate through the screen but without touching it and open or close the swing leaf or hold it in any desired position.

(*Swing leaf operator 1216 or 1133.*)

4d PROVIDE solid bronze adjuster for all projecting open-out transoms, and a solid bronze automatic spring catch for all projecting open-in transoms.

(*Open-out adjuster 1108. Spring catch No. 739.*)

5 PAINTING, ERECTION

(*Same as "Fenmark" windows 5 and 6.*)

6 GLASS, GLAZING, SHADING

(*Same as "Fenmark" windows 7 and 8.*)

7 SCREENS

7a SCREENS for swing leaves and projected open-out transoms shall set flat against the inside of the frame, with handles and adjusters extending through the screens, so that each window may be opened, closed and locked through the screen but without touching it.

7b SCREENS for projected open-in ventilators shall set flat against a screen guide outside the frame and shall be equipped with fasteners so designed that the screens may be readily hung or removed from inside the building.

7c SCREEN frames shall be cold-rolled, rust-proof steel (or bronze) containing a reinforcing brace running the full length of the stile. Steel frames shall be painted two coats of grey lead and oil, baked on. Screen cloth shall be 16-mesh bronze wire. Each screen shall be provided with a 22-gauge steel (or bronze) escutcheon with circular hole to fit over and around the locking handle.

(*Bronze frames or steel frames with bronze cap, or screens with finer than 16-mesh cloth can be supplied at slight extra cost.*)

8 METAL STOOLS, SUBFRAMES

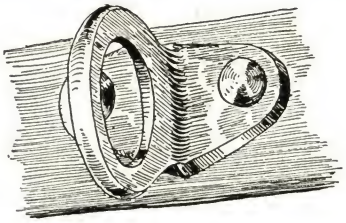
(*Metal stools and rolled steel or pressed metal subframes can be supplied where specified. Consult the nearest Fenestra office.*)



FLORENCE CRITTENTON HOSPITAL DETROIT MICHIGAN
SMITH HINCHMAN & GRYLLS, ARCHITECTS



Finger Pull 1130 for D



Pole Ring 151 for D, C & B



Finger Pull 1230 for C & B



Handle 1122 for D



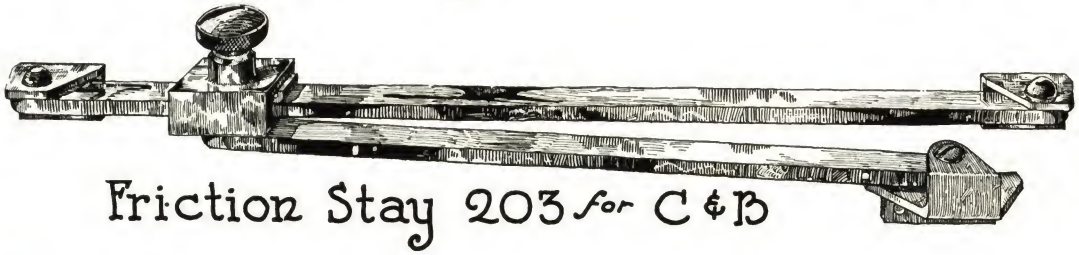
Handle 1223 for C & B



Handle 1071 for C



Friction Stay 1101 for D



Friction Stay 203 for C & B

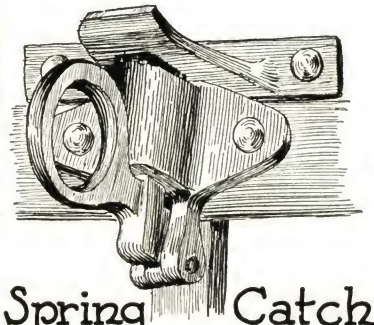
Fenestra 1931

FENMARK, SCREENED FENMARK & FENMARK PROJECTED HARDWARE

Plate No G-415



Handle
699 for C



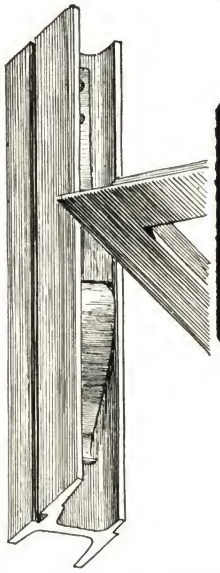
Spring Catch
739 for D, C & B



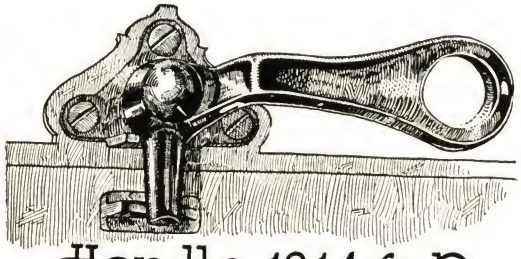
Handle
1119 for D



Handle
733 for C



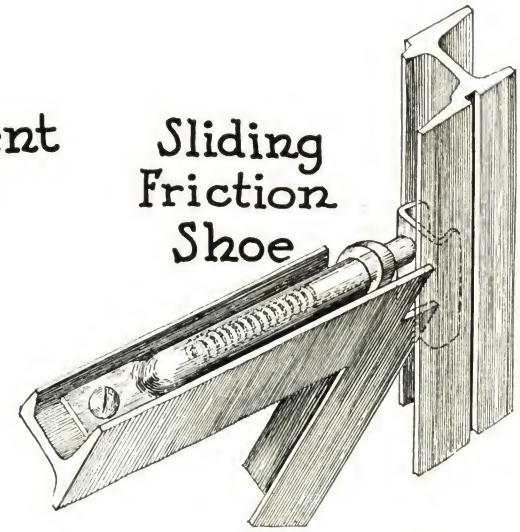
* Series D & C *
U.S. Specification Bronze,
Coinage finish, Polished.~
* Series B *
Solid Bronze, Oxidized finish



Handle 1214 for D

Alignment
Stop

Sliding
Friction
Shoe



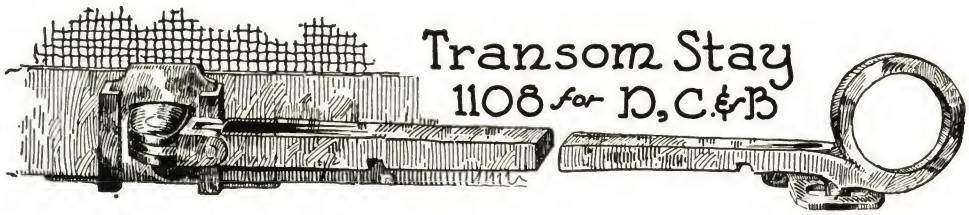


Handle
914 for C & B

Fenestra 1931

FENMARK, SCREENED FENMARK & FENMARK PROJECTED HARDWARE

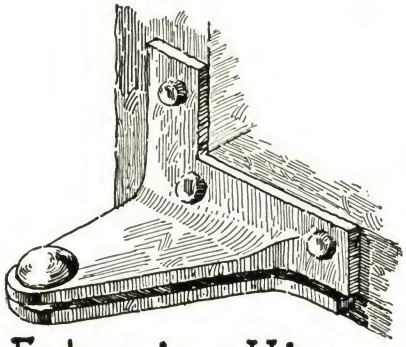
Plate No G~416



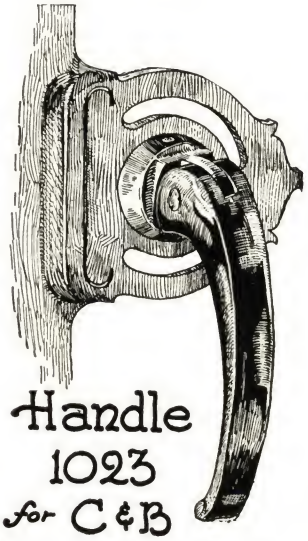
Transom Stay
1108 for D, C & B



Handle
1222
for D



Extension Hinge



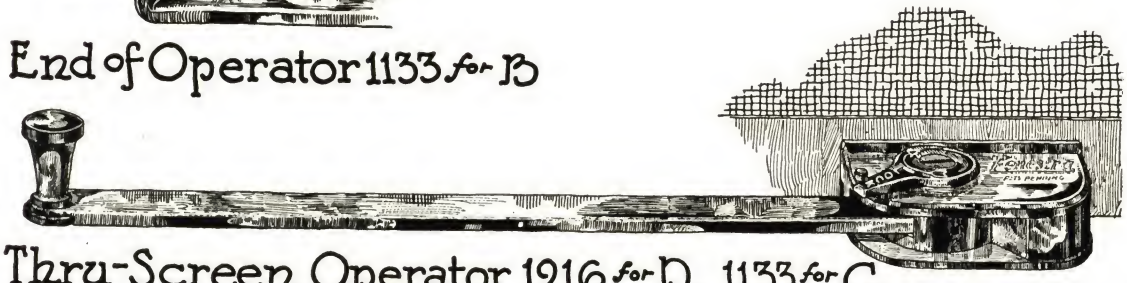
Handle
1023
for C & B

Series D & C
U.S. Specification Bronze,
Coinage finish, Polished.

Series B
Solid Bronze, Oxidized finish



End of Operator 1133 for B

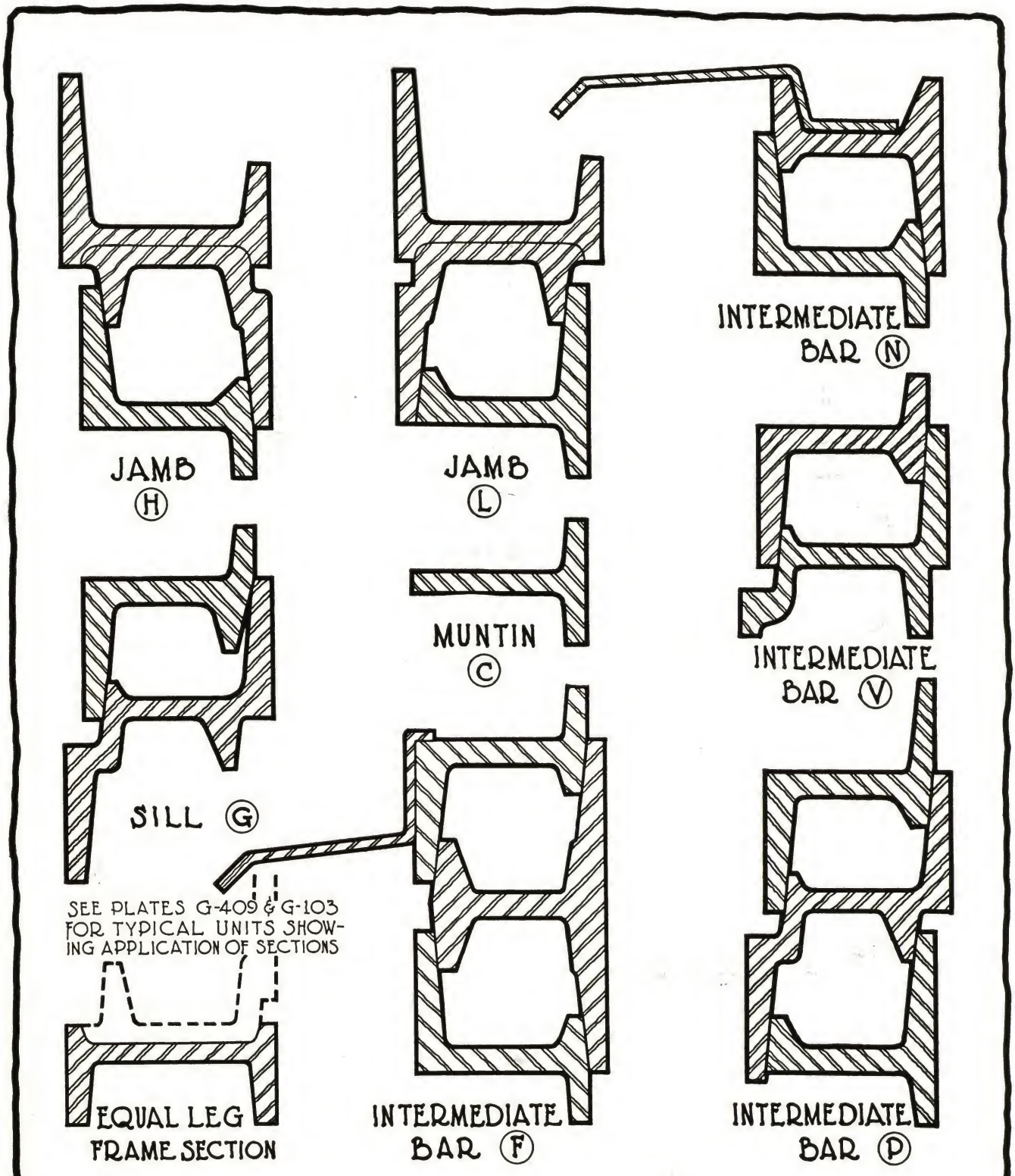


Thru-Screen Operator 1216 for D, 1133 for C

Fenestra 1931

FENMARK, SCREENED FENMARK & FENMARK PROJECTED HARDWARE

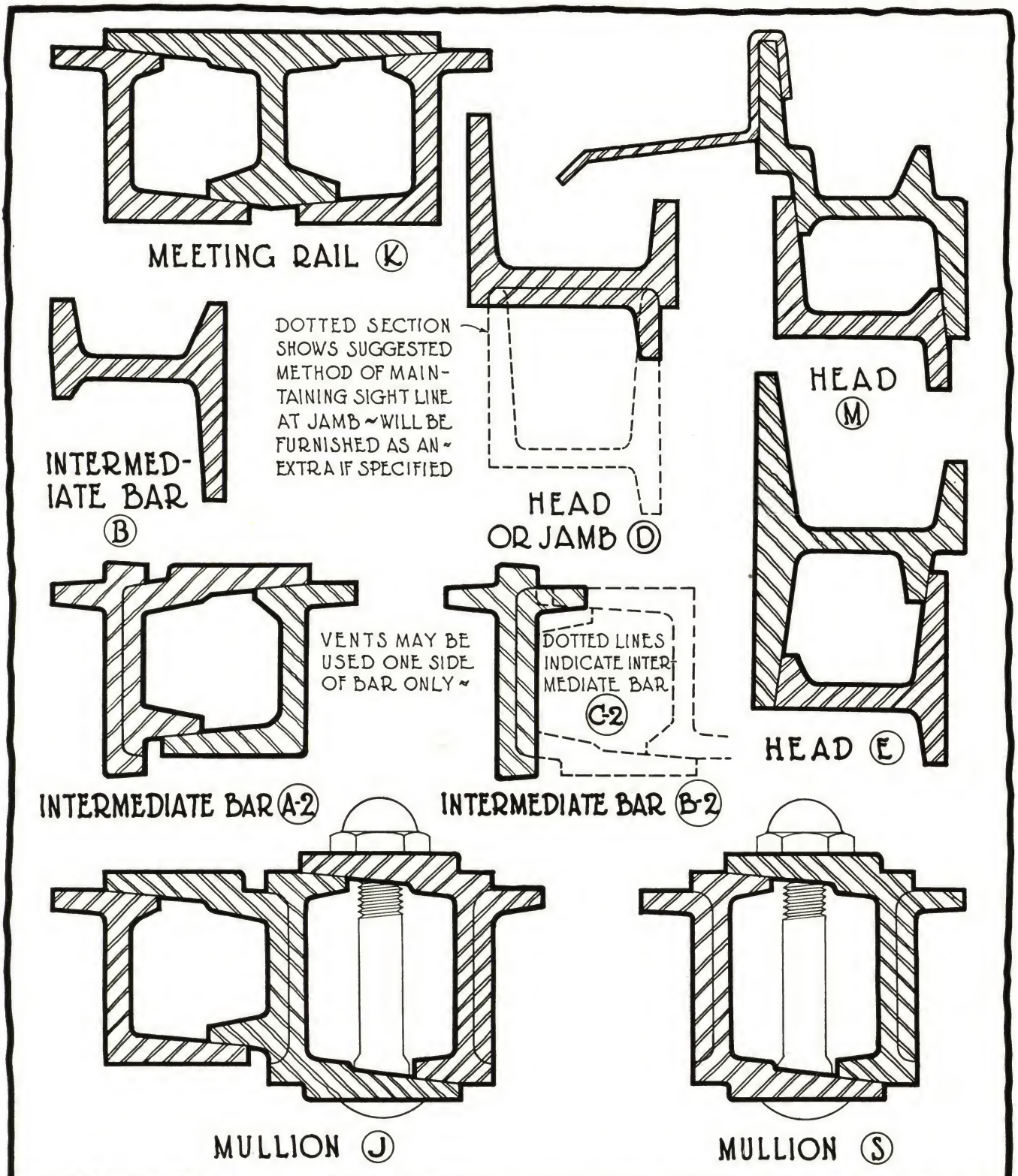
Plate No G-417



Fenestra 1931

FENMARK WINDOWS
FULL SIZE SECTIONS

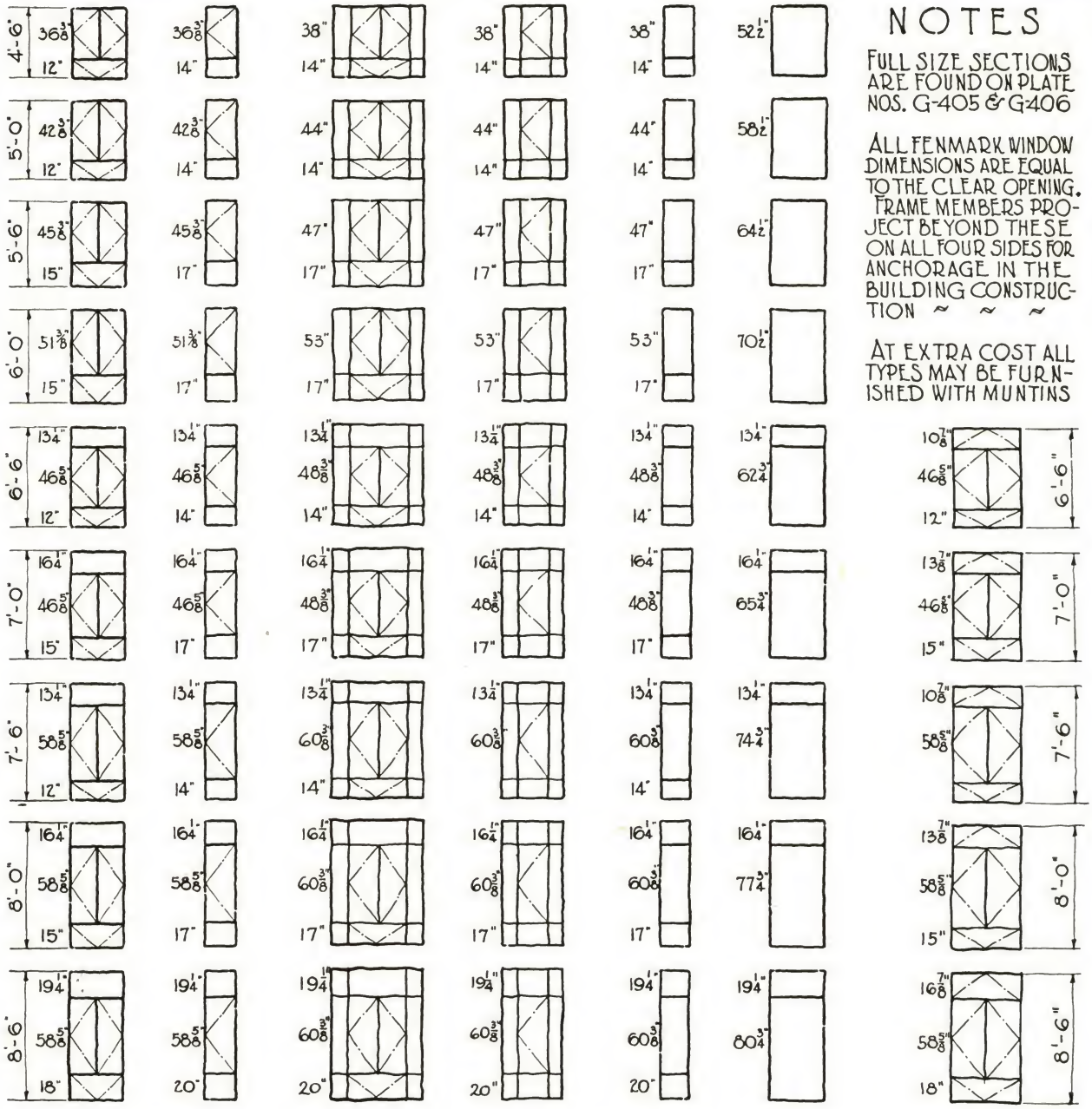
Plate No G-405



Fenestra 1931

FENMARK WINDOWS
FULL SIZE SECTIONS

Plate No G-406



NOTES

FULL SIZE SECTIONS ARE FOUND ON PLATE NOS. G-405 & G-406

ALL FENMARK WINDOW DIMENSIONS ARE EQUAL TO THE CLEAR OPENING. FRAME MEMBERS PROJECT BEYOND THESE ON ALL FOUR SIDES FOR ANCHORAGE IN THE BUILDING CONSTRUCTION ~ ~ ~

AT EXTRA COST ALL TYPES MAY BE FURNISHED WITH MUNTINS

NOTES

SECTIONS "J", "R" AND "S" ON PLATE NO. G-409 SHOW HOW UNITS MAY BE COMBINED WITHOUT USE OF PLATE MULLION & MUST BE SPECIFIED IF DESIRED.

HANDING OF WINDOWS IS DETERMINED BY THE LOCATION OF HINGE VIEWED FROM THE OUTSIDE. RIGHT HAND CASEMENTS ARE HINGED AT RIGHT,

LEFT HAND CASEMENTS ARE HINGED AT LEFT. ~ ~ ~

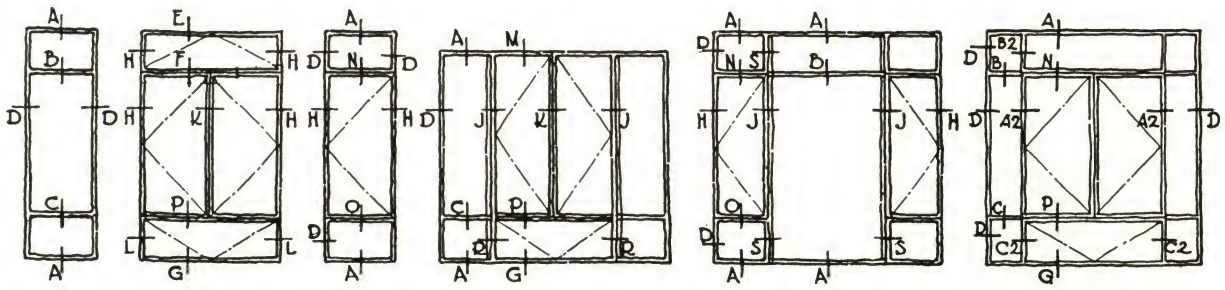
DIMENSIONS AT LEFT OF TYPES ARE GLASS HEIGHTS. ~ ~ ~

FOR DETAILS SEE PLATE NO. G-409

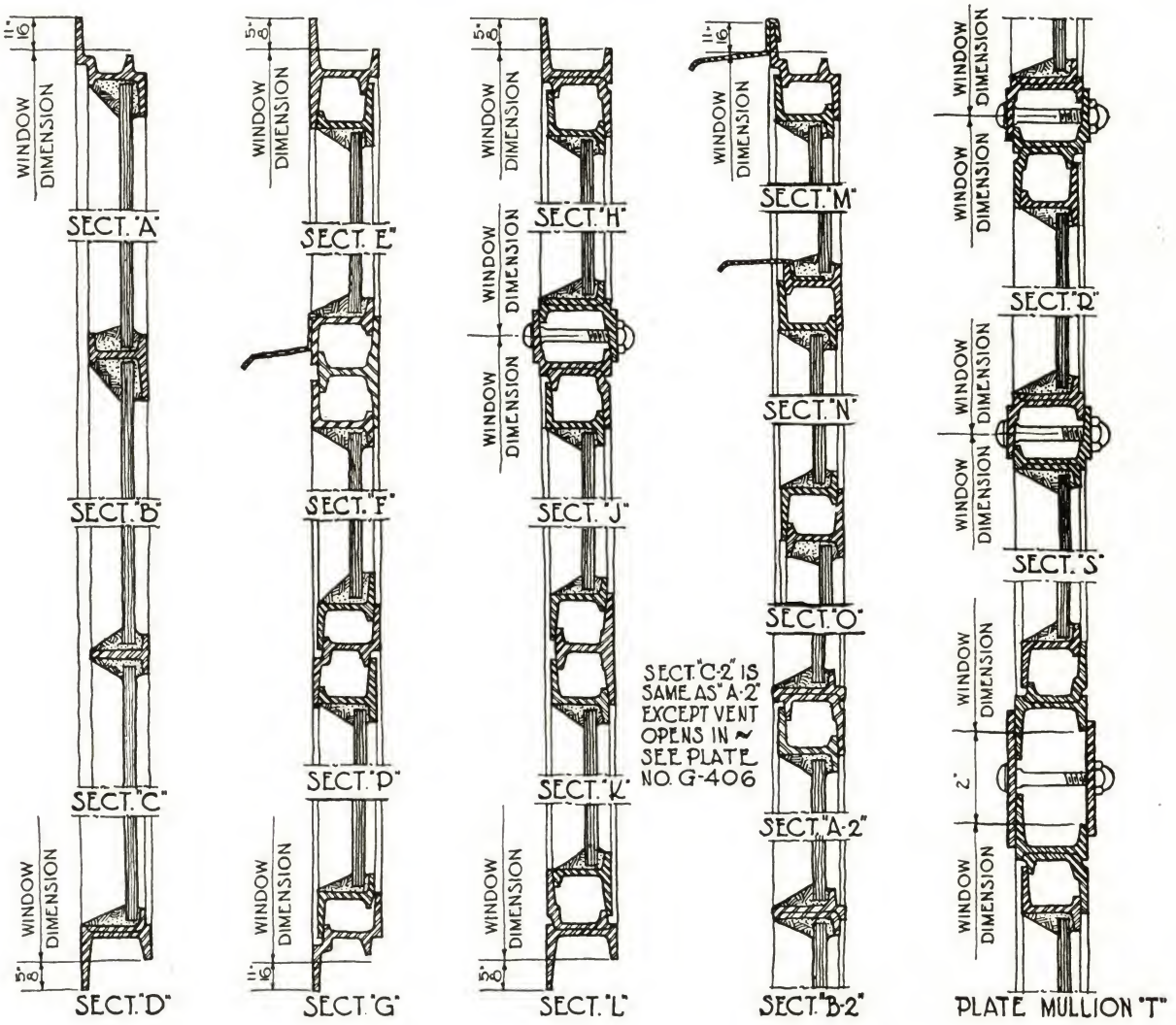
Fenestra 1931

FENMARK WINDOWS
TYPES AND SIZES

Plate No G-408



TYPICAL ELEVATIONS



NOTE: DETAILS ON THIS PLATE ALSO APPLY TO SCREENED FENMARK WINDOWS.

Fenestra 1931

FENMARK WINDOWS
COMBINATION DETAILS

Plate No G-409

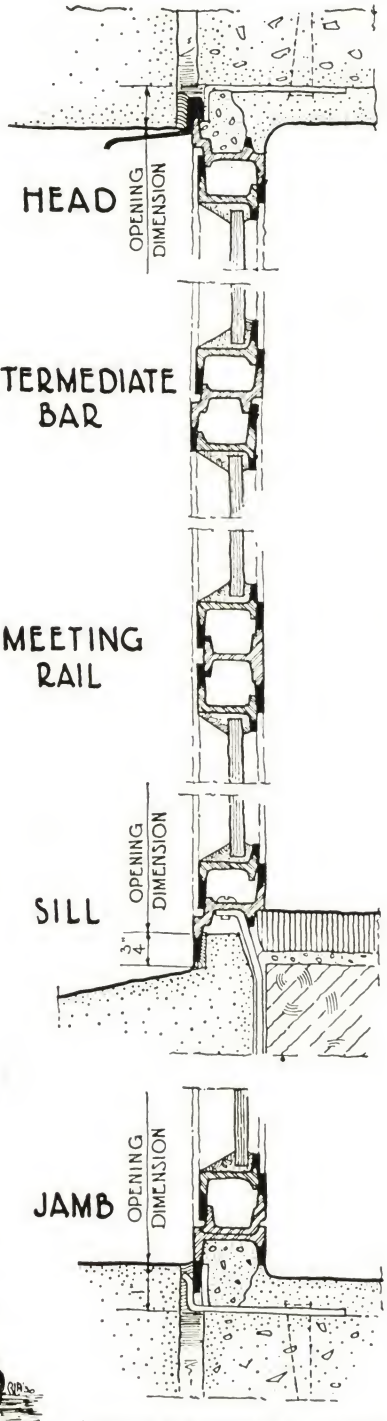


TYPICAL
FENMARK WINDOW

NOTES

CAULKING BETWEEN WINDOW FRAME AND BUILDING CONSTRUCTION SHALL BE SUPPLIED AND APPLIED BY OTHERS

SECTIONS ON THIS PLATE ARE "M", "P", "K", "G" AND "H" AS SHOWN ON PLATES NUMBERS G-405, G-406



SCALE OF DETAILS - 3"-1'-0"

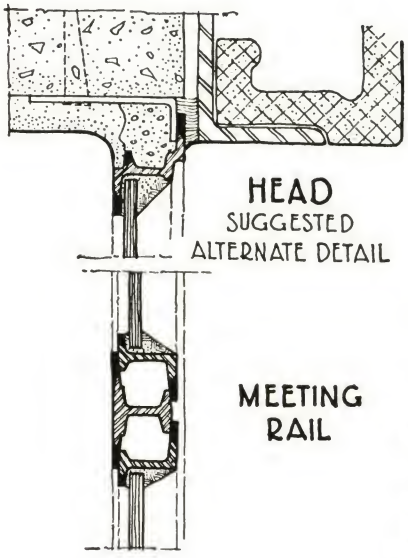


INTEGRITY TRUST COMPANY BUILDING
PAUL P. CRET - ARCH'T. PHILADELPHIA, PA.

Fenestra 1931

FENMARK WINDOWS
STONE INSTALLATION

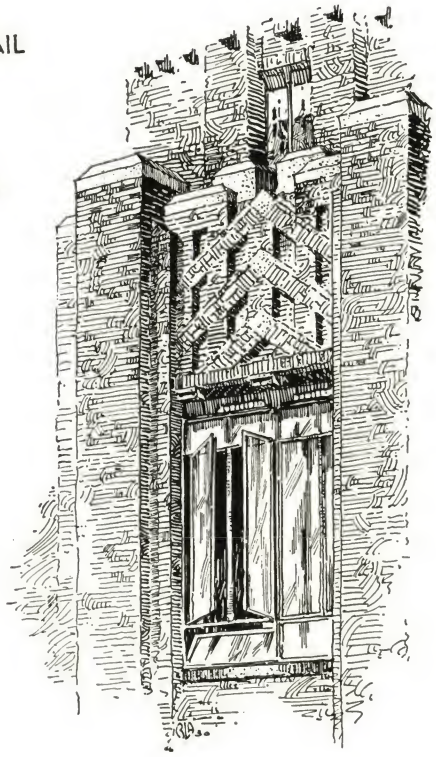
Plate No G-411

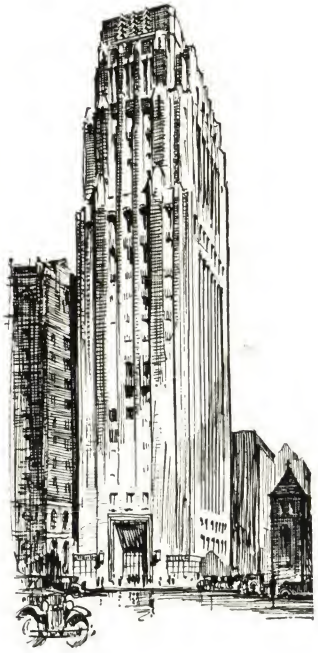


HEAD
SUGGESTED
ALTERNATE DETAIL

MEETING
RAIL

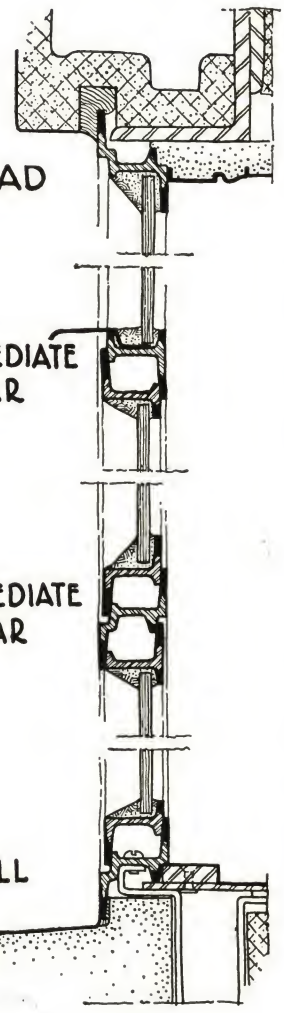
CAULKING BETWEEN WINDOW FRAME AND BUILDING CONSTRUCTION SHALL BE SUPPLIED AND APPLIED BY OTHERS

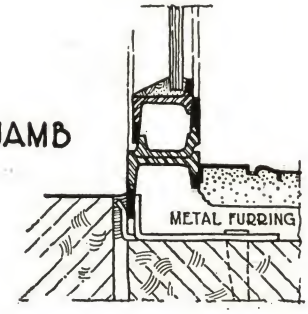




SECTIONS ON THIS PLATE ARE "A", "N", "P", "G", "H" AND "K" SHOWN ON PLATES NUMBERS G-405, G-406

ARCHITECTS BUILDING
PHILADELPHIA - PENNA
BISSEL & SINKLER - BOYD, ABEL & GUGERT
A.H. BROCKIE - I.T. CATHERINE - P. P. CRET
FOLSOM & STANTON - E. B. GILCHRIST
R.H. JOHNSON - G.I. LOVATT - R. R. McGOODWIN
RANKIN & KELLOGG - H. STERNFELD - THOMAS,
MARTIN & KIRKPATRICK - F. R. WATSON
C.E. WUNDER - ZANTZINGER, BORIE & MEDARY
ASSOCIATED ARCHITECTS



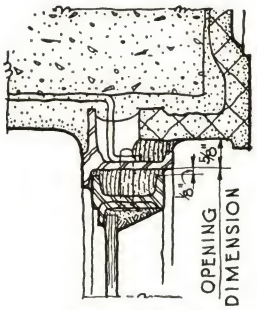


SCALE OF DETAILS - 3"-1'-0"

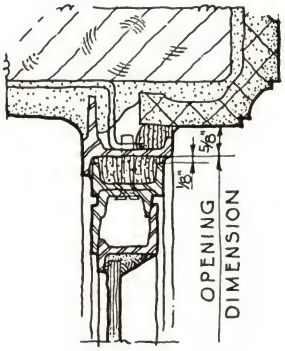
Fenestra 1930

FENMARK WINDOWS
TERRA COTTA INSTALLATION

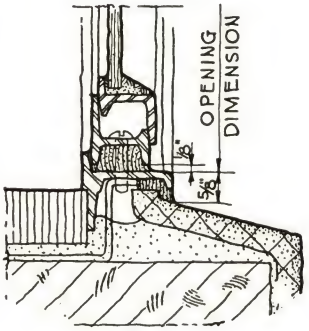
Plate No G-412



HEAD



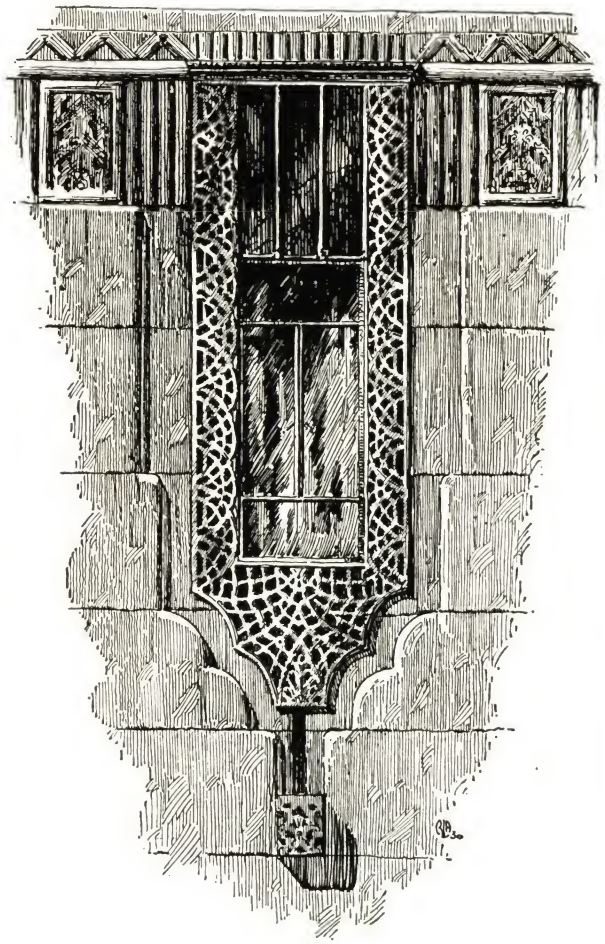
JAMB

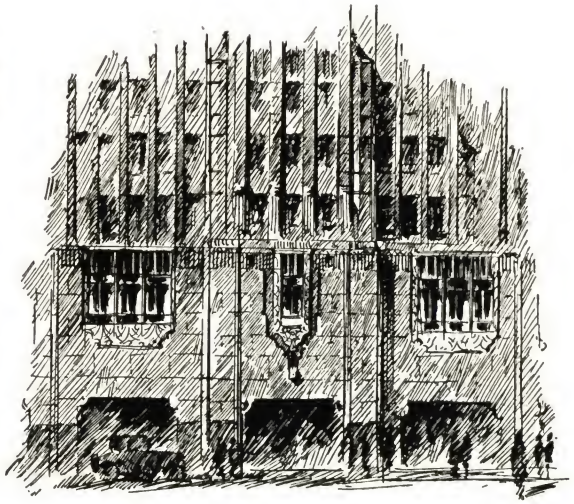


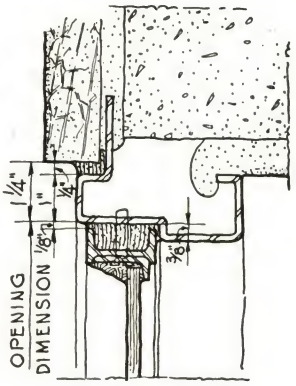
SILL

CAULKING BETWEEN WINDOW FRAME AND BUILDING CONSTRUCTION SHALL BE SUPPLIED AND APPLIED BY OTHERS.

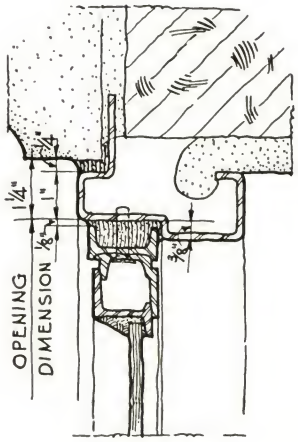
DETAILS SHOW ROLLED & PRESSED STEEL SUB-FRAMES IN CONNECTION WITH EQUAL LEG SASH FRAME SECTION



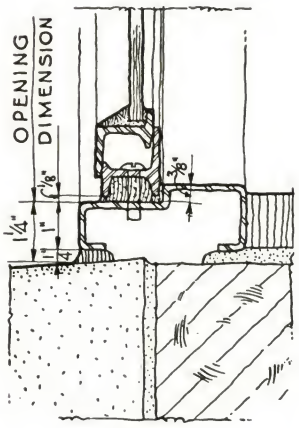




HEAD



JAMB



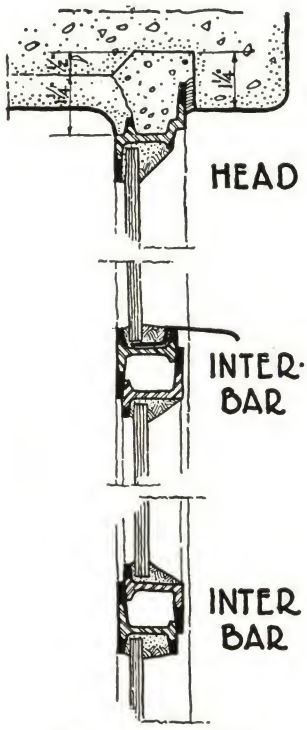
SILL

SCALE OF DETAILS - 3"-1'-0"

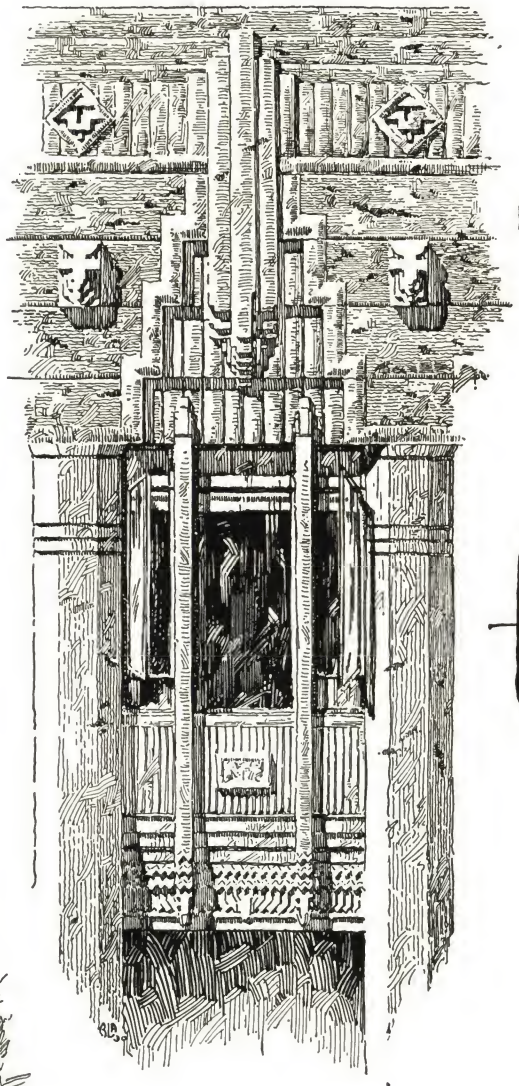
Fenestra 1930

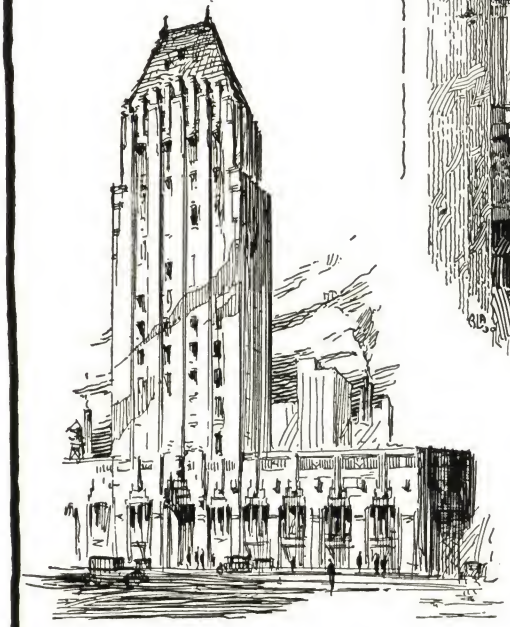
FENMARK WINDOWS
METAL FRAME INSTALLATION

Plate No G-413



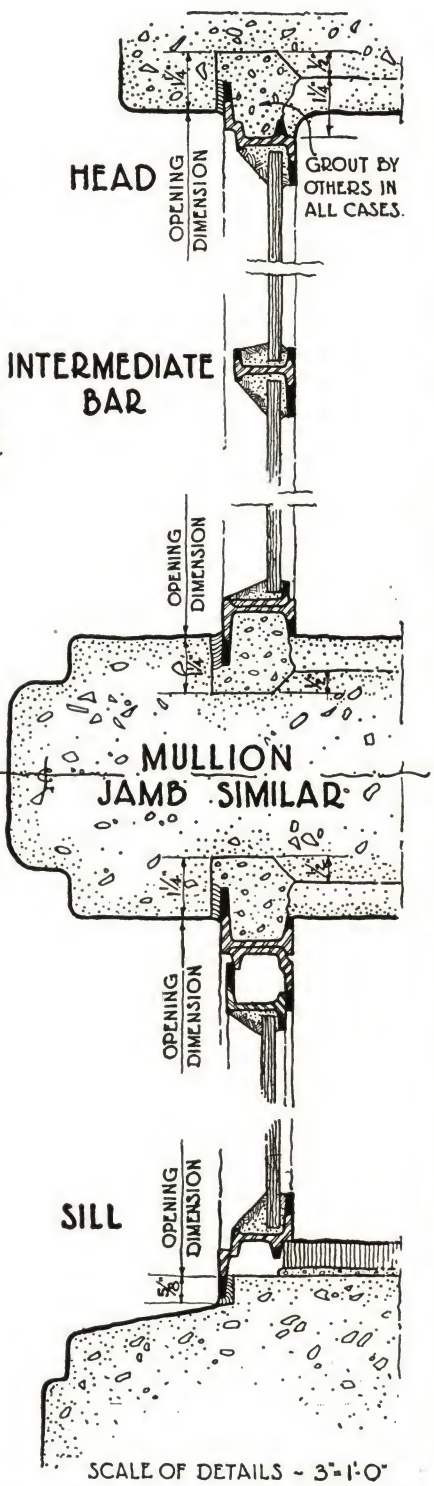
SECTION THRU SIDE LIGHTS





CAULKING BETWEEN WINDOW FRAME AND BUILDING CONSTRUCTION SHALL BE SUPPLIED AND APPLIED BY OTHERS

SECTIONS ON THIS PLATE ARE "A", "N", "B", "D" AND "H" AS SHOWN ON PLATES NUMBERS G-405, G-406

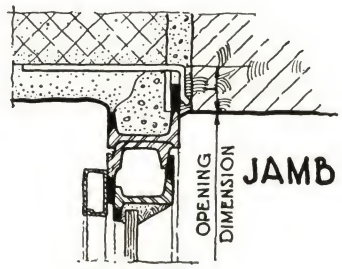


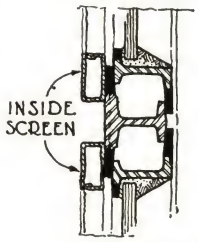
SCALE OF DETAILS ~ 3"-1'-0"

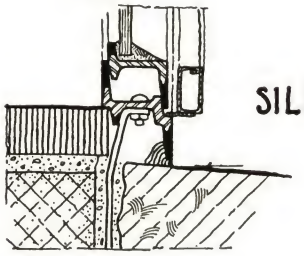
Fenestra 1930

FENMARK WINDOWS CONCRETE INSTALLATION

Plate No G-414

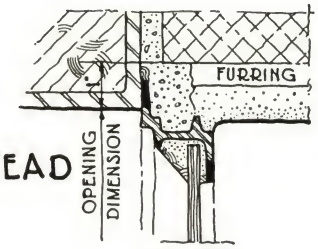


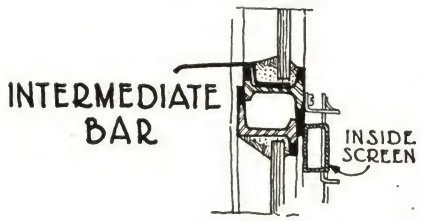


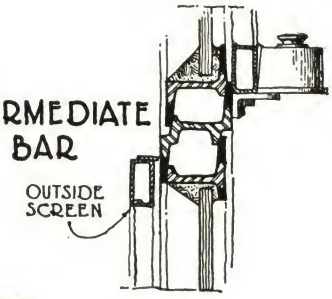


CAULKING BETWEEN WINDOW FRAME AND BUILDING CONSTRUCTION SHALL BE SUPPLIED AND APPLIED BY OTHERS.

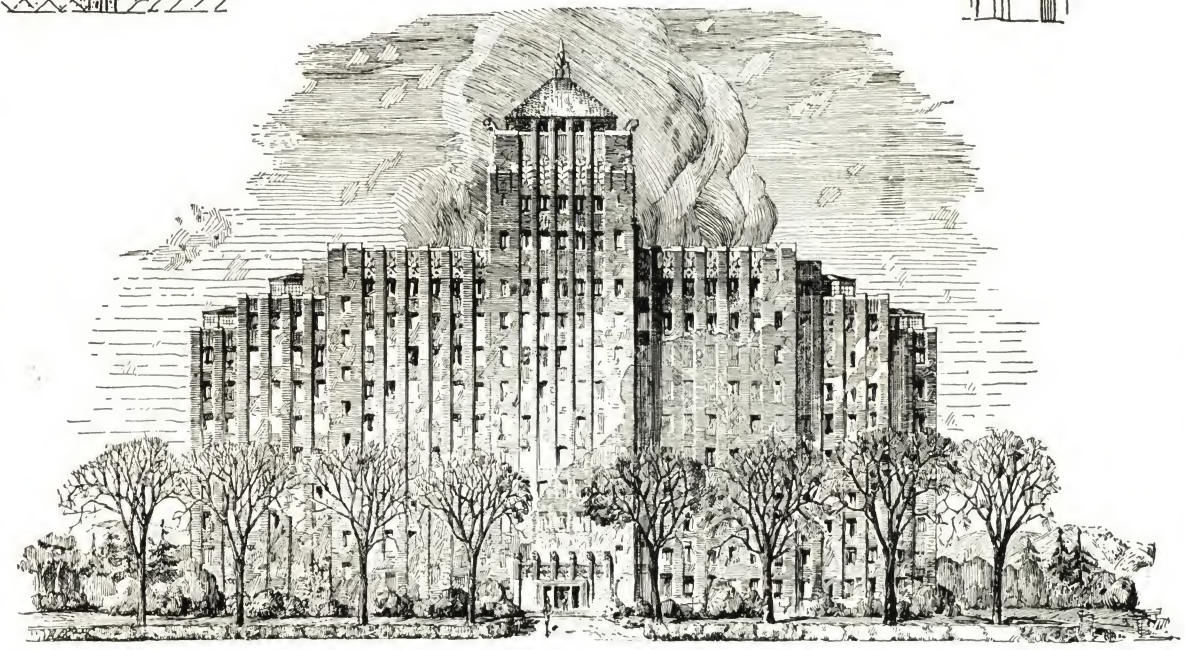
SECTIONS ON THIS PLATE ARE "H", "K", "G", "A", "N" AND "P" AS SHOWN ON PLATES NUMBERS G-405, G-406







SCALE OF DETAILS - 3"= 1'-0"

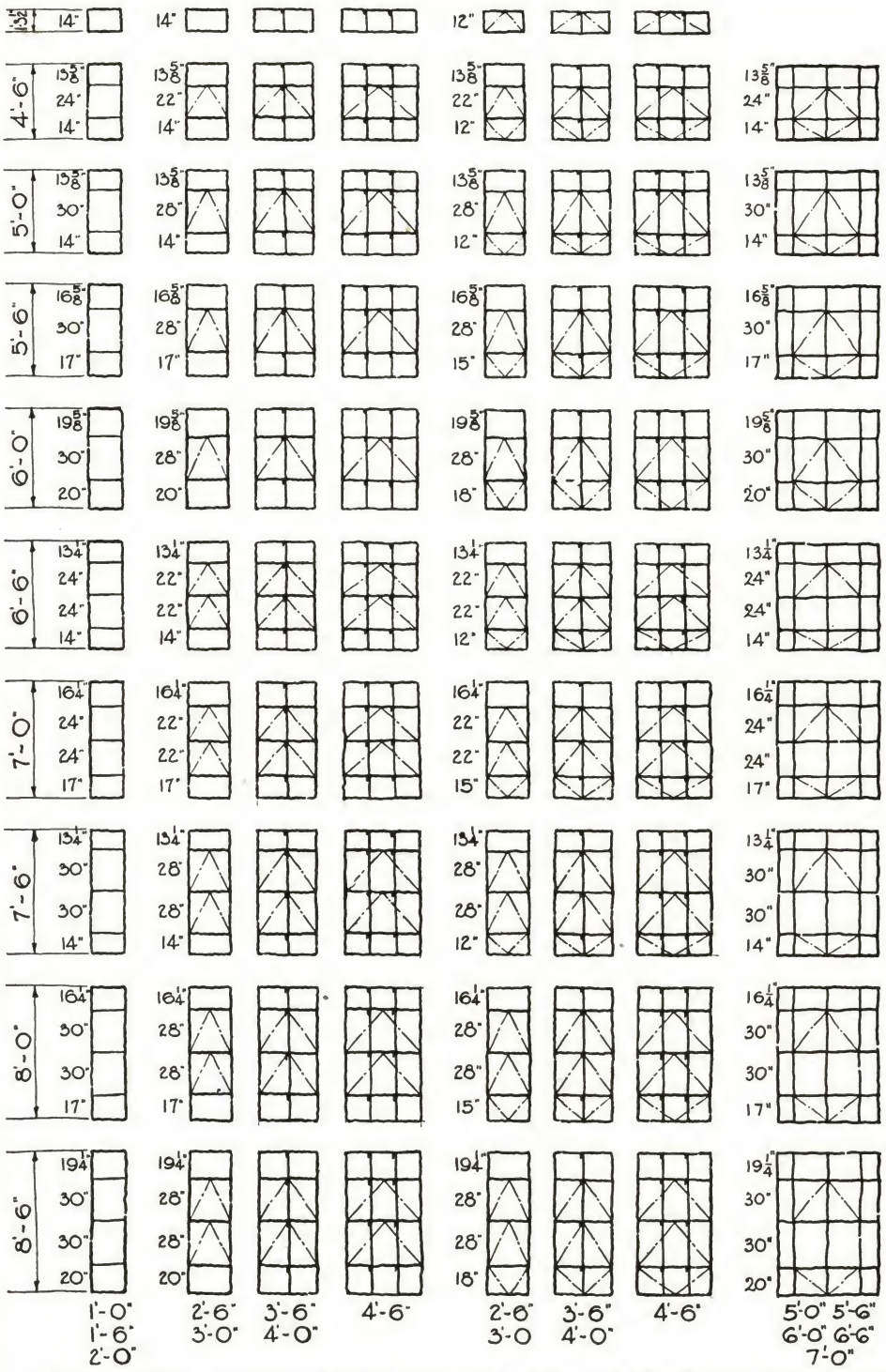


HARBORVIEW HOSPITAL KINGS COUNTY SEATTLE WASH
THOMAS, GRAINGER & THOMAS - ARCHITECT'S
DR. WILLIAM H. WALSH - CHICAGO - HOSPITAL CONSULTANT

Fenestra 1931

SCREENED FENMARK TYPICAL HOSPITAL INSTALLATION

Plate No G-501



SIZES GIVEN UNDER EACH COLUMN ARE STANDARD WIDTHS OF CLEAR OPENINGS

NOTES

ALL PROJECTED FENMARK WINDOW DIMENSIONS ARE EQUAL TO CLEAR OPENING DIMENSION. FRAME MEMBERS PROJECT BEYOND THESE ON ALL FOUR SIDES FOR ANCHORAGE IN BLDG. CONSTRUCTN.

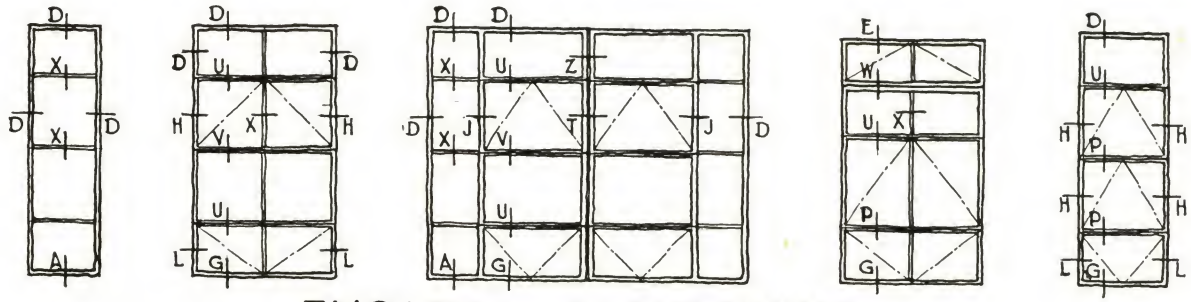
DIMENSIONS SHOWN AT LEFT OF EACH TYPE GROUP ARE STD. GLASS HEIGHTS GIVEN TO SHOW THE PROPORTIONS FOR DIVIDING TYPES HORIZONTALLY ~

TYPICAL ELEVATIONS SHOWING COMBINATIONS OF UNITS AND APPLICABLE DETAILS ARE FOUND ON PLATE NO G-103 ~ ~ ~ ~

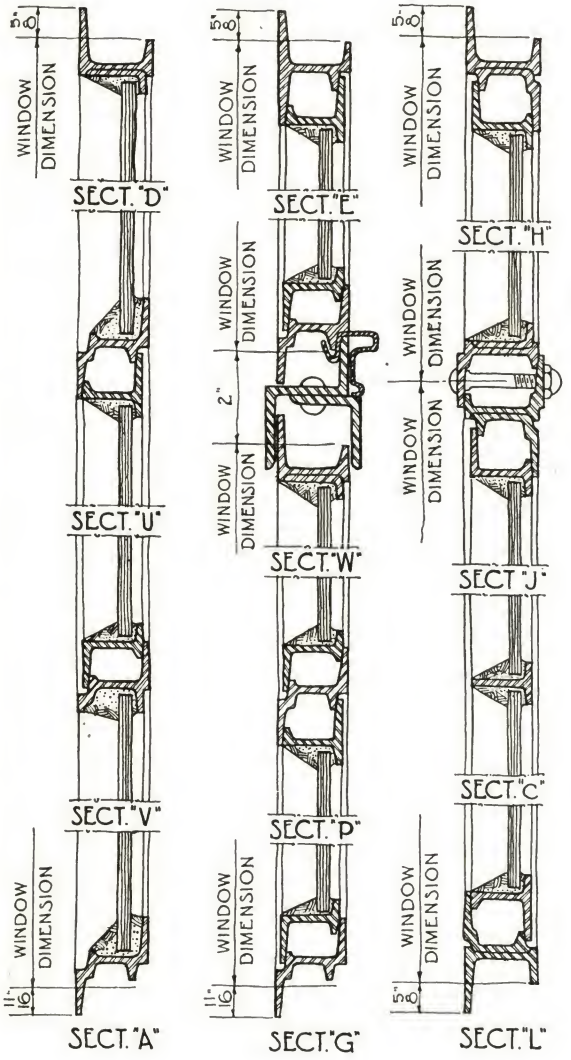
Fenestra **1931**

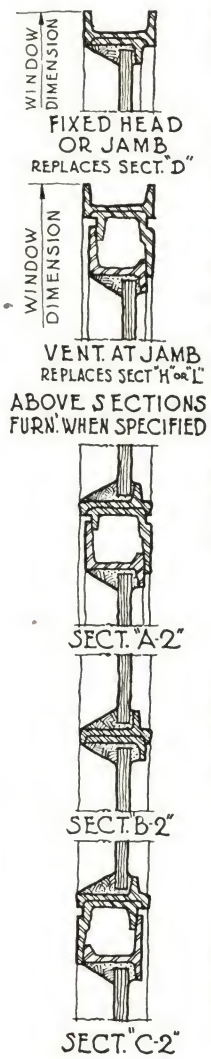
FENMARK PROJECTED TYPES AND SIZES

Plate No **G-102**



TYPICAL ELEVATIONS





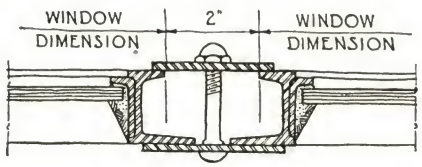
NOTES

FULL SIZE SECTIONS ARE FOUND ON PLATES NUMBERS G-405, G-406

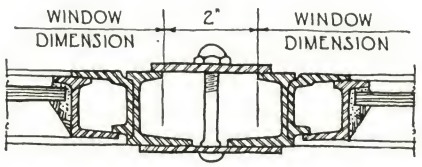
WIDTH OF BARS "W", "Z" AND "T" MUST BE ADDED TO OVER-ALL SIZES WHEN COMBINED UNITS ARE USED WITHIN MASONRY OPENING.

SECTION "W" IS LIMITED TO OPENINGS UP TO 9'-0" IN WIDTH

SECTION "J" SHOWS HOW UNITS MAY BE COMBINED WITHOUT USE OF PLATE MULLION AND MUST BE SPECIFIED IF DESIRED.



SECT. "Z"



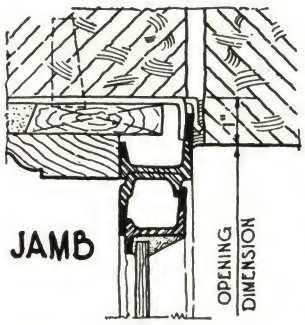
SECT "T"

Fenestra 1931

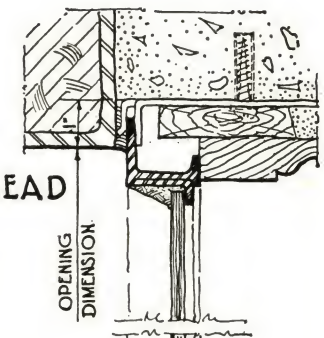
FENMARK PROJECTED COMBINATION DETAILS

Plate No G-103

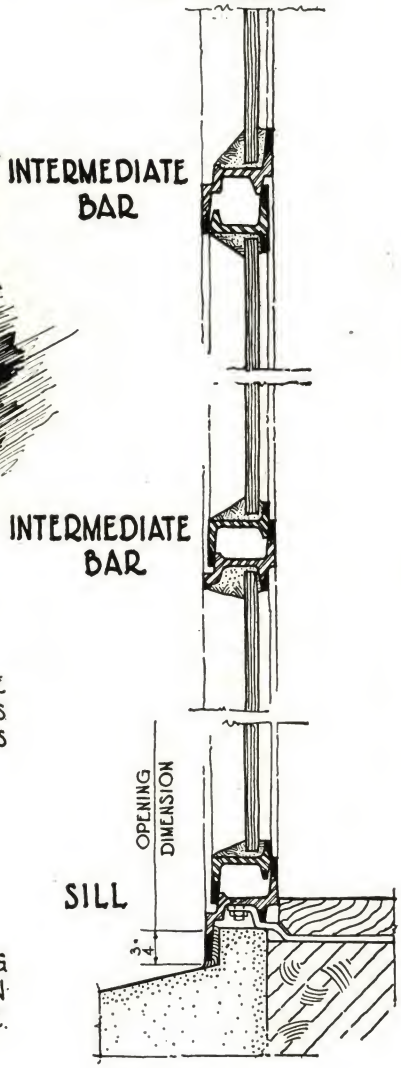
SCALE OF DETAILS - 3"-1'-0"







CAULKING BETWEEN WINDOW FRAME AND BUILDING CONSTRUCTION SHALL BE SUPPLIED AND APPLIED BY OTHERS





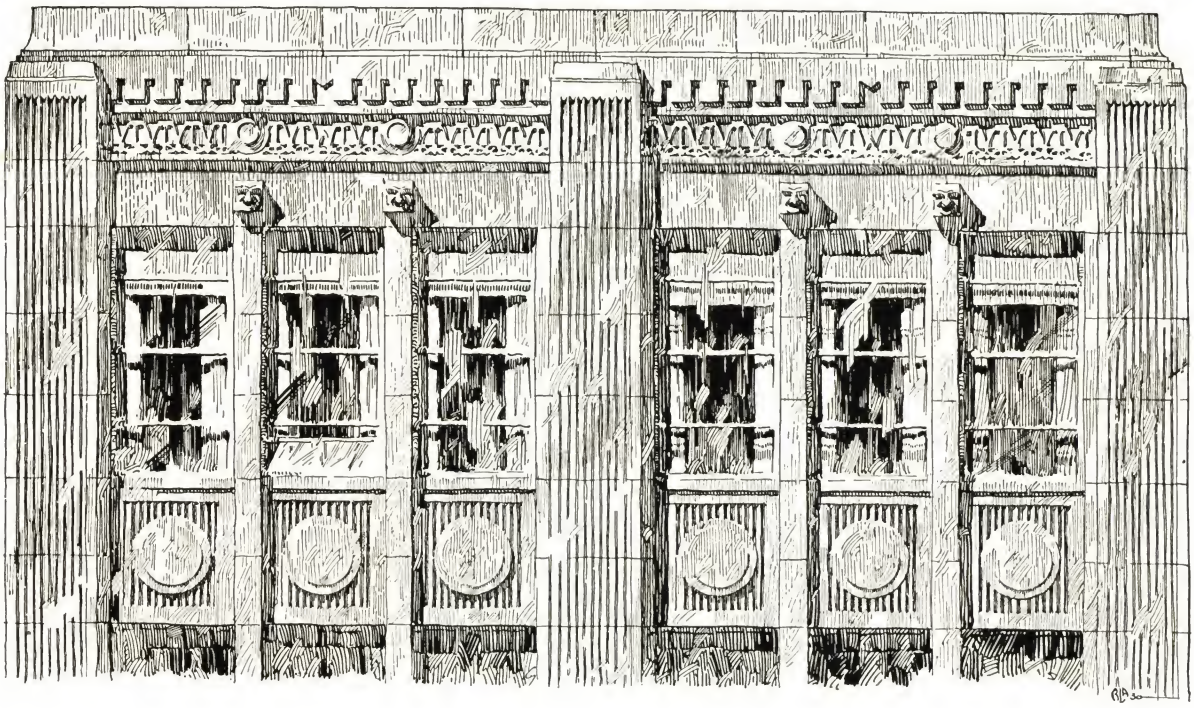
SECTIONS ON THIS PLATE ARE "D", "U", "V", "G" AND "H" AS SHOWN ON PLATES NUMBERS G-405, G-406

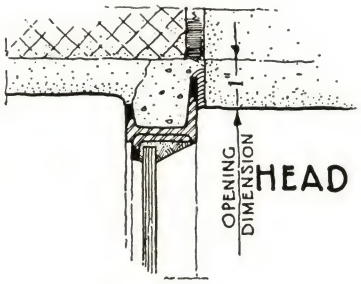
GRISWOLD BUILDING
DETROIT - MICHIGAN
ALBERT KAHN INC.
ARCHITECT

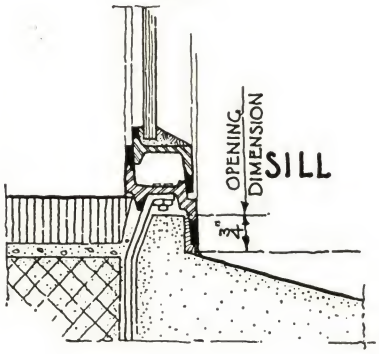
Fenestra 1930

FENMARK PROJECTED BRICK INSTALLATION

Plate No G-104





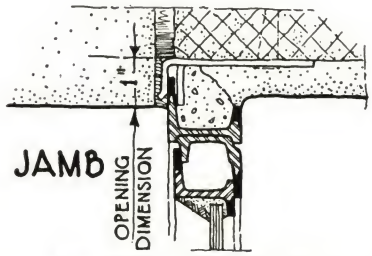


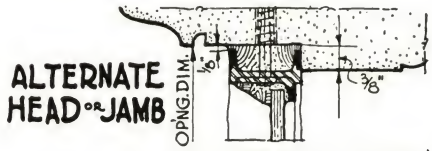
JOSEPH HILTON BLDG.
NEW YORK CITY
D. R. SWARTBURG
ARCHITECT

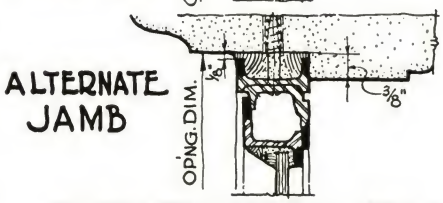
NOTES

CAULKING BETWEEN WINDOW FRAME AND BUILDING CONSTRUCTION SHALL BE SUPPLIED AND APPLIED BY OTHERS.

SECTIONS ON THIS PLATE ARE "D", "G", "H", "B-2" AND "A-2" SHOWN ON PLATES NUMBERS G-405, G-406







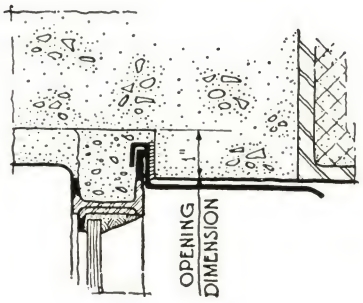
THE TWO DETAILS DIRECTLY ABOVE ~ SHOW USE OF EQUAL LEG FRAME SECTION

SCALE OF DETAILS - 3"=1'-0"

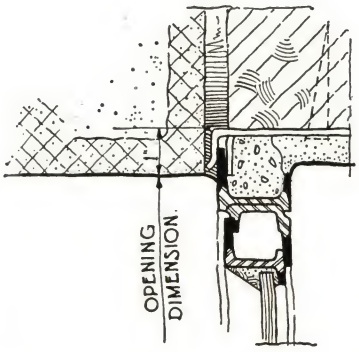
Fenestra 1930

FENMARK PROJECTED STONE INSTALLATION

Plate No G-105



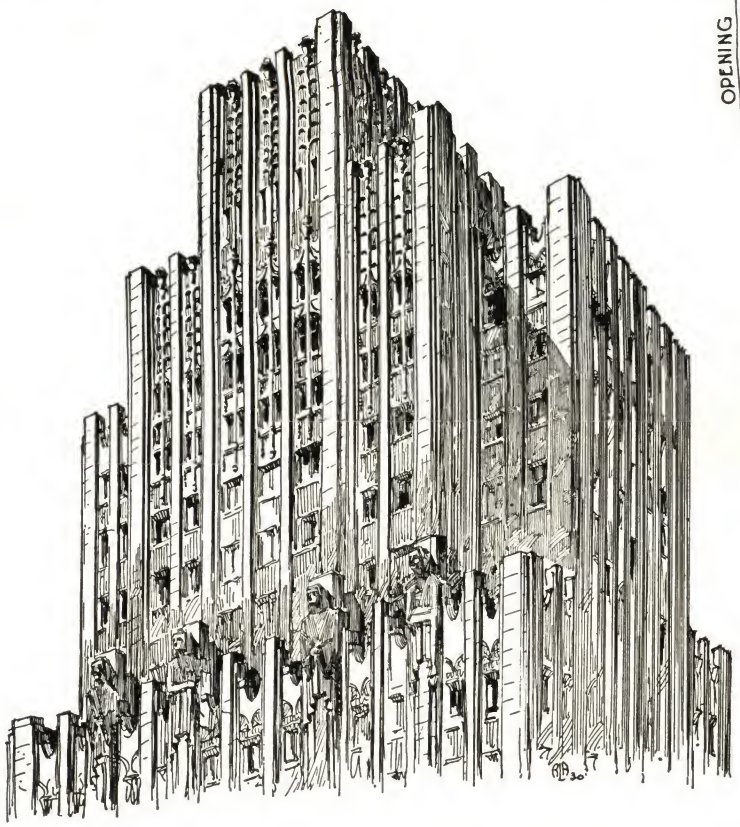
HEAD



JAMB



INTERMEDIATE BAR

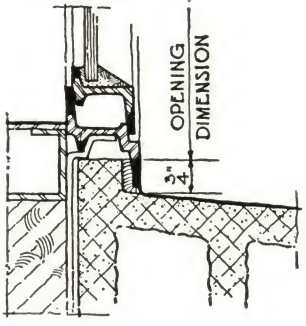




MULLION



INTERMEDIATE BAR



SILL

DETAIL UPPER PORTION
CONTINENTAL LIFE INSURANCE
BUILDING - ST. LOUIS, MISSOURI
WILLIAM B. ITTNER - ARCHITECT

SCALE OF DETAILS - 3" = 1'-0"

NOTES

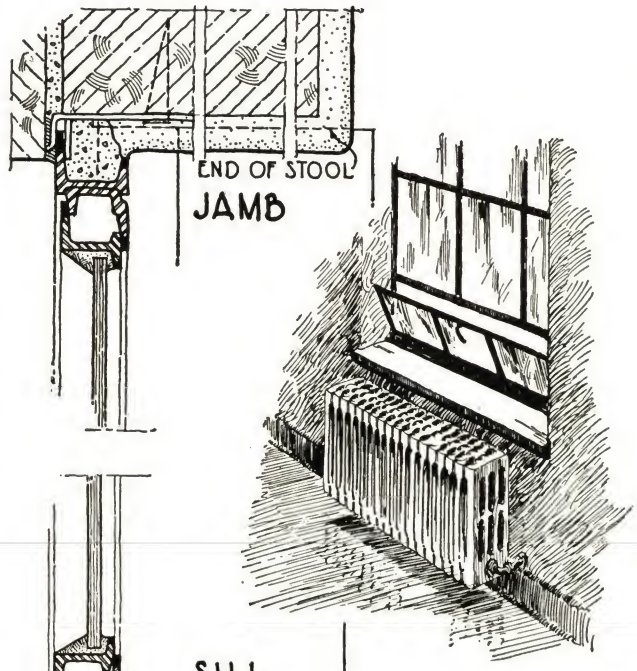
CAULKING BETWEEN WINDOW FRAME AND BUILDING CONSTRUCTION SHALL BE SUPPLIED AND APPLIED BY OTHERS.

SECTIONS ON THIS PLATE ARE "D" "U" "P" "G" "H" AND "J" AS SHOWN ON PLATES NUMBERS G-405, G-406

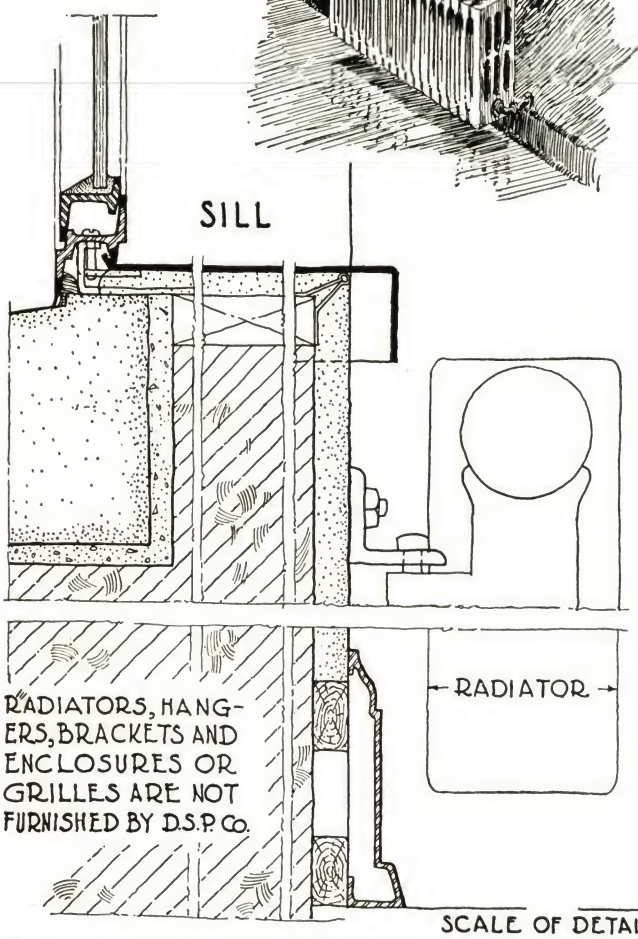
Fenestra 1930

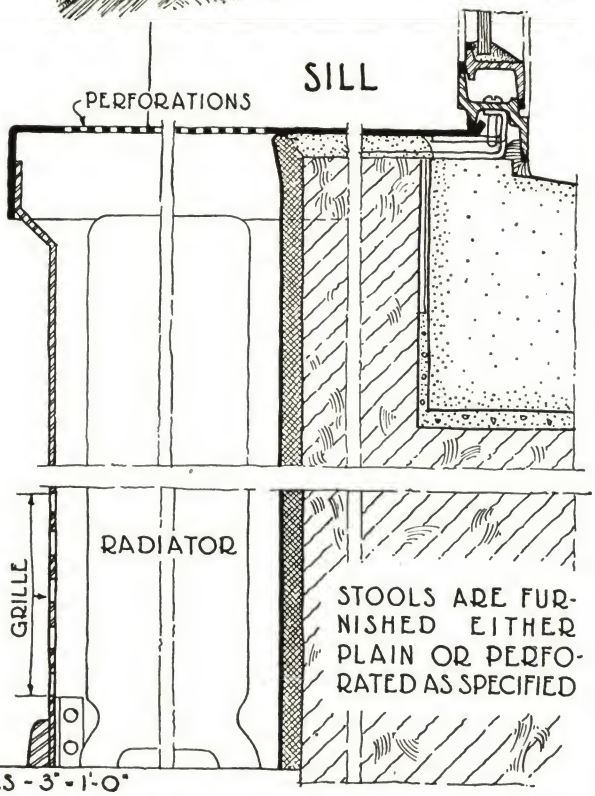
FENMARK PROJECTED TERRA COTTA INSTALLATION

Plate No G-106









SCALE OF DETAILS - 3" - 1'-0"

SECTION THRU STOOL SHOWING RADIATOR TOTALLY EXPOSED

SECTION THRU STOOL SHOWING RADIATOR TOTALLY CONCEALED

Fenestra 1930

FENMARK WINDOWS
METAL STOOL SUGGESTIONS

Plate No G-108

FENESTRA "FENCRAFT" CASEMENTS

SPECIFICATIONS

1 GENERAL

1a ALL windows shall be Fenestra "Fencraft," as manufactured by Detroit Steel Products Company.

2 MATERIAL AND CONSTRUCTION

2a FRAME sections shall have a minimum depth of 1¼" from front to back. Frames and swing leaves shall be of hot rolled, solid steel providing continuous, two-point, flat weathering contact between swing leaves and frame and shall be further weathered by baffles at both inner and outer contacts.

2b ALL sections shall be rerolled, cold, to make them true and straight and shall be individually electrically tested for straightness.

2c FRAMES and swing leaves shall be mitered at all corners and electrically butt welded. All welds shall be ground to a smooth finish.

(Mullions or transom bars are provided between adjacent units as specified.)

(Heavy, electro-galvanized steel drip is supplied over all swing leaves.)

(Sill and jamb anchor clips with bolts for attachment to frame are supplied where required.)

3 ATTACHED HARDWARE

3a ALL side hung swing leaves shall open out on two heavy, friction (cleaning) hinges of solid rolled, sherardized steel with heavy reentrant angle fillets. Each hinge shall be equipped with two friction washers. Washers and hinge members shall be held by lock washers and bronze studs with acorn nuts so that by adjusting the nuts, friction may be increased or decreased.

3b ALL top hung, open-out transoms and all bottom hung, open-in transoms shall be hung on heavy, flush, sherardized, wrought steel hinges with bronze hinge pins. Open-in transoms shall be supported by two bronze, friction side arms with friction shoes moving in bronze channels attached to the frame members.

3c EACH side hung swing leaf shall have an ornamental locking handle bracket of solid rolled steel, electrically welded to the swing leaf stile.

3d BRASS strikes and wrought steel keepers shall be supplied, attached to the window frame as required.

4 DETACHED HARDWARE

4a ALL locking handles shall be: (1) U. S. Government Specification solid bronze of ornamental design and coinage finish obtained without the use of plating or chemicals and equipped with friction springs, or (2) same, equipped with friction clevices, or (3) oxidized bronze with friction clevices.

(Handles 1119, 699 or 198.)

4b SWING leaf operating hardware shall consist of a finger pull solidly attached to the sill of each swing leaf (used with friction hinges where specified) or a solid bronze thumb screw operator (with non-friction hinges).

(Finger Pull 1130 or 1230. Operator 1101 or 203.)
(Double Locking Device in bronze only, where specified, at added cost.)

4c PROVIDE solid bronze peg and stay for all top hung, open-out transoms and a solid bronze, automatic spring catch for all open-in transoms.

(Peg and Stay 1110. Spring Catch 739.)

5 PAINTING

5a ALL casements shall receive one coat of rust resisting primer and one coat of gray lead and oil paint at the factory—each coat to be sprayed on and baked separately.

(Provide for additional coat of paint by the painting contractor after erection of windows and before glazing. Final painting should be deferred until three weeks after glazing to permit putty to set. Where desired, Fenestra Construction Co. will do field painting under a separate contract.)

6 ERECTION

6a ALL casements shall be erected plumb and true and caulked with mastic to form a weather-tight union between window frames and mullions, transom bars or building construction. All hardware shall be applied in accordance with manufacturer's instructions.

(Mastic is supplied—3 lbs. to each 10 lineal feet of perimeter.)
(Include in the masonry specifications, that all masonry openings shall be constructed in accordance with Fenestra installation details so that the windows may be installed after the masonry is completed. Also include that all mortar grouting and pointing shall be done by the mason contractor after the windows have been installed.)

7 GLASS AND GLAZING

7a ALL glass shall be bed puttied and face puttied and further secured by copper-plated, spring glazing clips furnished by the window manufacturer.

(Putty should be high grade, quick setting, steel window putty. Ordinary wood window putty cannot be used. Glass should be ⅛" or ¼" plate. Single or double strength glass is not recommended. Glass and glazing labor is supplied by Fenestra Construction Co. under separate contract if desired.)

8 SHADING

(All shades must be located at least 2½" back from the face of the window to clear hardware. Each casement is drilled at both jambs near the head for the attachment of standard shade brackets.)

9 METAL STOOLS AND SUBFRAMES

(Metal stools and rolled steel or pressed steel subframes can be supplied if specified. Consult the nearest Fenestra office.)

10 FRENCH DOORS

(For use with "Fencraft" and "Screened Fencraft" Casements, Fenestra French Doors of similar design, quality and workmanship can be supplied in standard sizes, where specified. Shop drawings are submitted for the architect's approval before fabrication.)

(By the use of mullions, doors may be combined with side lights and transoms to fill door openings of various sizes.)

(Doors can be made to open in or out. Open-out doors have a heavy, electro-galvanized drip at the head.)

(Open-in doors have a heavy, non-corrosive, extruded drip at the sill. All doors have a double kick plate in the lower panel with wood inserted between 16-gauge steel sheets as a sound deadener. All doors have bronze hinges and pins and extruded bronze thresholds. The active leaf of each door is equipped with a solid bronze locking handle operating a concealed, bronze cremone bolt which actuates three locking bolts. Shot bolts are provided on the opposite leaf. A dead lock is provided to lock the doors from the inside. All doors are glazed from the outside.)

(Screens for French Doors are not supplied by Detroit Steel Products Co.)

"FENCRAFT" OPEN-IN CASEMENTS

SPECIFICATIONS

1 GENERAL

1a ALL windows shall be Fenestra "Fencraft" Open-In Casements as manufactured by Detroit Steel Products Company.

(Standard Types of "Fencraft" Open-In Casements are 2214 Bottom Hung and CH 2. Also 22, 2214 R-L, 23, 2316 R-L, 24, 2418 R-L, 25, 25-1-10 R-L, as shown on Plate A 515.)

(Top hung open-out transom units may be used in combination with open-in casement units if desired.)

2 MATERIAL AND CONSTRUCTION

(Same as "Fencraft" Casements 2a, 2b, 2c, except that Heavy electro-galvanized steel drip is supplied at the sill of all side hung swing leaves.)

3 ATTACHED HARDWARE

3a HINGES for side hung swing leaves and for top hung open-out transoms and bottom hung open-in transoms shall be heavy, flush, sherardized, wrought steel with bronze hinge pins.

3b LOCKING handle bracket shall be solid rolled steel of ornamental design, electrically welded to the swing leaf stile.

4 DETACHED HARDWARE

4a ALL locking handles shall be (1) U. S. Government specification, solid bronze, of ornamental design and coinage finish obtained without the use of plating or chemicals and equipped with friction springs, or (2) same equipped with friction clevices.

(Handles 1119 or 1299. Double locking device in bronze where necessary at added cost.)

4b PROVIDE solid bronze peg and stay for all top hung open-out transoms and solid bronze automatic spring catch for all bottom hung open-in transoms.

(Peg and Stay 1110. Spring Catch 739.)

4c PROVIDE bronze strikes and wrought steel keepers attached to the casement frame as required.

4d EACH side hung swing leaf and each bottom hung open-in transom shall be provided with flat type friction adjuster consisting of a solid bronze arm and sliding adjustable friction shoe moving in a bronze channel attached to the frame in such a manner as to be entirely concealed when the casement is closed.

(No other adjusters are necessary on "Fencraft" Open-In Casements.)

5 PAINTING

(Same as "Fencraft" Casements 5a.)

6 ERECTION

(Same as "Fencraft" Casements 6a.)

7 GLASS AND GLAZING

(Same as "Fencraft" Casements 7a.)

8 SHADING

(Care should be taken to attach shade and drapery brackets to the building construction in such a manner as to clear the open-in swing leaves. At extra cost, casements may be drilled in the field so that shades or glass curtains may be attached directly to the swing leaves. When this is done, jambs should be kept back 2" from the window on the inside to avoid fouling.)

9 METAL STOOLS AND SUBFRAMES

(Same as "Fencraft" Casements 9.)

10 SCREENS

SCREENS, where used, should be installed on the outside and should be kept 1½" from the face of the window to clear sill drip.

11 FRENCH DOORS

(Same as "Fencraft" Casements 10.)

SCREENED "FENCRAFT" CASEMENTS

SPECIFICATIONS

1 GENERAL

1a ALL windows shall be Fenestra Screened "Fencraft" Casements as manufactured by the Detroit Steel Products Company.

2 MATERIAL AND CONSTRUCTION

(Same as "Fencraft" Casements—2a, 2b, 2c.)

3 ATTACHED HARDWARE

3a ALL side hung swing leaves shall open out on heavy (cleaning) hinges of solid rolled, sherardized steel with heavy reentrant angle fillets. Hinge pins shall be solid bronze, accurately fitted into flanged bronze bushings.

3b ALL top hung, open-out transoms shall be hung on heavy, flush sherardized wrought steel hinges with bronze hinge pins.

(Bottom hung, open-in transoms are not supplied in Screened Fencraft Casements.)

3c EACH swing leaf shall be provided with a malleable iron keeper both riveted and welded to the swing leaf stile.

4 DETACHED HARDWARE

4a HANDLE brackets shall be ornamental die castings designed to accommodate and entirely conceal the locking cam and swing leaf keeper when the casement is closed.

4b ALL locking handles shall be equipped with lock washers and shall be: (1) U. S. Government specification solid bronze of ornamental design and coinage finish obtained without the use of plating or chemicals; or (2) solid bronze with oxidized finish.

(Handles 1222 or 1023.)
(Handles and handle brackets are assembled at the factory and are designed to be attached to the casement stile by concealed screws.)

4c ALL handles shall be designed with a hinge action to permit their slipping through screen escutcheons.

4d AN adjuster shall be provided at the sill of each casement so that the swing leaf may be opened and closed through the screen, but without touching it. Each adjuster shall consist of a solid bronze arm with fulcrum bracket, equipped with friction plate and thumb screw.

(Adjusters 1133 or 1216.)

4e ADJUSTER for top hung open-out transoms shall be of the notched stay type; (1) U. S. specification bronze or (2) solid bronze, oxidized;—designed to operate through the screen without touching it.

(Stay Adjuster 1108.)

5 PAINTING

(Same as "Fencraft" Casements 5a.)

6 ERECTION

(Same as "Fencraft" Casements 6a.)

7 GLASS AND GLAZING

(Same as "Fencraft" Casements 7a.)

8 SHADING

(Same as "Fencraft" Casements 8.)

9 METAL STOOLS, SUBFRAMES

(Same as "Fencraft" Casements 9.)

10 SCREENS

10a SCREENS shall set flat against the inside of the casement frame with locking handles and adjusters extending through the screens so that casements may be opened or closed or locked without touching the screens.

Screen frames shall be cold rolled, rust proofed steel containing a triangular reinforcing brace running the full length of the stile and shall be painted two coats of grey lead and oil, baked on. Screen cloth shall be 16-mesh oxidized bronze wire, held taut by a cap removable for rewiring. Each screen shall be provided with a 22-gauge steel escutcheon with circular hole to fit over and around the locking handle.

(Screens with bronze frames and escutcheon or with finer mesh may be had at extra cost.)

11 FRENCH DOORS

(Same as "Fencraft" Casements 10.)



Handle
699 for C



Handle
198 for B



Handle
1119 for D

Series D & C
U.S. Specification Bronze,
Coinage finish, Polished.~
Series B
Solid Bronze, Oxidized finish



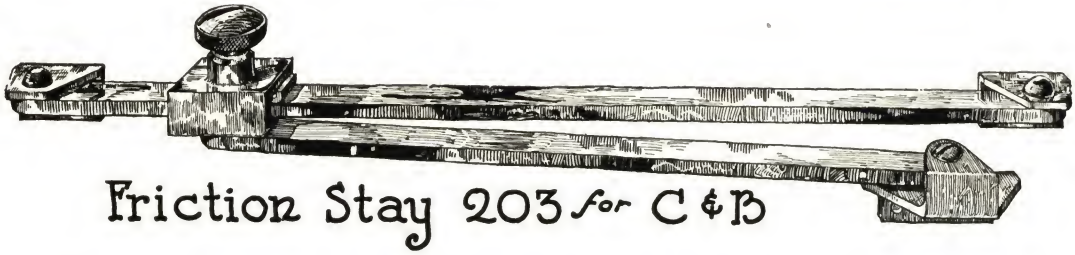
Finger
Pull 1130 for D



Finger
Pull 1230 for C & B



Friction Stay 1101 for D



Friction Stay 203 for C & B

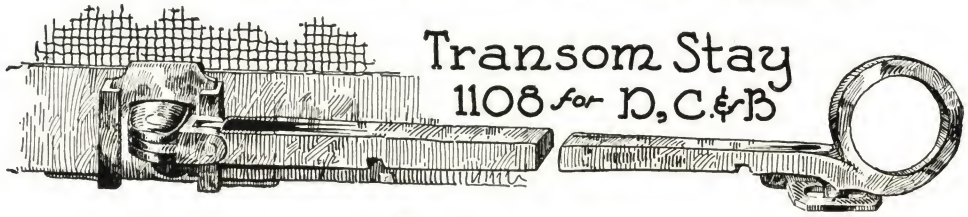
Fenestra
1931

FENCRAFT CASEMENTS HARDWARE

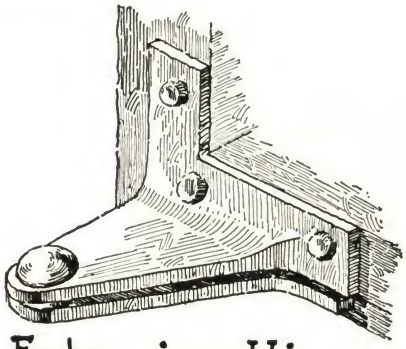
Plate No
A-407



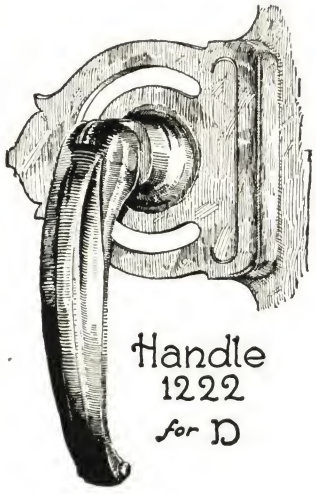
Transom Stay 1110 for D
1210 for C & B



Transom Stay
1108 for D, C & B

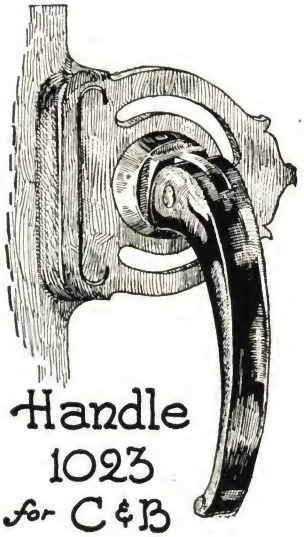


Extension Hinge



Handle
1222
for D

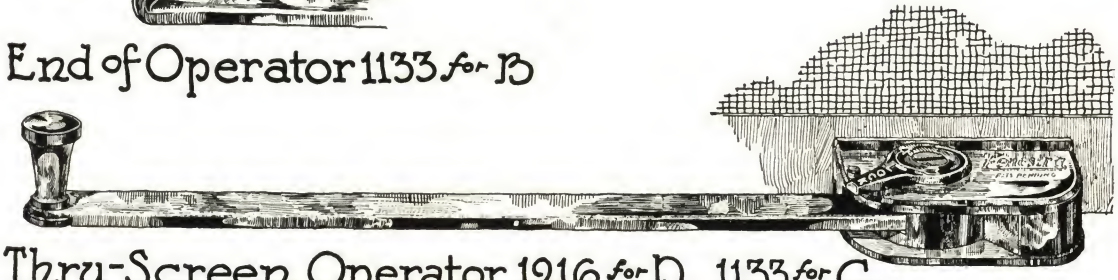
"Series D & C"
U.S. Specification Bronze,
Coinage finish, Polished.
"Series B"
Solid Bronze, Oxidized finish



Handle
1023
for C & B



End of Operator 1133 for B



Thru-Screen Operator 1216 for D, 1133 for C

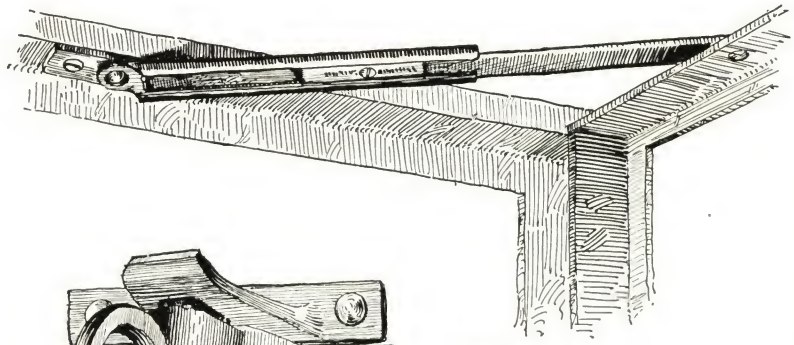
Fenestra 1931

FENCRAFT CASEMENTS HARDWARE

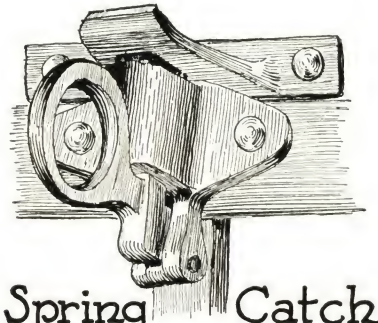
Plate No A-408



Handle
No. 1119
for D



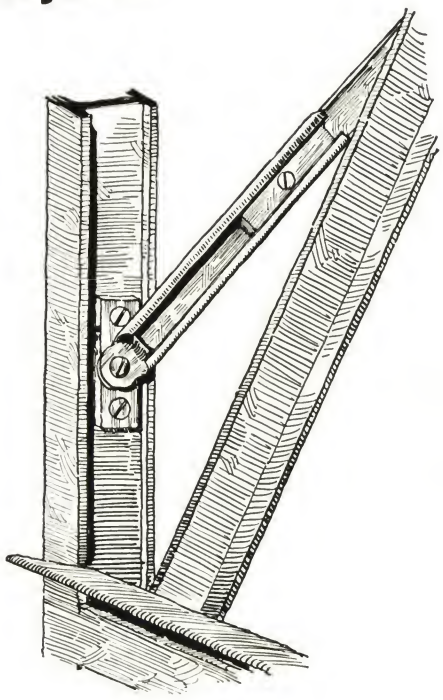
Friction
Adjuster



Spring Catch
739 for D, C & B



Handle
1299 for C



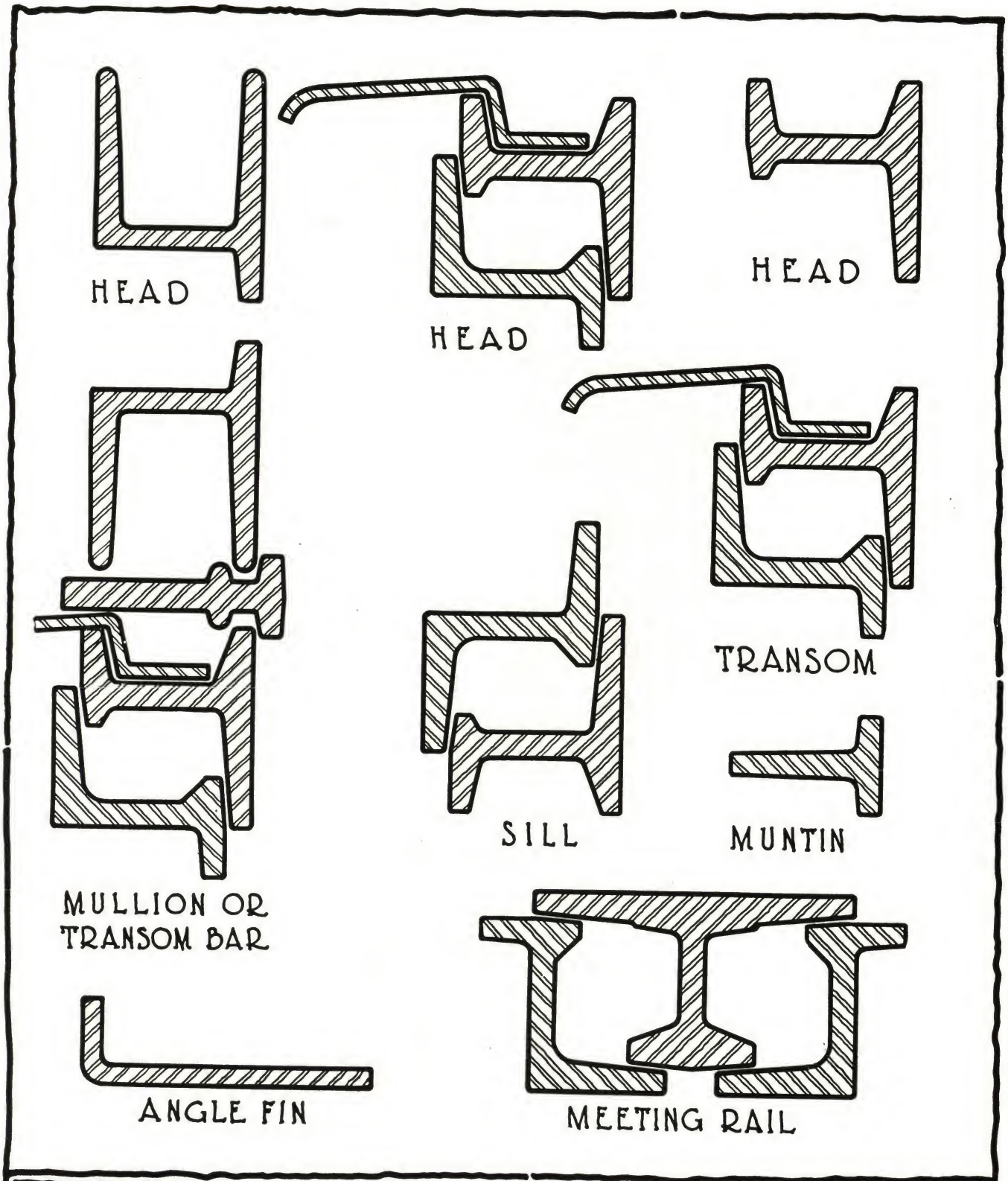
Friction
Side Arm

* Series D & C *
U.S. Specification Bronze,
Coinage finish, Polished.
* Series B *
Solid Bronze, Oxidized finish

Fenestra 1931

FENCRAFT CASEMENTS
HARDWARE

Plate No A-409

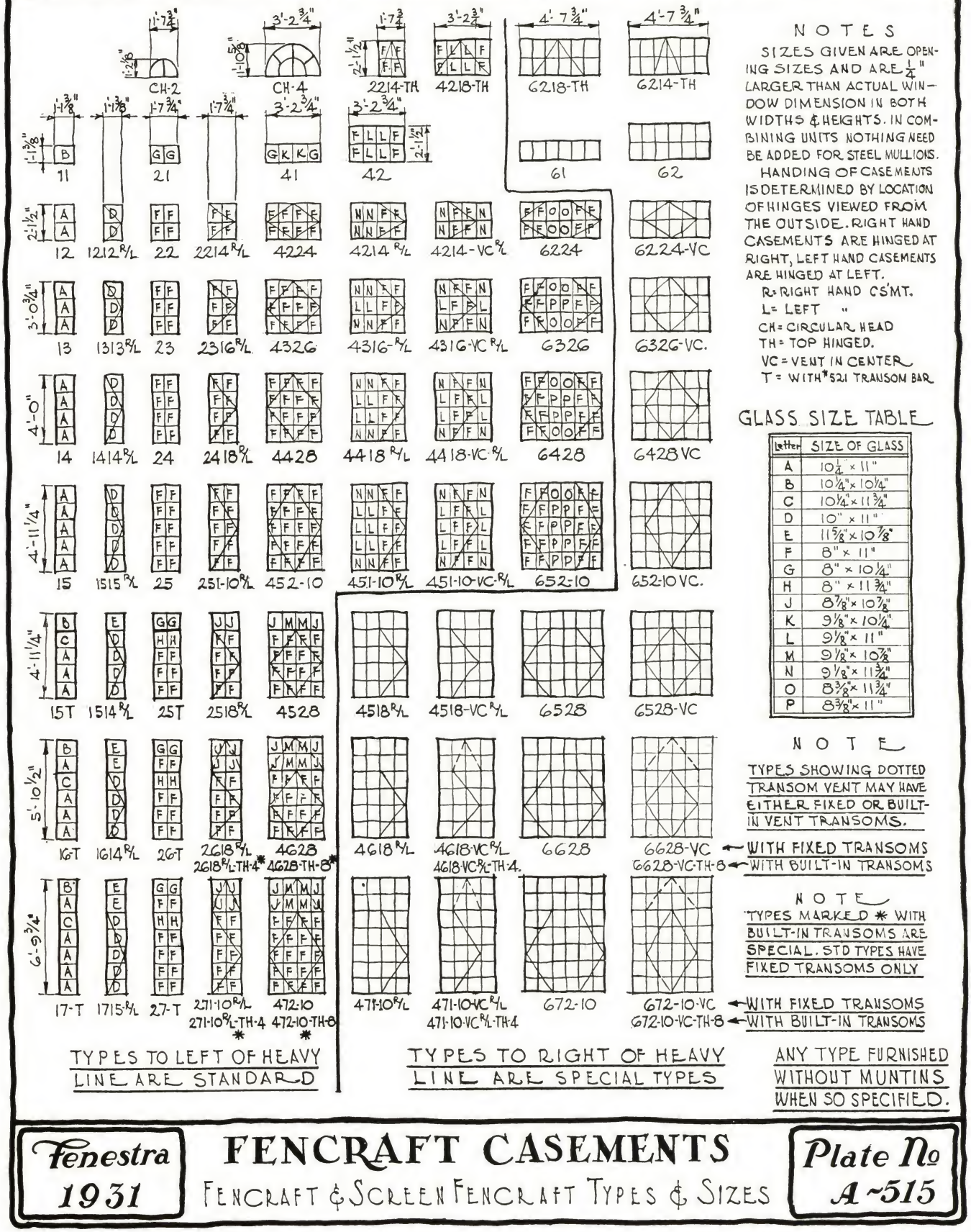


Fenestra 1930

SCREENED FENCRAFT

FULL SIZE SECTIONS

Plate No A-501



NOTES

SIZES GIVEN ARE OPENING SIZES AND ARE 1/4" LARGER THAN ACTUAL WINDOW DIMENSION IN BOTH WIDTHS & HEIGHTS. IN COMBINING UNITS NOTHING NEED BE ADDED FOR STEEL MULLIONS.

HANDING OF CASEMENTS IS DETERMINED BY LOCATION OF HINGES VIEWED FROM THE OUTSIDE. RIGHT HAND CASEMENTS ARE HINGED AT RIGHT, LEFT HAND CASEMENTS ARE HINGED AT LEFT.

R = RIGHT HAND CS'MT.
L = LEFT "
CH = CIRCULAR HEAD
TH = TOP HINGED.
VC = VENT IN CENTER
T = WITH "521 TRANSOM BAR

GLASS SIZE TABLE

Letter	SIZE OF GLASS
A	10 1/4 × 11"
B	10 1/4" × 10 1/4"
C	10 1/4" × 11 3/4"
D	10" × 11"
E	11 5/8" × 10 7/8"
F	8" × 11"
G	8" × 10 1/4"
H	8" × 11 3/4"
J	8 7/8" × 10 7/8"
K	9 1/8" × 10 1/4"
L	9 1/8" × 11"
M	9 1/8" × 10 3/8"
N	9 1/8" × 11 3/4"
O	8 3/8" × 11 3/4"
P	8 3/8" × 11"

NOTE

TYPES SHOWING DOTTED TRANSOM VENT MAY HAVE EITHER FIXED OR BUILT-IN VENT TRANSOMS.

← WITH FIXED TRANSOMS
← WITH BUILT-IN TRANSOMS

NOTE

TYPES MARKED * WITH BUILT-IN TRANSOMS ARE SPECIAL. STD TYPES HAVE FIXED TRANSOMS ONLY

← WITH FIXED TRANSOMS
← WITH BUILT-IN TRANSOMS

TYPES TO LEFT OF HEAVY LINE ARE STANDARD

TYPES TO RIGHT OF HEAVY LINE ARE SPECIAL TYPES

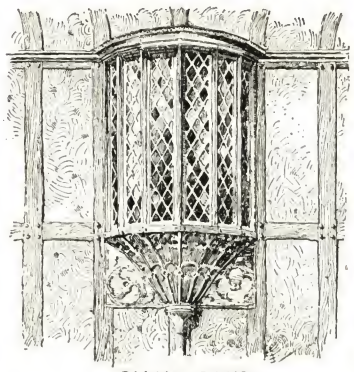
ANY TYPE FURNISHED WITHOUT MUNTINS WHEN SO SPECIFIED.

Fenestra 1931

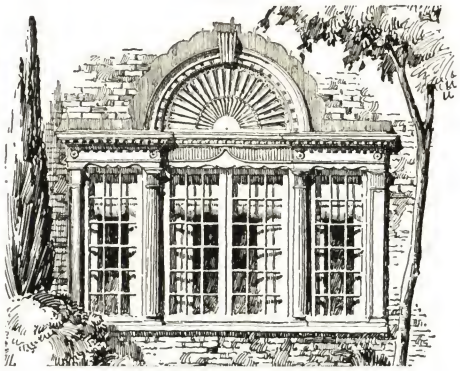
FENCRAFT CASEMENTS

FENCRAFT & SCREEN FENCRAFT TYPES & SIZES

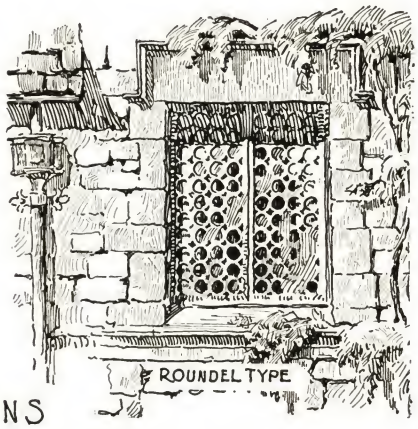
Plate No A-515



DIAMOND TYPE

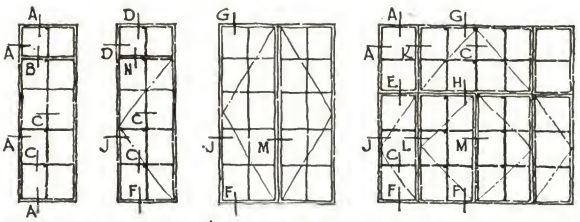


RECTANGULAR TYPE

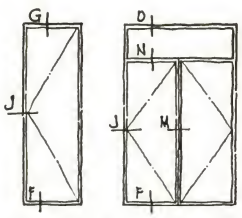


ROUNDEL TYPE

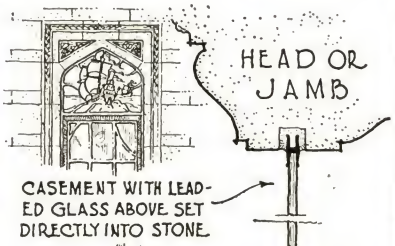
TYPICAL LEADED GLASS DESIGNS



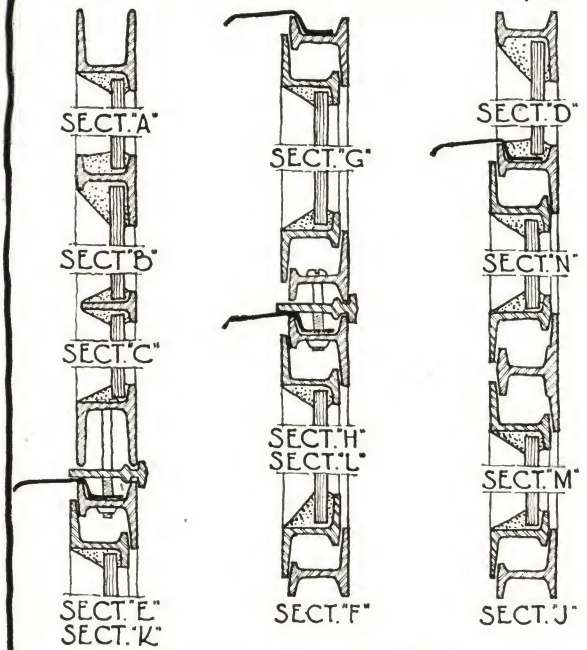
TYPICAL TYPES & COMBINATIONS WITH MUNTINS



TYPICAL TYPES WITHOUT MUNTINS



(DRIP IS OMITTED ON SECTIONS "K" & "L")



TYPICAL SECTION DETAILS

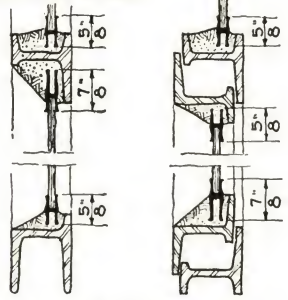
¼ SIZE ~ FOR FULL SIZE SECTIONS SEE PL. № A-501

NOTES

TYPES & SIZES SHOWN ON PLATE № A-515 ~ ~ ~ ~

DETAILS AT LEFT SHOW SECTIONS OF TYPES WITH OR WITHOUT MUNTINS & GLAZED WITH CLEAR GLASS. DETAILS AT RIGHT SHOW LEADED GLAZING WITH RECOMMENDED WIDTHS OF CAMES. ~

CLEAR OR LEADED GLASS OR GLAZING NOT BY D.S.P. CO. ~



LEADED GLAZING IN FENCRAFT SECTS.

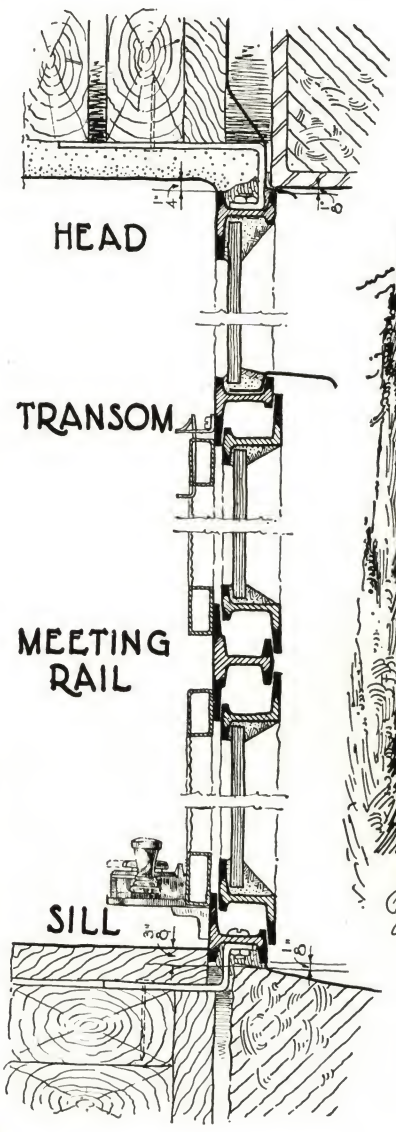
FENCRAFT SYMMETRICAL WIDTHS

WIDTH OF OPENING	LIGHTS IN WIDTH	UNITS IN WIDTH	ARRANGEMENT OF UNITS	MULLIONS REQUIRED
1'-1 3/8"	1	1	1	0
1'-7 3/4"	2	1	2	0
3'-2 3/4"	4	1	4	0
3'-3 1/2"	4	2	2-2	1
4'-7 3/4"	6	1	6	0
4'-11 1/4"	6	3	2-2-2	2
5'-5 1/2"	6	3	1-4-1	2
6'-5 1/2"	8	2	4-4	1
6'-6 1/4"	8	3	2-4-2	2
6'-7"	8	4	2-2-2-2	3

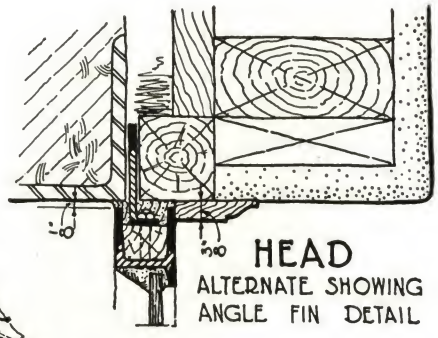
Fenestra 1931

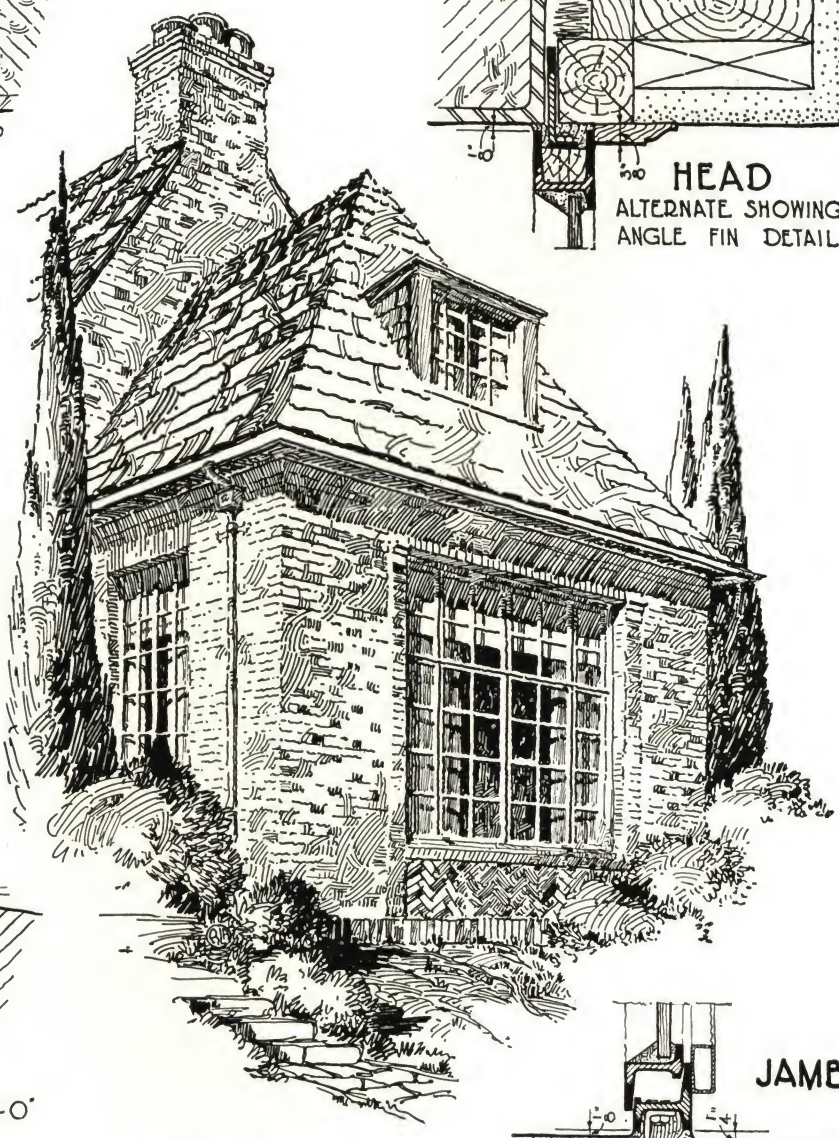
FENCRAFT CASEMENTS
GLAZING & GENERAL DETAILS

Plate № A-516

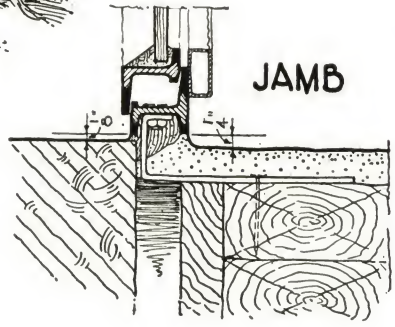


SCALE OF DETAILS - 3"-1'-0"





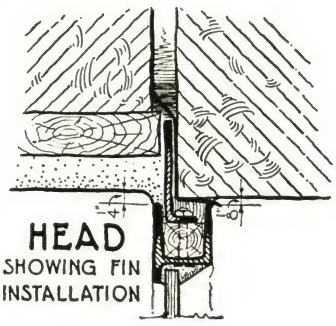
SET ALL CASEMENTS IN MASTIC CEMENT WHERE THEY COME IN CONTACT WITH BUILDING WORK



Fenestra 1930

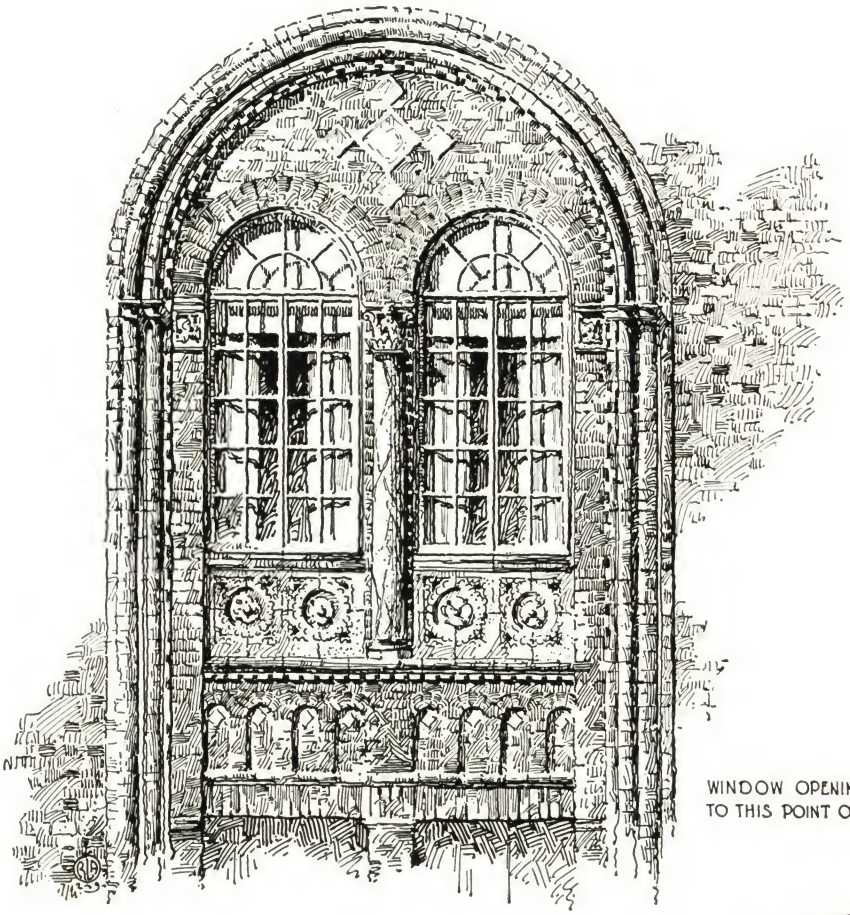
SCREENED FENCRAFT BRICK VENEER INSTALLATION

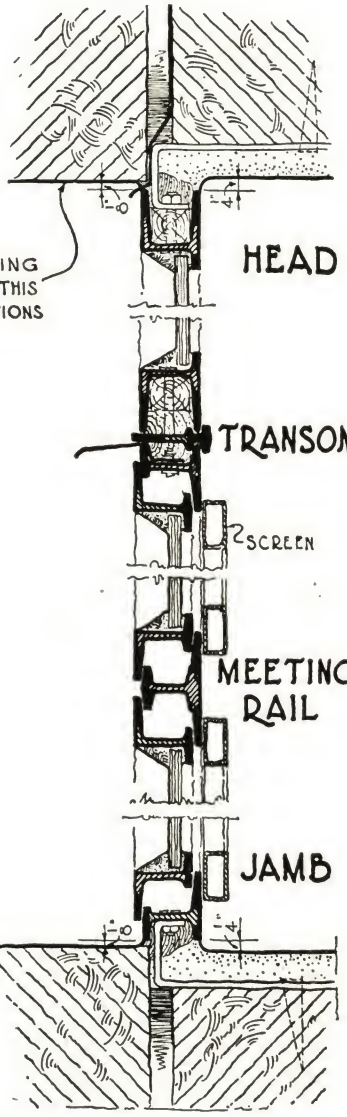
Plate No A 505

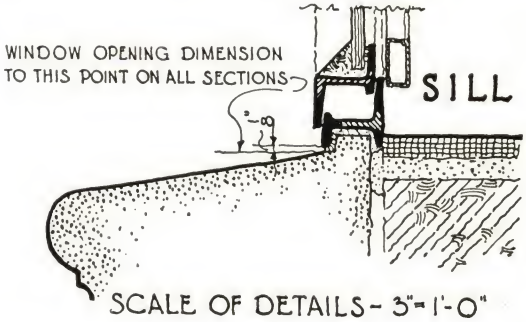


HEAD
SHOWING FIN
INSTALLATION

SET ALL CASEMENTS IN MASTIC CEMENT WHERE THEY COME IN CONTACT WITH BUILDING WORK. AND CAULK ON OUTSIDE





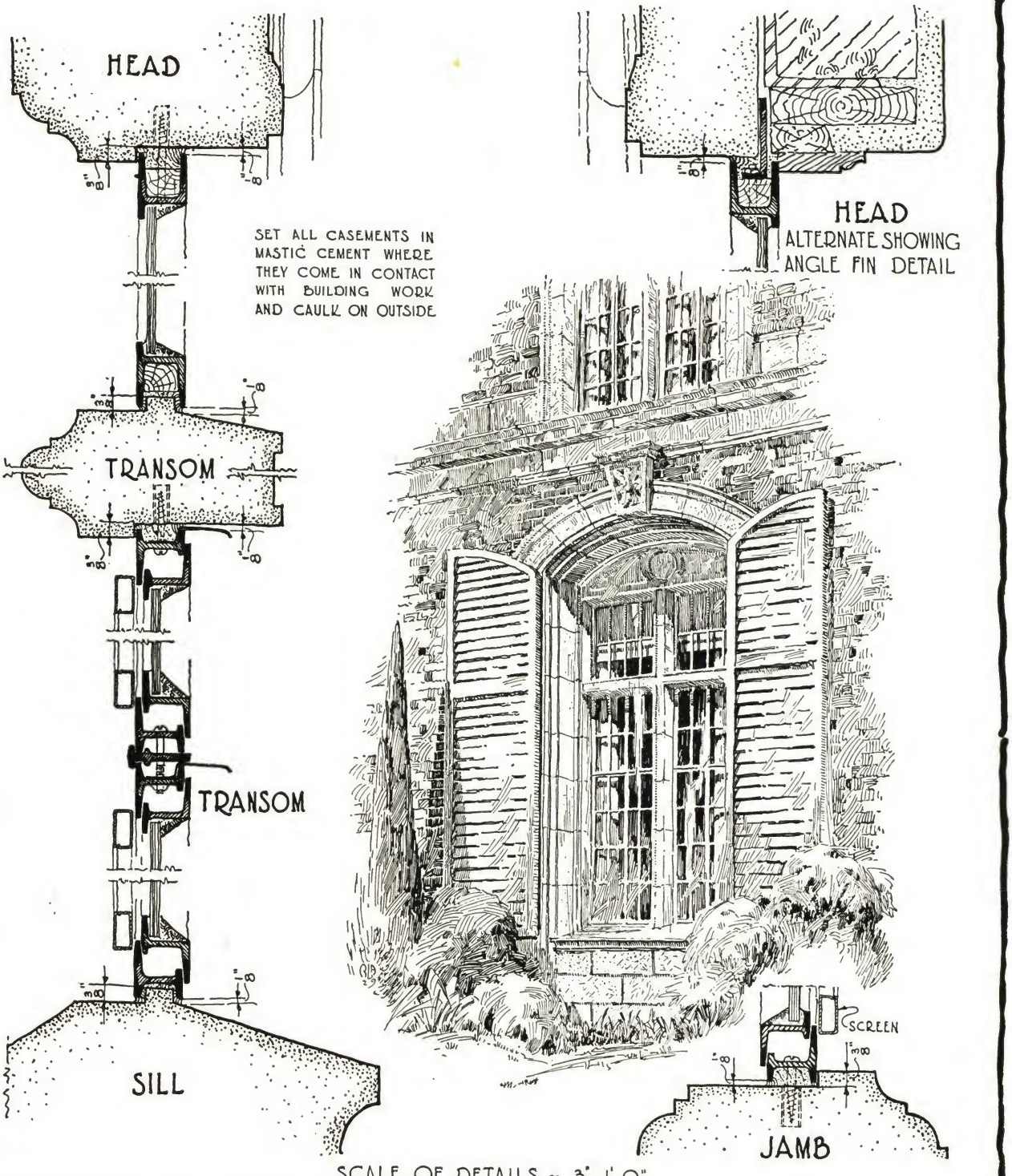


SCALE OF DETAILS - 3"=1'-0"

Fenestra 1930

SCREENED FENCRAFT BRICK - INSTALLATION

Plate No A 506

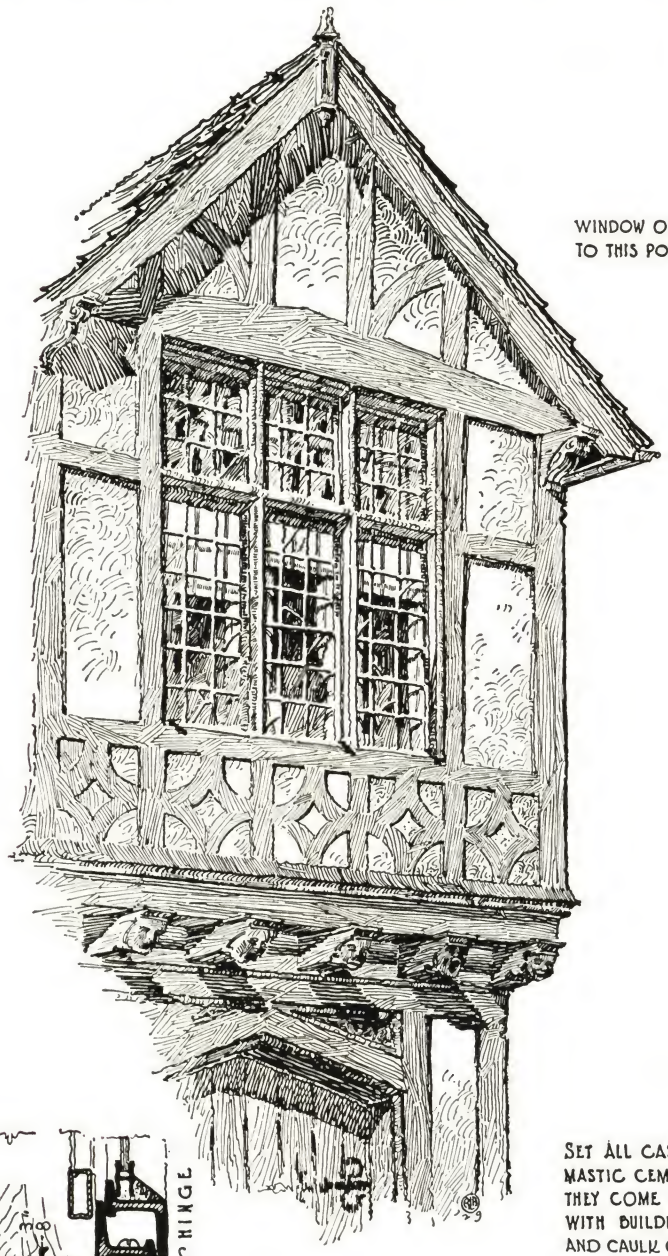


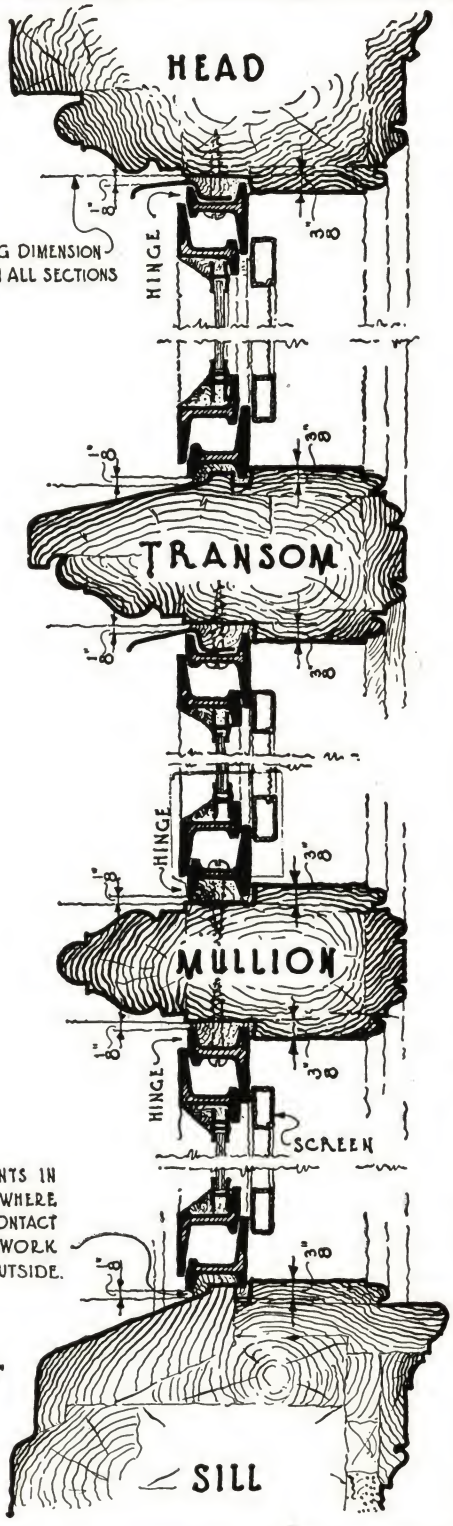
SCALE OF DETAILS ~ 3"-1'-0"

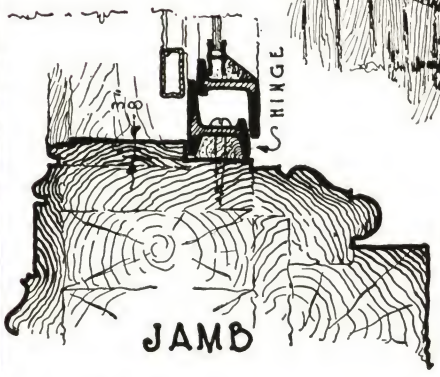
Fenestra 1930

SCREENED FENCRAFT STONE INSTALLATIONS

Plate No A 507







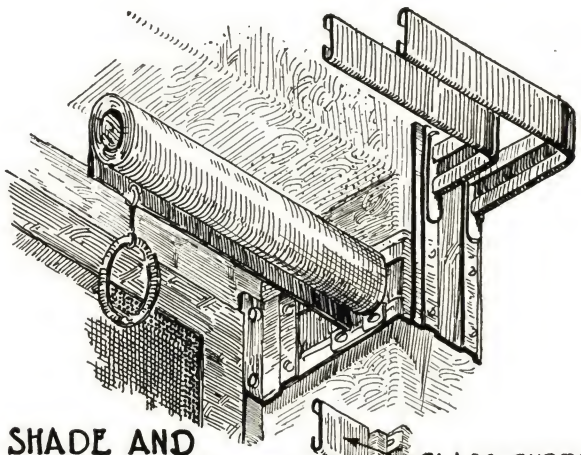
SET ALL CASEMENTS IN MASTIC CEMENT WHERE THEY COME IN CONTACT WITH BUILDING WORK AND CAULK ON OUTSIDE.

SCALE OF DETAILS 3"=1'-0"

Fenestra 1930

SCREENED FENCRAFT WOOD INSTALLATION

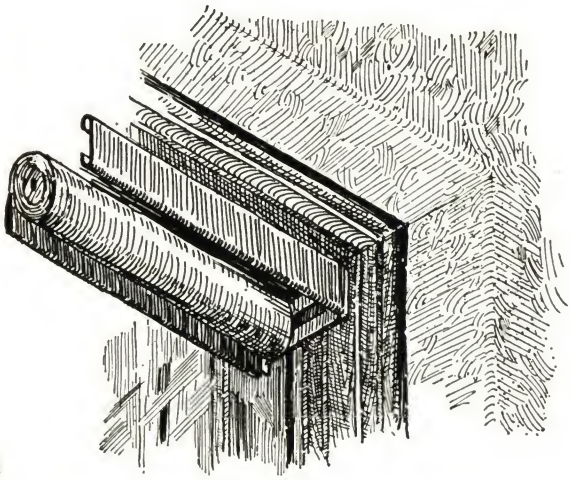
Plate No A 508



SHADE AND DRAPERY BRACKET SUGGESTED FOR OPEN OUT SWING LEAVES



GLASS CURTAIN ROD USED IN PLACE OF SHADE ROLLER.



SHADE & DRAPERY BRACKET AND SUGGESTED ATTACHMENT TO OPEN IN SWING LEAVES.

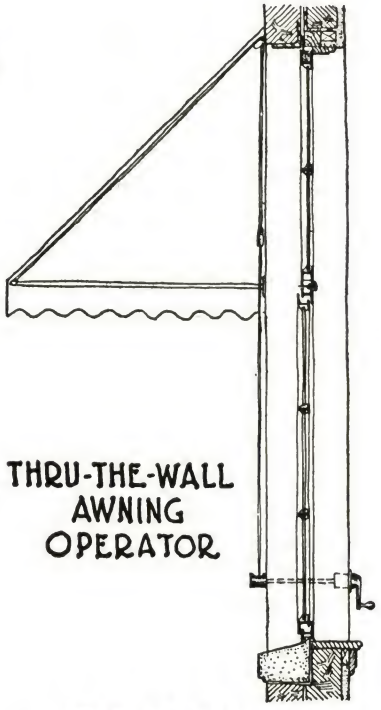
NOTES

SCREENED CASEMENTS ARE DRILLED FOR ATTACHMENT OF SHADE & DRAPERY BRACKETS, BUT NEITHER BRACKETS NOR AWNING OPERATORS ARE FURNISHED BY DETROIT STEEL PRODUCTS COMPANY.

AT EXTRA COST OPEN IN CASEMENTS MAY BE DRILLED AND TAPPED IN THE FIELD FOR ATTACHMENT OF SHADE AND DRAPERY BRACKETS DIRECT TO THE SWING LEAVES.

LEAVE MINIMUM CLEARANCE OF 2" FROM SASH TO REVEAL IF BRACKET IS ATTACHED TO OPEN IN LEAF. SEE PLATE NO. A-303.





THRU-THE-WALL AWNING OPERATOR

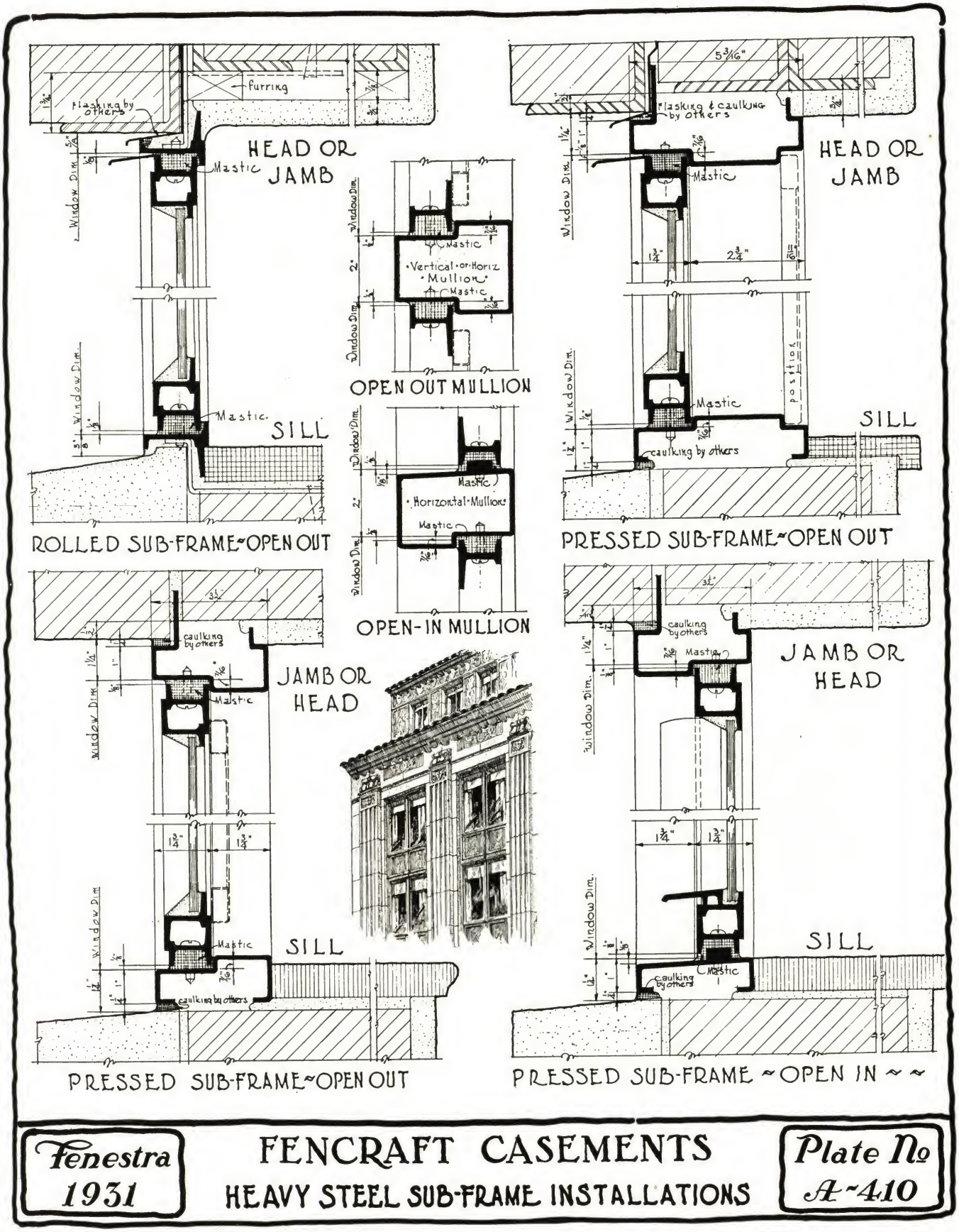
VERTICAL SECTION.

Fenestra 1930

FENESTRA CASEMENTS

DRAPING & AWNING OPERATOR SUGGESTIONS

Plate No. A-510



Fenestra 1931

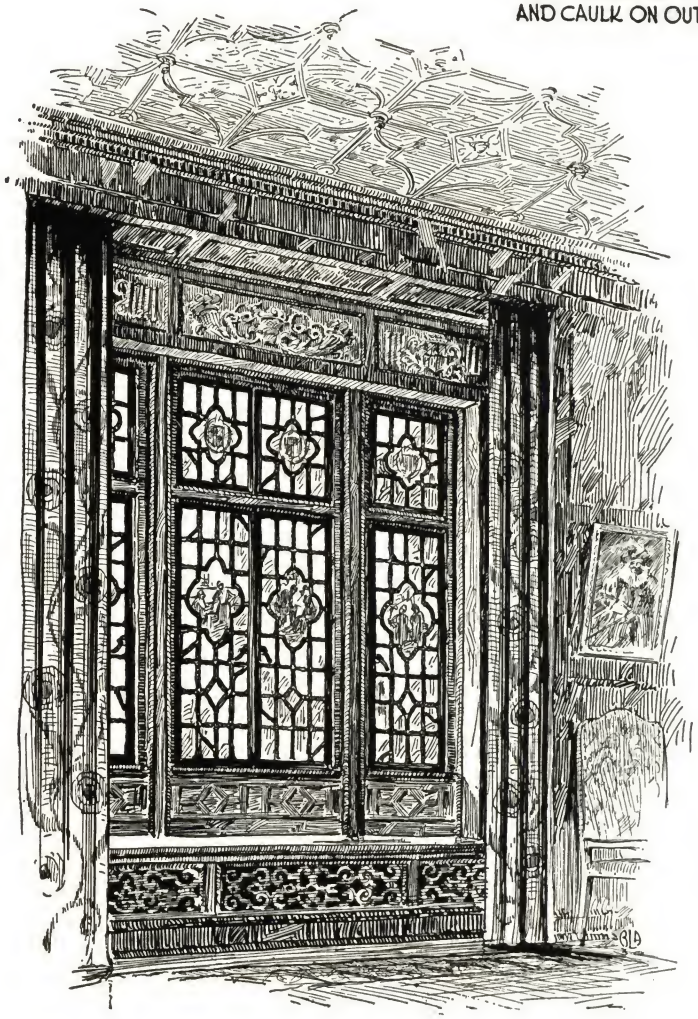
FENCRAFT CASEMENTS

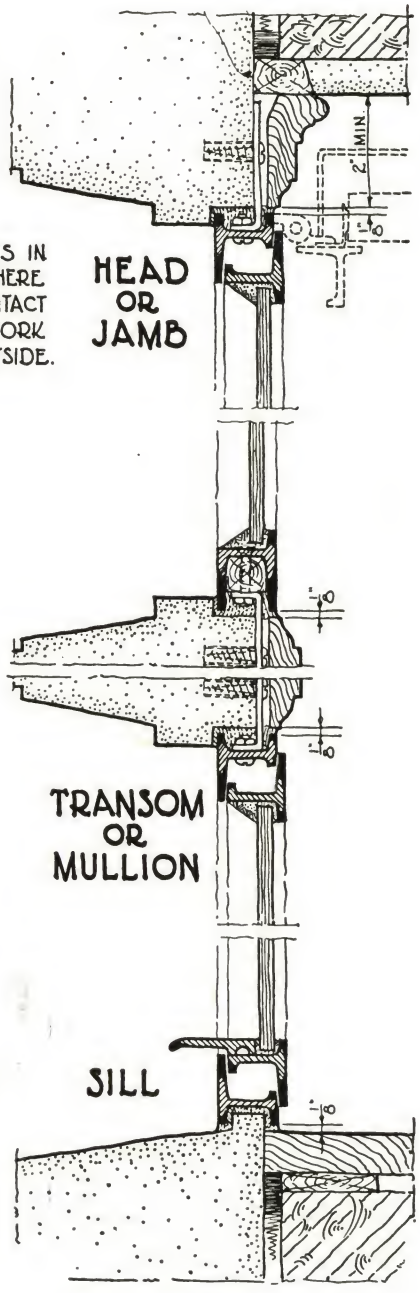
HEAVY STEEL SUB-FRAME INSTALLATIONS

Plate No A-410

A MINIMUM DIMENSION OF 2" FROM SASH TO REVEAL AT JAMB IS REQUIRED FOR CLEARANCE WHEN SHADE AND DRAPERY BRACKET IS ATTACHED TO SWING LEAF. SEE DETAIL AT RIGHT.

SET ALL CASEMENTS IN MASTIC CEMENT WHERE THEY COME IN CONTACT WITH BUILDING WORK AND CAULK ON OUTSIDE.





SCALE OF DETAILS - 3"-1'-0"

Fenestra 1930

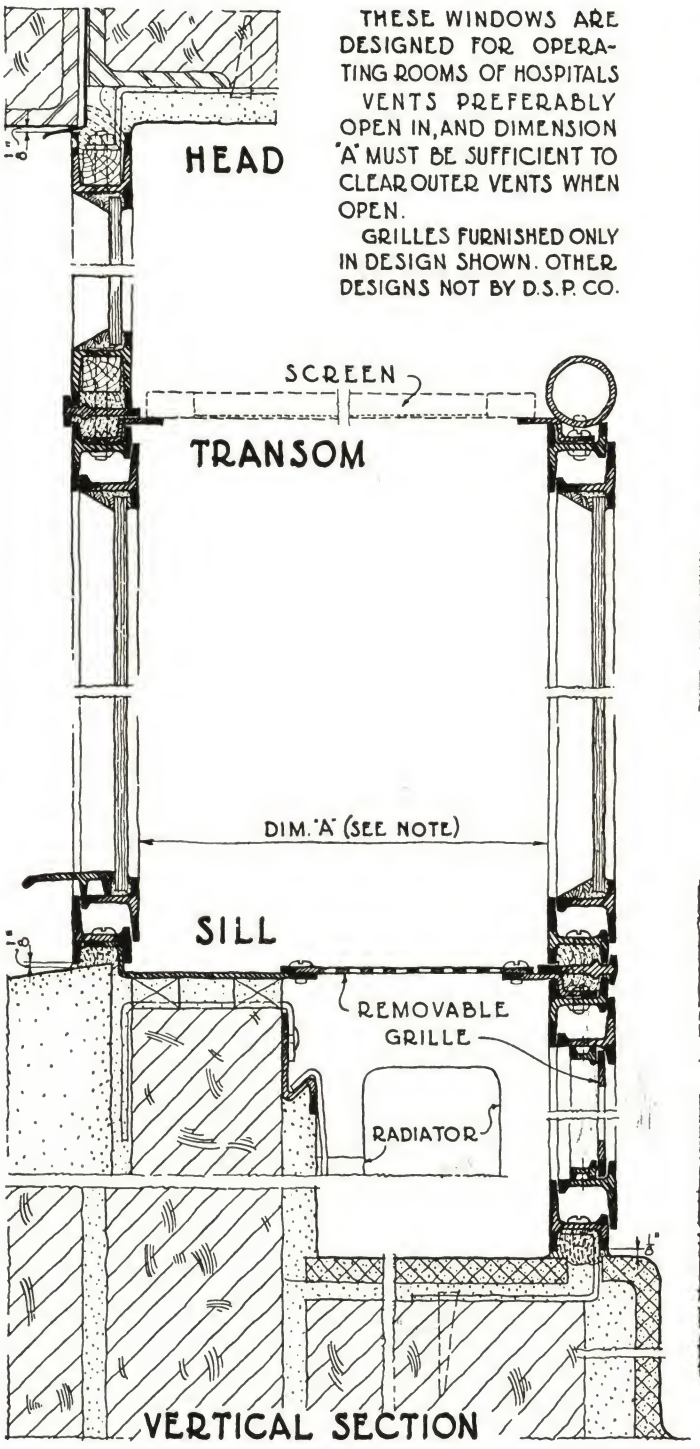
FENCRAFT OPEN IN TYPICAL INSTALLATION

Plate No. A-303

THESE WINDOWS ARE DESIGNED FOR OPERATING ROOMS OF HOSPITALS

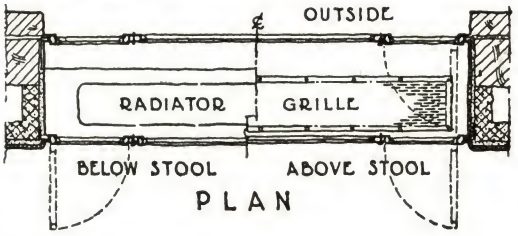
VENTS PREFERABLY OPEN IN, AND DIMENSION "A" MUST BE SUFFICIENT TO CLEAR OUTER VENTS WHEN OPEN.

GRILLES FURNISHED ONLY IN DESIGN SHOWN. OTHER DESIGNS NOT BY D.S.P. CO.

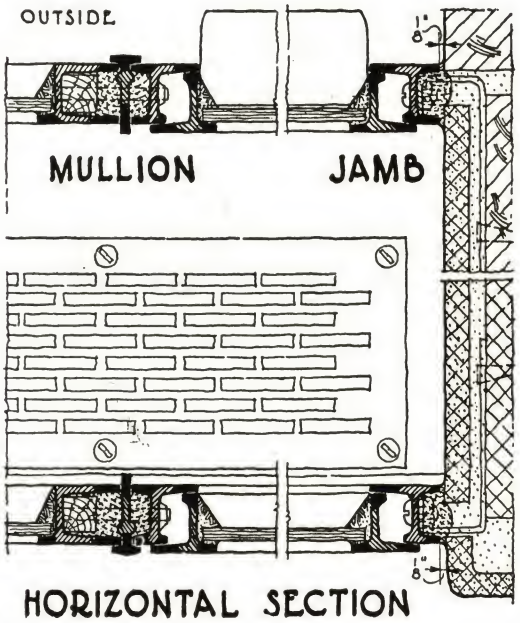


VERTICAL SECTION





PLAN

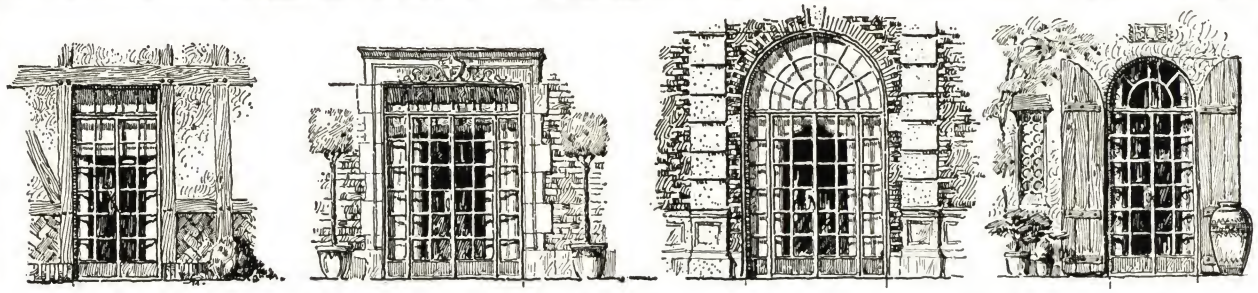


HORIZONTAL SECTION

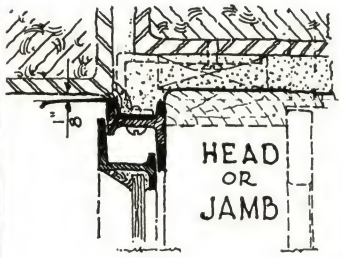
Fenestra 1930

FENCRAFT OPEN IN OPERATING ROOM INSTALLATION.

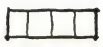
Plate No A-304

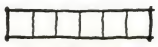


TYPICAL COMBINATIONS WITH SIDELIGHTS & TRANSOMS

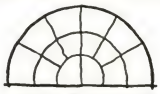


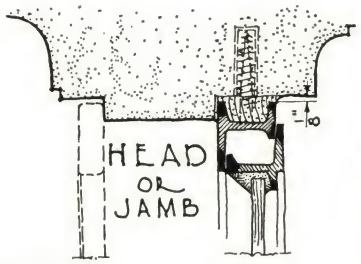

17-D SIDELIGHT

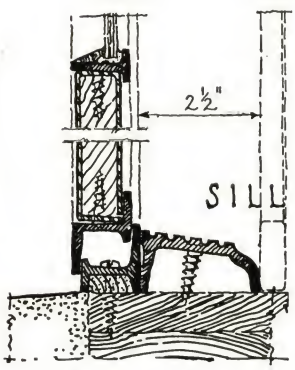

41-D TRANSOM
OVER DOOR ONLY

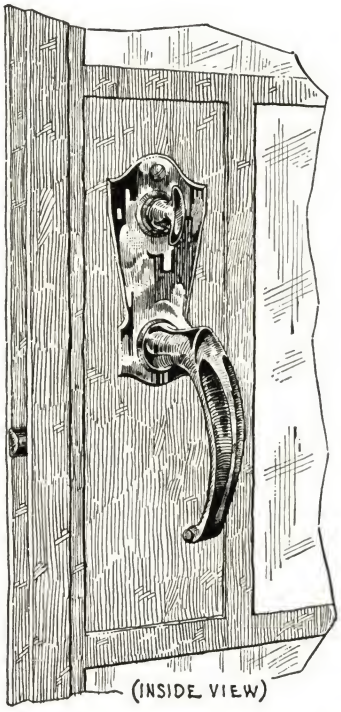

61-D TRANSOM
OVER DOOR & SIDELIGHT


CH-4-D TRANSOM
OVER DOOR ONLY

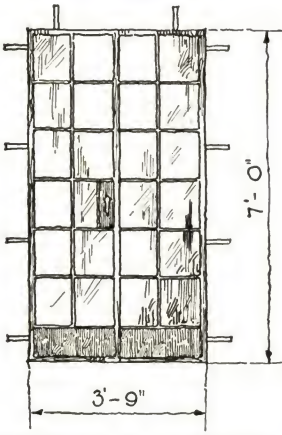

CH-6-D TRANSOM
OVER DOOR & SIDELIGHT



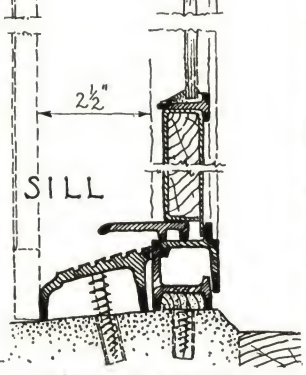



(INSIDE VIEW)

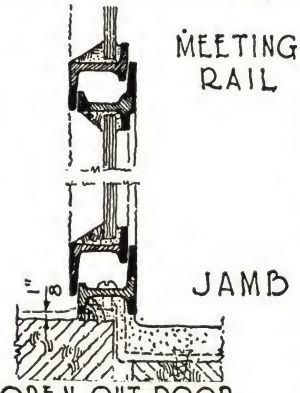
HANDLE OF CREMONE BOLT AND LOCK



OUTSIDE ELEVATION OF DOOR UNIT

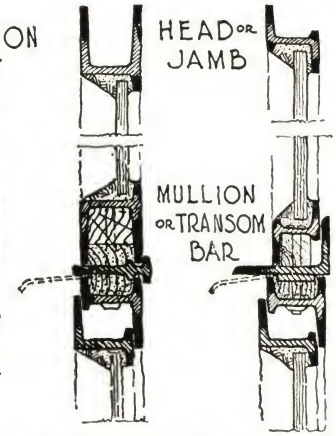


OPEN IN DOOR



OPEN OUT DOOR


BRONZE BUTT



DOOR COMBINED WITH FENCRAFT SIDELIGHT OR TRANS.

DOOR COMBINED WITH FENWROUGHT SIDELIGHT OR TRANS.

N O T E S

EACH LEAF OF DOOR IS FITTED WITH THREE BRONZE BUTTS

RIGHT HAND LEAF HAS CONCEALED BRONZE SHOT BOLTS. LEFT HAND LEAF HAS CONCEALED BRONZE CREMONE BOLTS WITH BRONZE HANDLES & MAY HAVE THUMB LATCH (INSIDE), CYLINDER OUTSIDE & THUMB LATCH INSIDE, OR CYLINDERS BOTH SIDES AS SPECIFIED.

Fenestra 1931

FENESTRA CASEMENT DOOR

WITH FENCRAFT & FENWROUGHT SIDELIGHTS

Plate No B-301

SCREENED "FENWROUGHT" CASEMENTS

SPECIFICATIONS

1 GENERAL

1a ALL windows shall be Fenestra Screened "Fenwrought" as manufactured by Detroit Steel Products Company.

2 MATERIAL AND WORKMANSHIP

2a FRAME sections shall have a minimum depth of 1" from front to back. Frames and swing leaves shall be hot rolled, solid steel, providing continuous, two-point, flat weathering contact between swing leaves and frame and shall be further weathered by baffles at both inner and outer contacts.

2b FRAMES and swing leaves shall be mitered at all corners and electrically butt welded. Welds shall be ground to a smooth finish.

(Mullions or transom bars are provided between adjacent units as specified.)

(Heavy, electro-galvanized steel drip is supplied over all swing leaves, coming to the head of the window.)

(Sill and jamb anchor clips with bolts for attachment to frame are supplied where required.)

3 ATTACHED HARDWARE

3a ALL side hung swing leaves shall open out on heavy extension (cleaning) hinges of special, solid rolled steel with heavy re-entrant angle fillets. Hinge pins shall be solid bronze accurately fitted into flanged bronze bushings.

3b ALL top hung open-out transoms shall be hung on heavy, flush, sherardized, wrought steel hinges with bronze hinge pins.

3c PROVIDE a locking handle bracket of heavy gauge steel plate stamped to special design and solidly attached to the frame section.

(On units with one swing leaf, the bracket is welded to the frame section. Specify whether leaf is desired left or right handed. Where window contains two swing leaves, the bracket is screwed to the vertical meeting rail.)

3d PROVIDE a specially rolled steel keeper welded to each swing leaf stile.

4 DETACHED HARDWARE

4a ALL locking handles shall be of ornamental design and shall be (1) malleable iron with dull black finish, or (2) solid bronze, coinage finish.

(Handle 1023.)

4b ALL handles shall be designed with a hinge action to permit their slipping through the screen escutcheon.

4c AN adjuster shall be provided at the sill of each casement so that the swing leaves may be opened and closed through the screen, but without touching it. Each adjuster shall consist of a solid bronze arm with fulcrum bracket and locking lever, coinage finish or oxidized.

(Through Screen Operator 1133.)

4d ADJUSTERS for top hung, open-out transoms shall be of the notched stay type designed to operate through the screen, but without touching it. Furnished in coinage or oxidized finish.

(Transom Stay 1108.)

5 PAINTING

5a ALL casements shall receive one dip coat of gray lead and oil paint by the manufacturer before shipment.

(Provide for additional coat of paint by the painting contractor after erection of windows and before glazing. Final painting should be deferred until three weeks after glazing to permit putty to set. Where desired, Fenestra Construction Co. will do field painting under a separate contract.)

6 ERECTION

6a ALL casements shall be set plumb and true and caulked with mastic to form a weather-tight union between window frames and mullions, transom bars or building construction. All hardware shall be applied in accordance with manufacturer's instructions.

(Mastic is supplied—1 lb. to each 10 lineal feet of perimeter.)

(Include in the masonry specifications that all masonry openings shall be constructed in accordance with Fenestra installation details so that windows may be installed after the masonry is completed. Also, include that all mortar grouting and pointing shall be done by the mason contractor after the windows have been installed.)

7 GLASS AND GLAZING

7a ALL glass shall be bed puttied and face puttied and further secured by copper plated, spring glazing clips furnished by the window manufacturer.

(Putty should be high grade, quick setting, steel window putty. Ordinary wood sash putty cannot be used. Glass should be 1/8" or 1/4" plate. Double strength recommended for small lights only. Single strength not recommended. Glass and glazing labor is supplied by the Fenestra Construction Co. under a separate contract, if desired.)

8 SHADING

(Each casement is drilled at both jambs near the head for the attachment of standard shade and drapery brackets which can be purchased from local interior decorators.)

9 SCREENS

9a FENESTRA Flat Screens: Screens shall be set flat against the inside of the casement frame with locking handles and adjusters extending through the screens so that casements may be opened, closed and locked without touching screens.

SCREEN frames shall be cold rolled, rust proofed steel containing a triangular reinforcing brace running the full length of the stile and shall be painted two coats of gray lead and oil baked on. Screen cloth shall be 16-mesh oxidized bronze wire held taut by a cap removable for rewiring. Each screen to

have a 22-gauge steel escutcheon to fit over and around the locking handle.

(Screens with bronze frame or finer mesh may be had at extra cost.)

10 FRENCH DOORS

(For use with "Fenwrought" and "Screened Fenwrought" Casements, Fenestra French Doors of similar design, quality and workmanship can be supplied in standard sizes, where specified. Shop drawings are submitted for the architect's approval before fabricating. See Plate B-301.)

(By the use of mullions, doors may be combined with side lights and transoms to fill door openings of various sizes.)

(Doors can be made to open in or out. Open-out doors have a heavy electro-galvanized drip at the head. Open-in doors have a heavy, non-corrosive, extruded drip at the sill. All doors have a double kick plate in the lower panel with wood inserted between 16-gauge steel sheets as a sound deadener. All doors have bronze hinges and pins. Extruded bronze thresholds may be had at extra cost.)

(The active leaf of each door is equipped with a solid bronze locking handle operating a concealed bronze cromone bolt which actuates three locking bolts. Shot bolts are provided on the opposite leaf. A dead lock is provided to lock the doors from the inside. All doors are glazed from the outside.)

(Screens for French doors are not supplied by Detroit Steel Products Co.)

FENESTRA "FENWROUGHT" CASEMENTS

SPECIFICATIONS

1 GENERAL

1a ALL windows shall be Fenestra "Fenwrought" as manufactured by Detroit Steel Products Co.

2 MATERIAL AND WORKMANSHIP

(Same as "Screened Fenwrought" 2a, 2b.)

3 ATTACHED HARDWARE

3a ALL side hung swing leaves shall open out on two heavy, friction, cleaning hinges of solid rolled, sherardized steel with heavy re-entrant angle fillets. Each hinge shall be equipped with two friction washers. Washers and hinge members shall be held by lock washers and bronze studs with acorn nuts so that by adjusting the nuts, the friction may be increased or decreased.

3b ALL top hung open-out transoms shall be hung on heavy, flush, sherardized, wrought steel hinges with bronze hinge pins.

3c PROVIDE ornamental locking handle brackets of special, solid rolled steel sections, welded to the swing leaf stiles.

3b BRASS strikes and wrought steel keepers shall be supplied, attached to the window frame as required.

4 DETACHED HARDWARE

4a ALL locking handles shall be ornamental in design and shall be (1) Specification Bronze, Coinage Finish, (2) Solid Bronze Oxidized, (3) Iron with dull black finish.

(Handles 198 or 699.)

4b WHERE friction hinges are used, no sill operating hardware is necessary. Where non-friction hinges are used operators shall be: (1) Sliding Stay; (2) Peg and Stay; (3) Friction Stay; (4) Gear Type Underscreen.

(Sliding Stay 612; Peg and Stay 209; Friction Stay 203; Underscreen 385.)

4c FOR top hung transoms, provide Peg and Stay operator in wrought iron with dull black finish or in solid bronze, at extra cost.

(Transom Stays 747 or 1034.)

5 PAINTING

(Same as "Screened Fenwrought" 5.)

6 ERECTION

(Same as "Screened Fenwrought" 6.)

7 GLASS AND GLAZING

(Same as "Screened Fenwrought" 7.)

8 SHADING

(Shade and drapery brackets should be attached to the building construction, 2½" back from the face of the window to clear the hardware.)

9 SCREENS

9a SCREENS shall be: (1) Fenestra Swing Screens; (2) Fenestra Chamberlin Roll Screens.

(Fenestra Swing Screens are of cold rolled steel, welded into tubes, mitered at the corners and butt welded. The entire screen is bonderized after assembly and painted with gray enamel, baked on. Screen cloth is 16-mesh oxidized bronze wire. All fittings are brass except pivot brackets which are parkerized steel.)

(All screens set flat against the inside of the casement frame and swing on brass studs at top and bottom. Easily removed. Rewireable if desired.)

(Fenestra Chamberlin Roll Screens consist of 16-mesh, antique finish, bronze wire cloth carried on a spring roller of steel tubing, the whole encased in an electro-plated, steel case. This case is attached at the head of the window or the head of the swing leaf, the screen cloth unrolling downward, guided by electro-plated steel guides, attached to the jambs.)

(When pulled down to the sill, the screen locks automatically in position. In opening, light pressure on the locks on either side releases the screen which is immediately wound up on the spring roller.)

(Guides, roll case, operating bar and all exposed parts are oxidized copper color and lacquered. Screens are rewirable when necessary.)

(Screens with finer than 16-mesh cloth may be had at extra cost.)

10 FRENCH DOORS

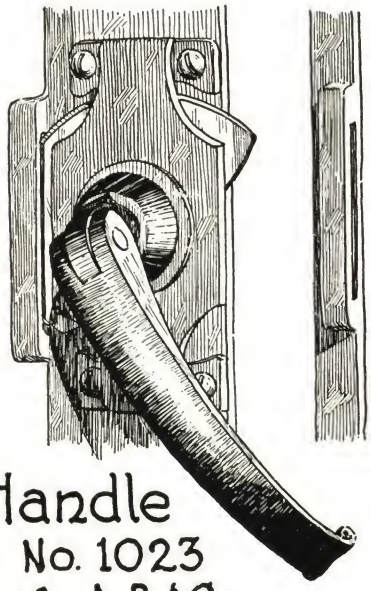
(Same as "Screened Fenwrought" 10.)



Handle
No. 699 for C



Handle
No. 198 for A & B

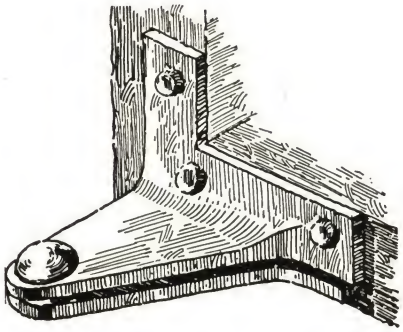


Handle
No. 1023
for A, B & C

SERIES - C = SPECIFICATION BRONZE COINAGE FINISH

SERIES - B = OXIDIZED FINISH

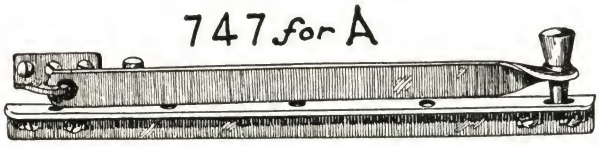
SERIES - A = DULL BLACK FINISH



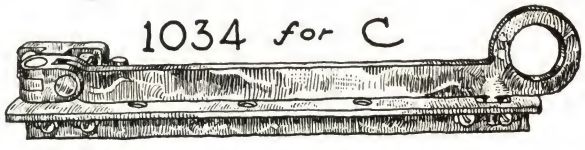
EXTENSION BUTT

Transom Stays

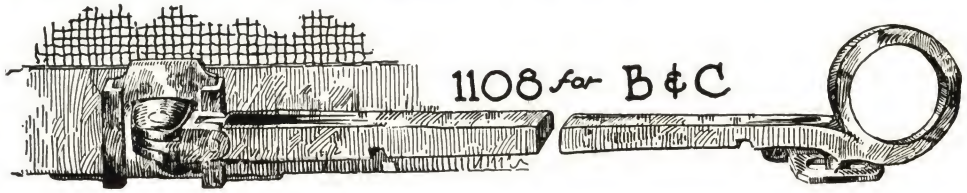
747 for A



1034 for C



1108 for B & C



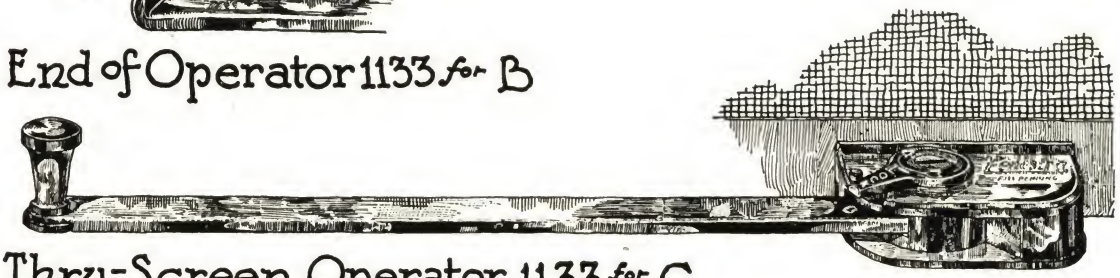
Fenestra 1931

FENWROUGHT CASEMENTS HARDWARE

Plate No A-211



End of Operator 1133 for B

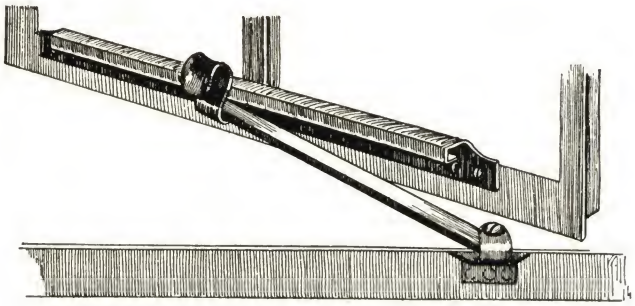


Thru-Screen Operator 1133 for C

SERIES-C = SPECIFICATION BRONZE ~ COINAGE FINISH ~

SERIES-B = OXIDIZED FINISH ~ ~

SERIES-A = DULL BLACK FINISH ~



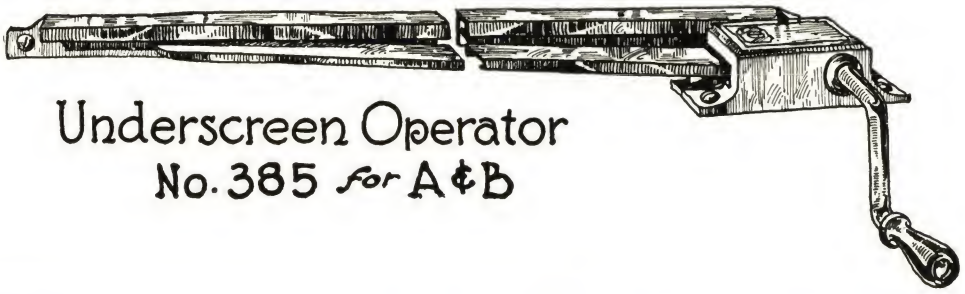
Sliding Stay No. 612 for A & B



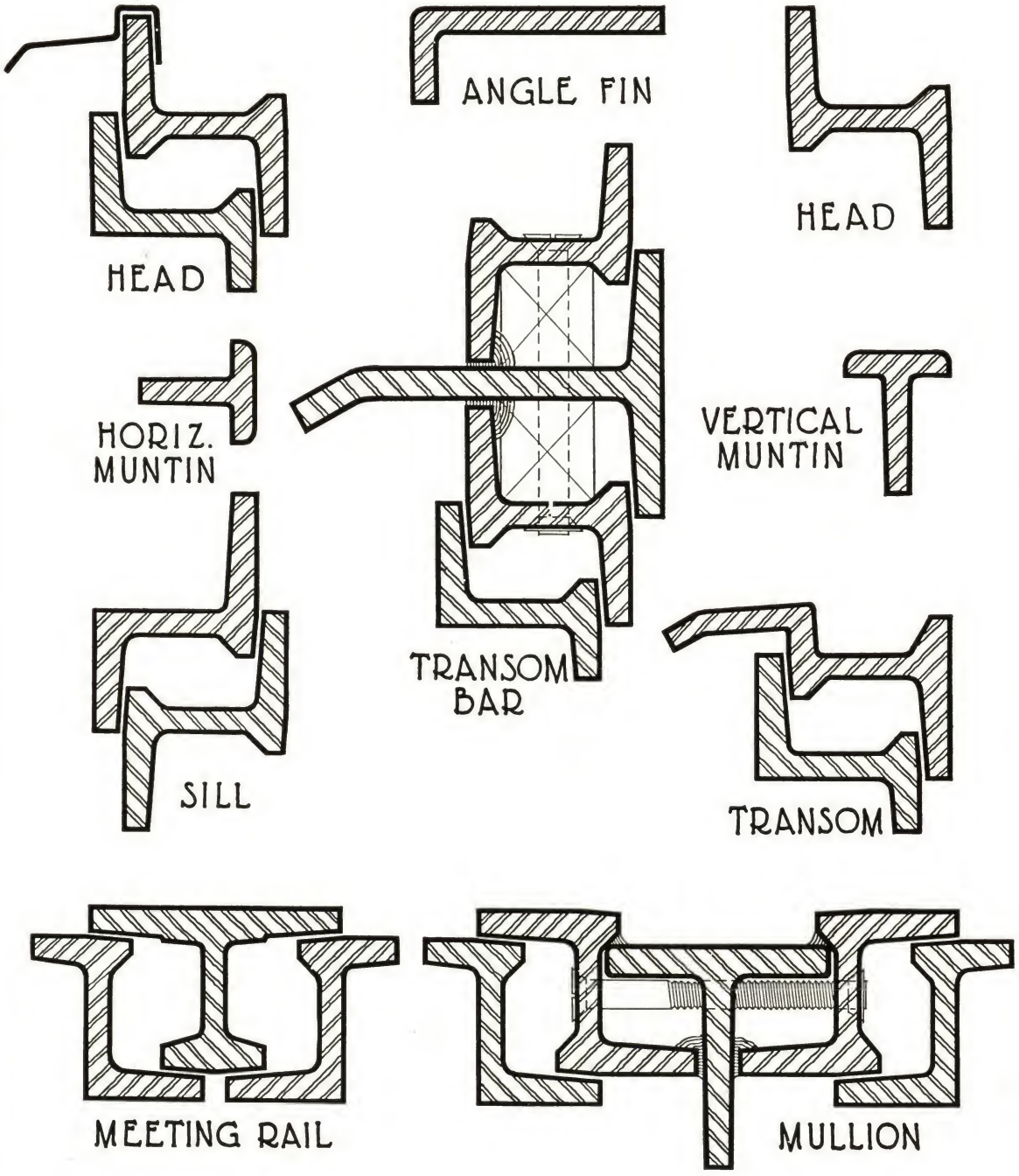
Peg-Stay No. 209 for A



Friction Stay No. 203 for B & C



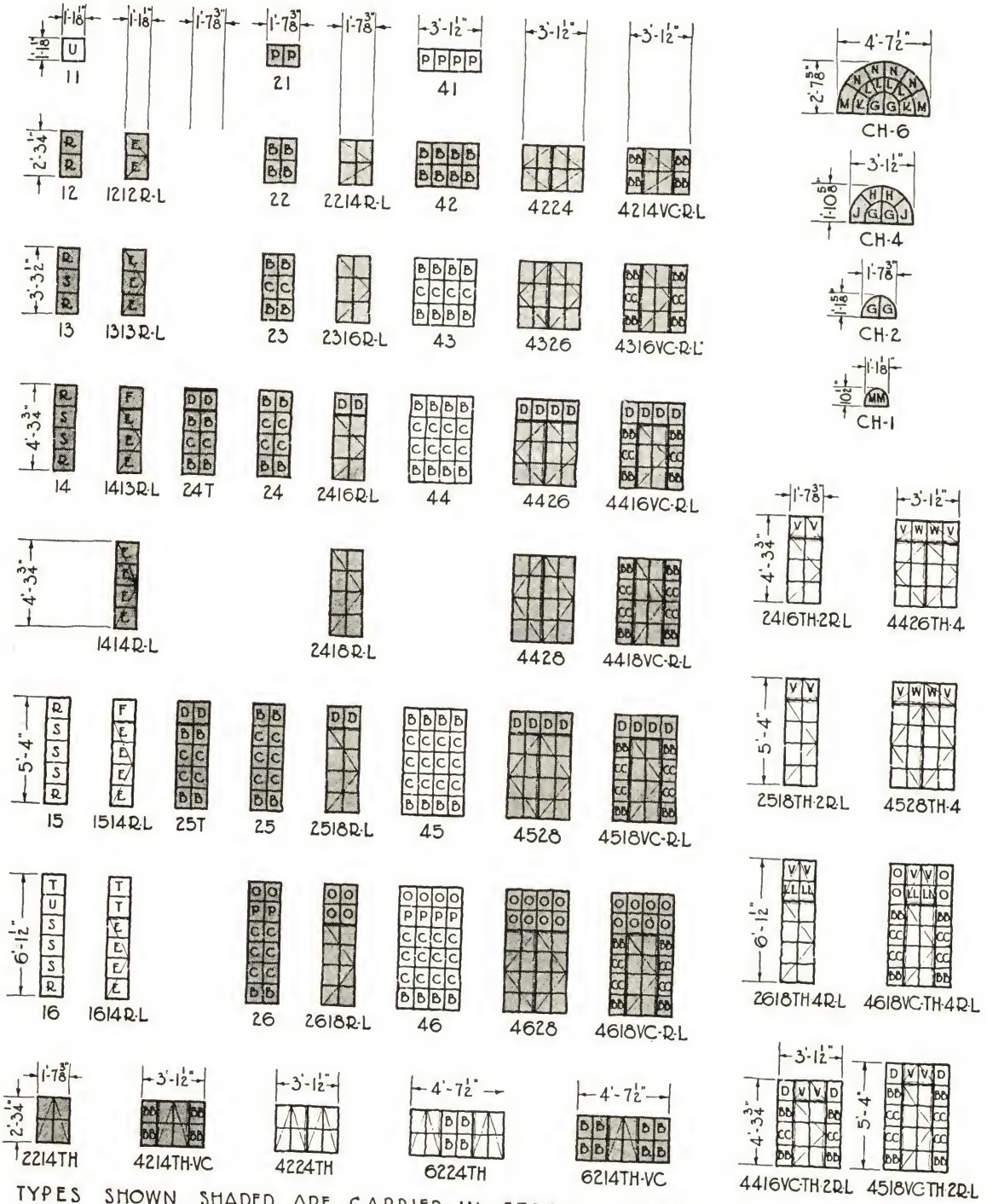
Underscreen Operator No. 385 for A & B



Fenestra 1930

SCREENED FENWROUGHT
FULL SIZE SECTIONS

Plate No A-202



TYPES SHOWN SHADED ARE CARRIED IN STOCK – OTHER TYPES ARE STANDARD

Fenestra 1930

SCREENED FENWROUGHT TYPES AND SIZES

Plate No A-203

GLASS SIZES

		CUT FROM
A	8" x 12"	STOCKED
B	8 1/16" x 12 5/8"	STOCKED
C	8 1/16" x 12"	STOCKED
D	8 1/16" x 11 3/4"	STOCKED
E	10" x 12"	R
F	11 3/16" x 11 3/4"	R
G	TEMPLATE	C
H	TEMPLATE	M
J	TEMPLATE	M
K	TEMPLATE	R
L	TEMPLATE	D
M	11 1/4" x 16 1/2"	STOCKED
N	TEMPLATE	M
O	8 1/16" x 10 1/2"	D
P	8 11/16" x 11 3/16"	D
R	11 3/16" x 12 5/8"	STOCKED
S	11 3/16" x 12"	R
T	11 3/16" x 10 1/2"	R
U	11 3/16" x 11 3/16"	R
V	8" x 10"	A
W	8 1/16" x 10"	D
BB	8 3/8" x 12 5/8"	STOCKED
CC	8 3/8" x 12"	STOCKED
LL	8" x 9 1/8"	A
MM	TEMPLATE	D

LIGHTS IN VENTILATORS (NOT LETTERED) ARE "A" SIZE 8"x12" GLASS.

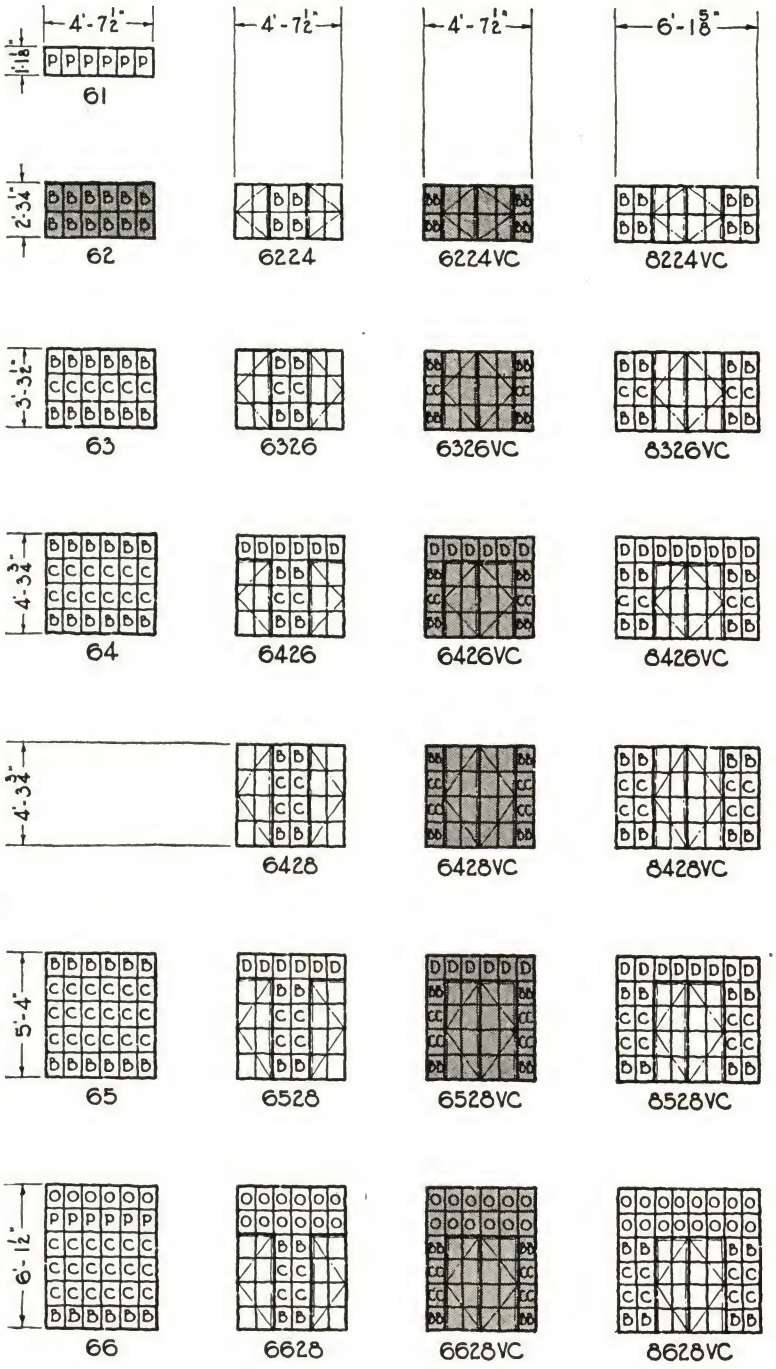
NOTES

VC - VENTILATOR IN CENTER
TH - TOP HINGED TRANSOM

SIZES GIVEN ARE WINDOW DIMENSIONS. 1/8" SHOULD BE ALLOWED FOR CLEARANCE ON ALL SIDES

HANDING OF CASEMENTS IS DETERMINED BY LOCATION OF HINGE VIEWED FROM OUTSIDE. RIGHT HAND CASEMENTS ARE HINGED AT RIGHT AND LEFT HAND CASEMENTS ARE HINGED AT LEFT.

TYPES SHOWN SHADED ARE CARRIED IN STOCK. OTHER TYPES ARE STANDARD.

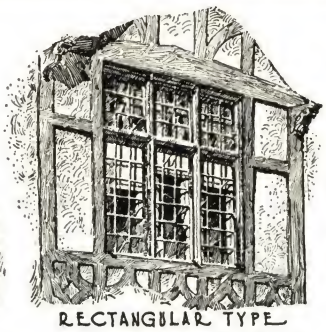


Fenestra 1930

SCREENED FENWROUGHT TYPES AND SIZES

Plate No A-204

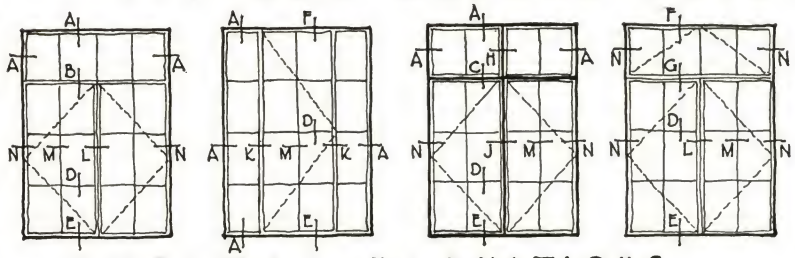

DIAMOND TYPE


RECTANGULAR TYPE

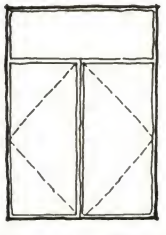

SPANISH TYPE

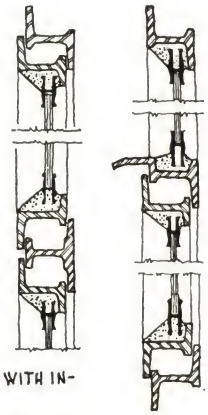

NORMAN TYPE

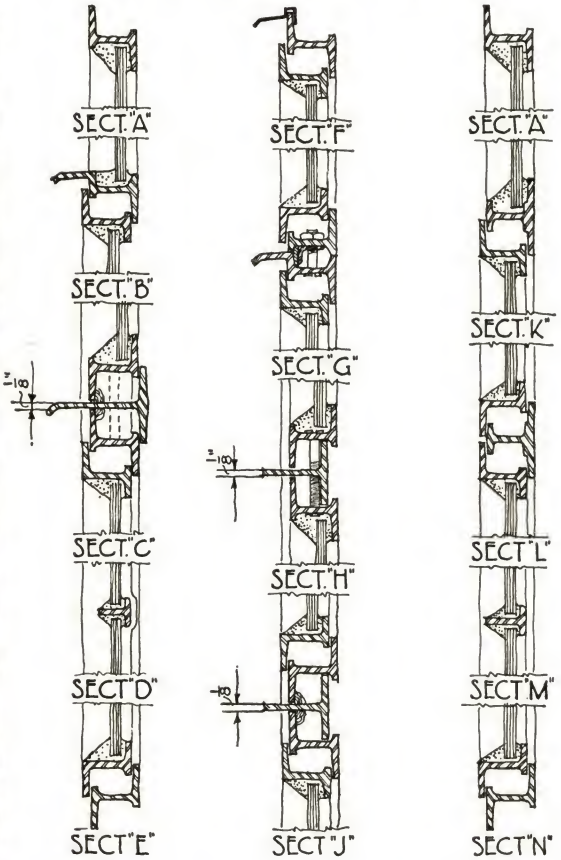
TYPICAL LEADED GLASS DESIGNS



TYPICAL ELEVATIONS


TYPICAL TYPE WITHOUT MUNTINS





NOTES

ANY FENWROUGHT TYPE WILL BE FURNISHED WITH INTERIOR MUNTINS OMITTED WHEN SO SPECIFIED.

LEADED GLASS DESIGNS SHOWN ARE ONLY SUGGESTIONS – D.S.P. CO. DOES NOT FURNISH EITHER CLEAR OR LEADED GLASS NOR DO ANY GLAZING.

DETAILS AT LEFT SHOW STD. SECTIONS OF TYPES GLAZED WITH CLEAR GLASS; DETAILS AT RIGHT SHOW LEADED GLAZING.

IN COMBINING UNITS IN OPENINGS ADD ⅛" FOR EACH MULLION OR TRANSOM BAR USED.

SYMMETRICAL COMBINED WIDTHS

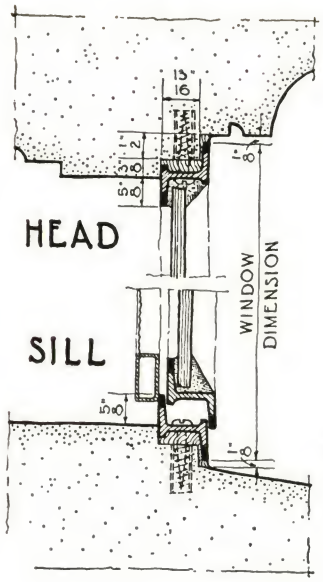
STANDARD WIDTHS	UNITS WIDE	PANES WIDE	PANES WIDE PER UNIT	VERT MULL
1'-7 3/8"	1	2	2	0
3'-1 1/2"	1	4	4	0
3'-2 7/8"	2	4	2,2	1
4'-7 1/2"	1	6	6	0
4'-10 3/8"	3	6	2,2,2	2
6'-1 5/8"	1	8	8	0
6'-3 1/8"	2	8	4,4	1
6'-4 1/2"	3	8	2,4,2	2
6'-5 7/8"	4	8	2,2,2,2	3
7'-10 1/2"	3	10	2,6,2	2
7'-10 5/8"	3	10	4,2,4	2
8'-1 3/8"	5	10	2,2,2,2,2	4

SCALE OF DETAILS : 3" = 1'-0"

Fenestra 1931

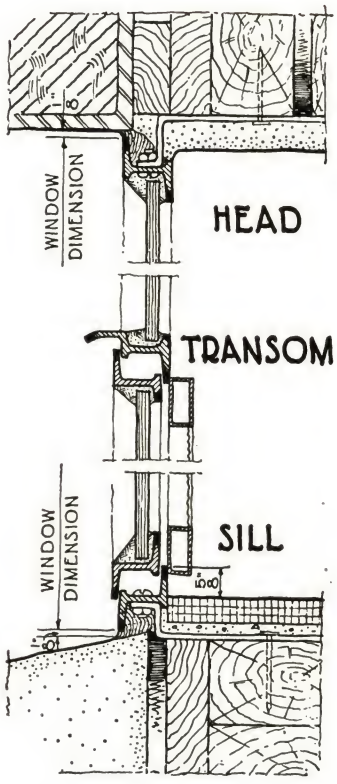
SCREENED FENWROUGHT GLAZING & GENERAL DETAILS

Plate No A-210



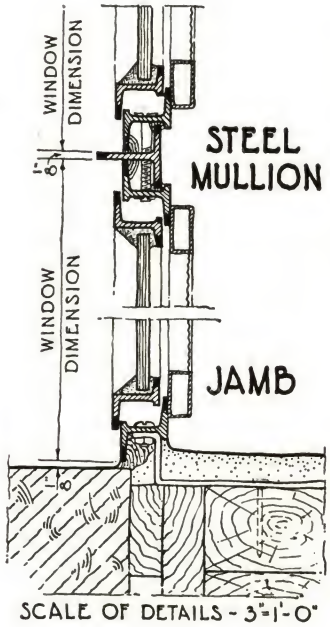
SET ALL CASEMENTS IN MASTIC CEMENT WHERE THEY COME IN CONTACT WITH BUILDING WORK.







L.A. LAYNE RESIDENCE - RIVER OAKS COUNTRY CLUB
C.W. OLIVER - ARCHITECT HOUSTON, TEXAS

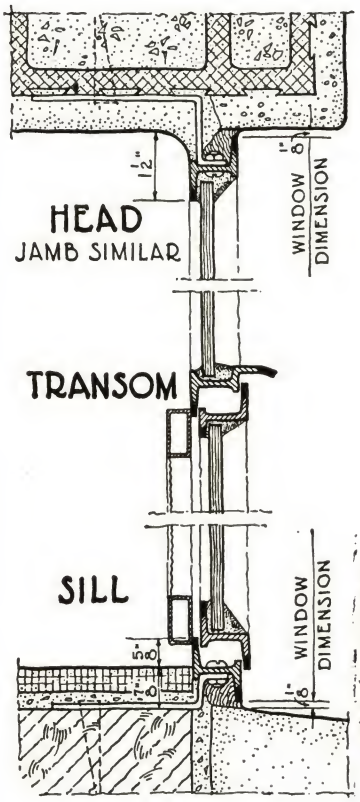


SCALE OF DETAILS - 3"-1'-0"

Fenestra 1930

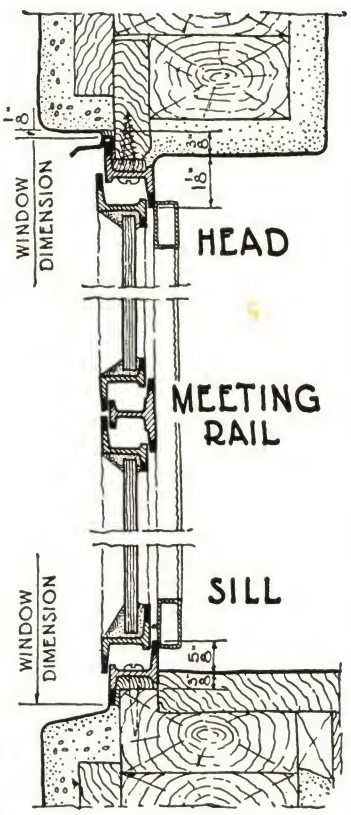
SCREENED FENWROUGHT BRICK VENEER & STONE INSTALLATIONS

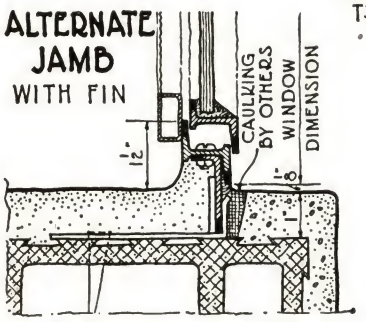
Plate No A-207





HENRY BARKHAUSEN RES.-WEST PALM BEACH, FLA.
TREANOR AND FATIO - - ARCHITECTS.





SCALE OF DETAILS - 3"- 1'-0"

SET ALL CASEMENTS IN MASTIC CEMENT WHERE THEY COME IN CONTACT WITH BUILDING WORK.

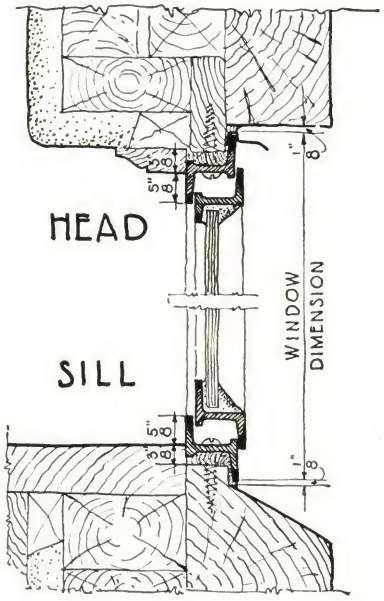


HALLAM COOLEY RES.- LOS ANGELES, CALIF.
JONES AND WARD - - ARCHITECTS.

Fenestra 1930

SCREENED FENWROUGHT STUCCO ON HOLLOW TILE & FRAME

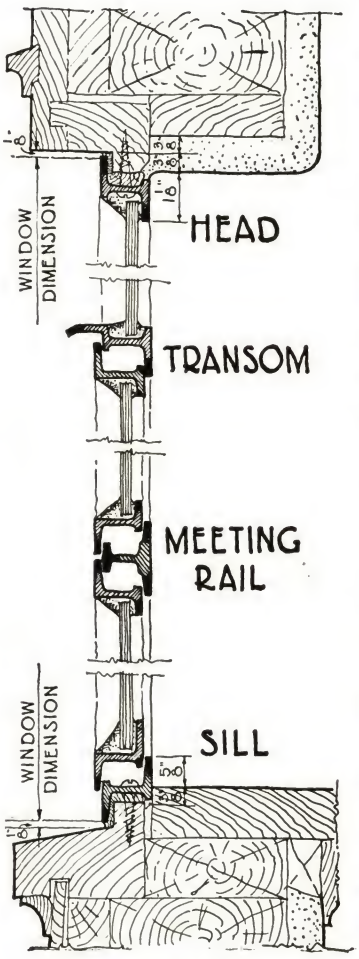
Plate No A-208



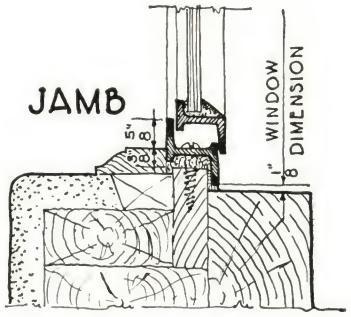
SCALE OF DETAILS - 3"=1'-0"



CHAS. W. WALKER RES - HEMPSTEAD, L.I., N.Y.
GEORGE R. THOMPSON ~ ARCHITECT.



FRAME



HALF TIMBER

NOTE

SET ALL CASEMENTS IN MASTIC CEMENT WHERE THEY COME IN CONTACT WITH BUILDING WORK

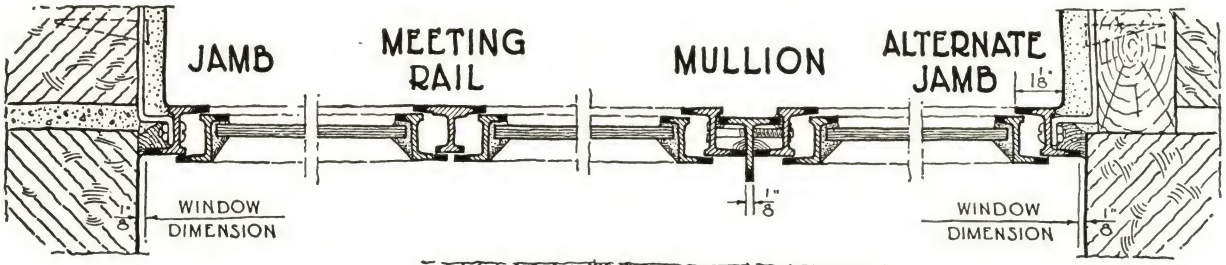


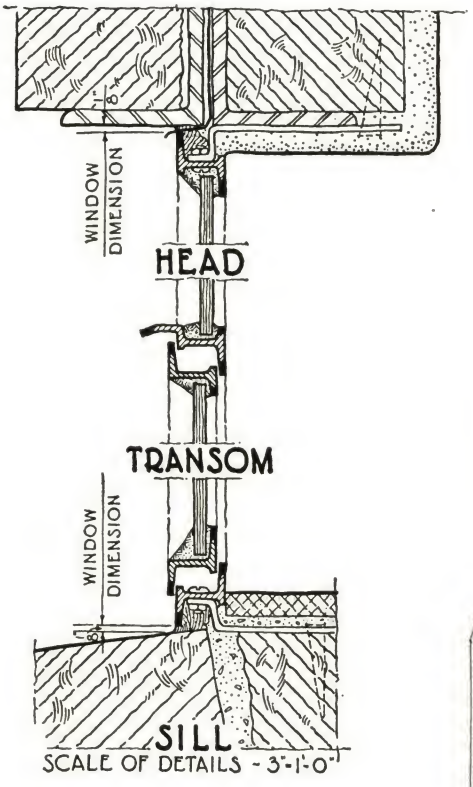
BROADMOOR COUNTRY CLUB BUILDING
CLARENCE KING ARCHITECT SHREVEPORT LA.

Fenestra 1930

FENWROUGHT CASEMENTS
HALF TIMBER & FRAME INSTALLATION

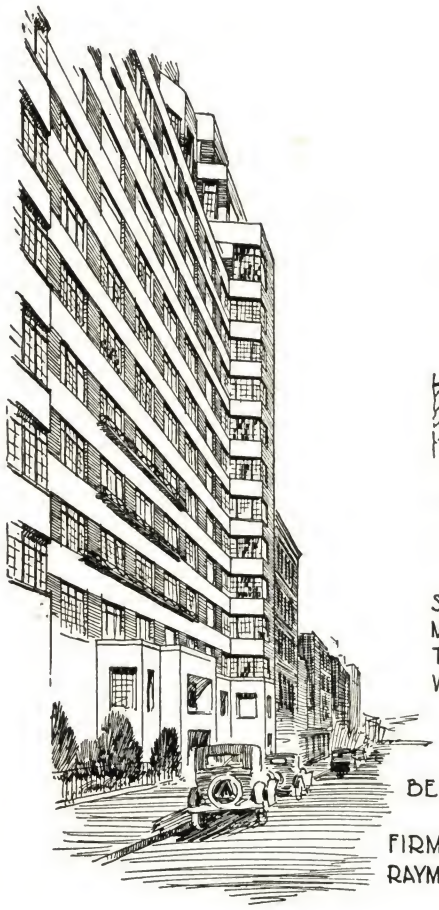
Plate No A-102





SCALE OF DETAILS - 3"-1'-0"

SET ALL CASEMENTS IN MASTIC CEMENT WHERE THEY COME IN CONTACT WITH BUILDING WORK



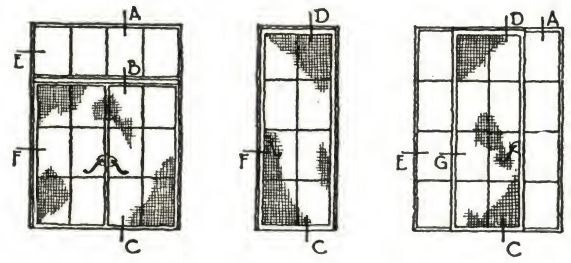


BEAUX-ARTS APARTMENTS
NEW YORK CITY
FIRM OF KENNETH M. MURCHISON; & RAYMOND HOOD, GODLEY & FOUILHOUX
ARCHITECTS

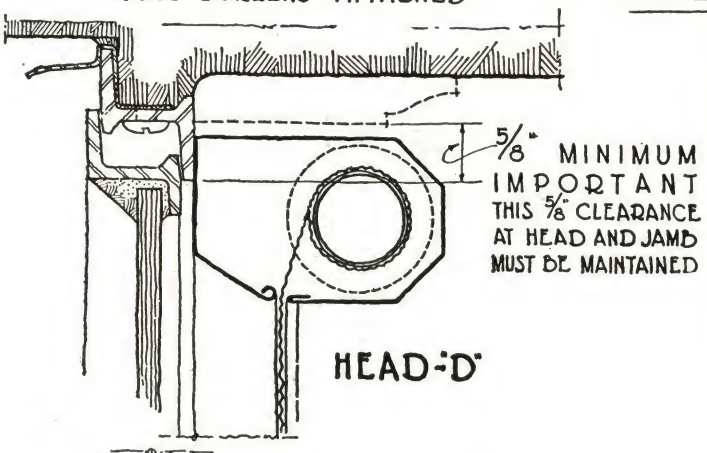
Fenestra 1930

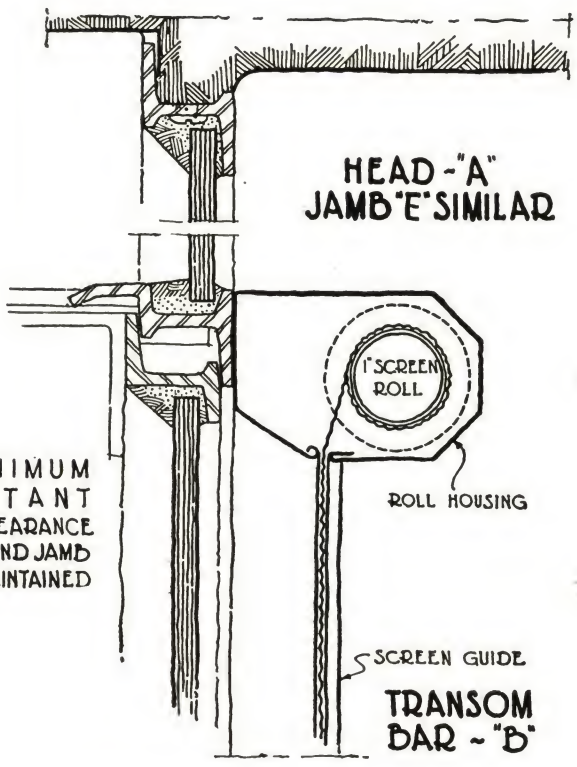
FENWROUGHT CASEMENTS
SOLID BRICK INSTALLATION

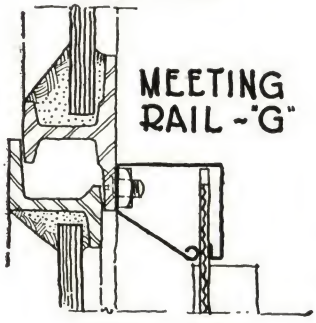
Plate No A-103

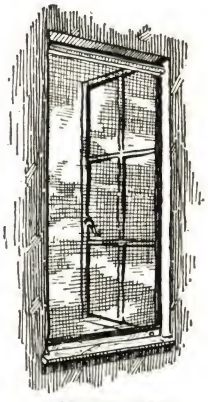


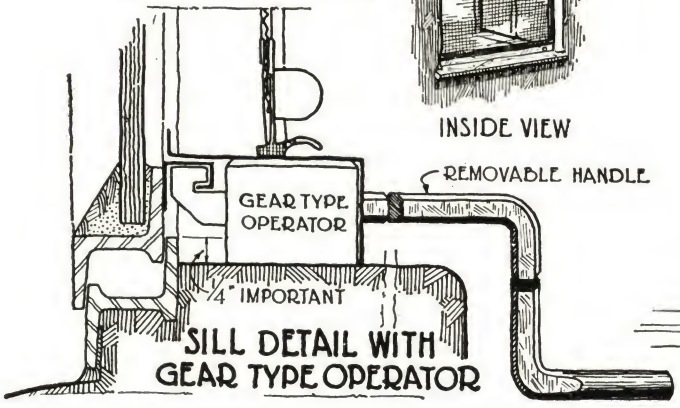
TYPICAL UNITS SHOWING ROLL-SCREENS ATTACHED

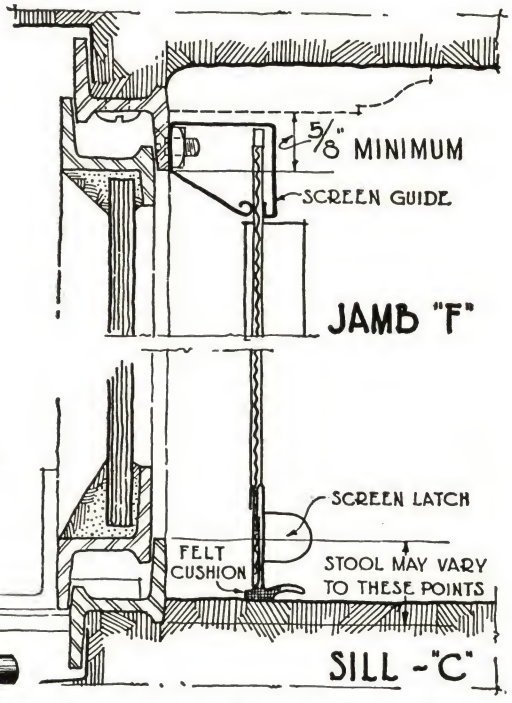








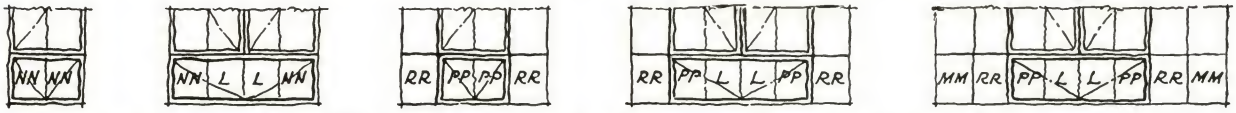




Fenestra 1930

FENESTRA CHAMBERLIN SCREEN CONSTRUCTION DETAILS

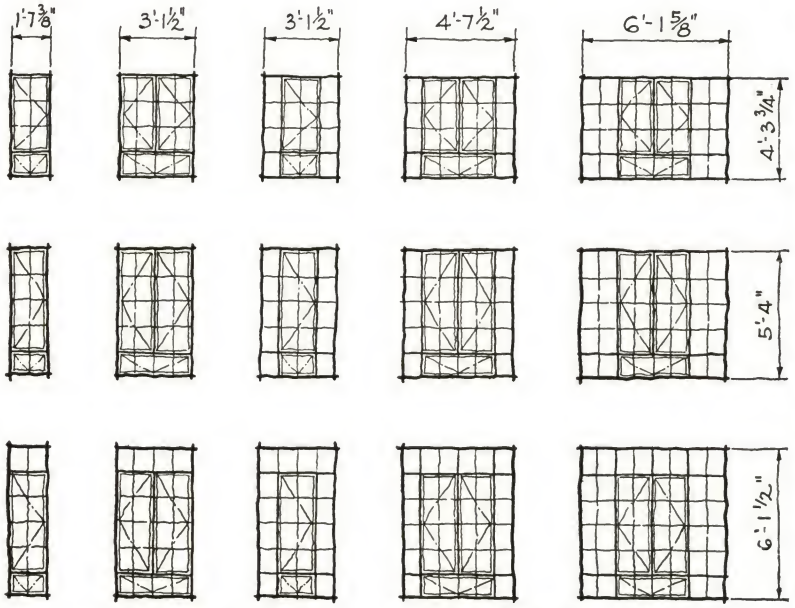
Plate No A-104



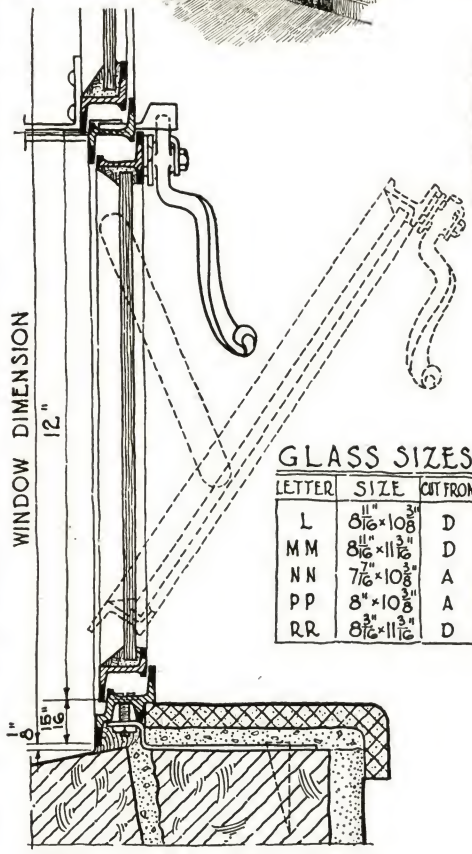
TYPICAL PROJECTED-IN VENTS BUILT INTO FENWROUGHT UNITS

LETTERS INDICATE GLASS SIZES ~ SEE TABLE BELOW ~





• TYPICAL TYPES •



VERTICAL SECTION

GLASS SIZES

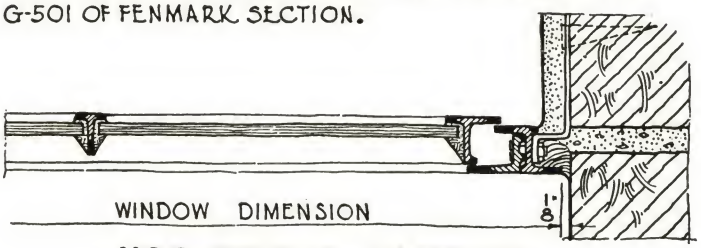
LETTER	SIZE	CUT FROM
L	$8\frac{11}{16}" \times 10\frac{3}{8}"$	D
MM	$8\frac{11}{16}" \times 11\frac{3}{16}"$	D
NN	$7\frac{7}{16}" \times 10\frac{3}{8}"$	A
PP	$8" \times 10\frac{3}{8}"$	A
RR	$8\frac{3}{16}" \times 11\frac{3}{16}"$	D

• NOTES •

PROJECTED-IN VENTILATORS ARE TWO AND FOUR LIGHTS WIDE AND ONE LIGHT HIGH. ~ THEY CAN BE BUILT INTO ANY CASEMENT OF STANDARD WIDTH AND HEIGHT BUT TYPES SHOWN ABOVE ARE RECOMMENDED.

LOCKING HANDLES ARE FURNISHED IN EITHER IRON OR BRONZE AND OF A DESIGN TO MATCH HANDLES USED ON SIDE HINGED VENTS ABOVE.

SCREENS MAY BE USED WITH PROJECTED IN VENTILATORS. DETAILS OF SCREENING ARE SIMILAR TO THOSE FOR FENMARK PROJECTED-IN SILL VENT SHOWN ON PLATE G-501 OF FENMARK SECTION.



HORIZONTAL SECTION

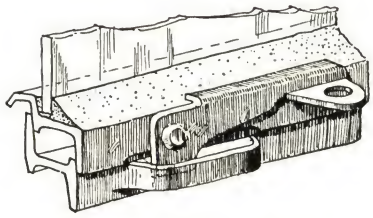
Fenestra 1931

FENWROUGHT CASEMENTS
PROJECTED-IN VENTILATOR

Plate No A-107

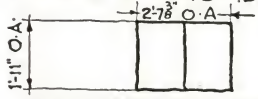
FENESTRA "BASEMENT" WINDOWS

SOLD EXCLUSIVELY THROUGH DEALERS

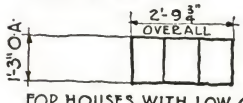


CAM ACTING LOCK AT THE SILL

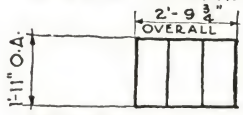
TYPES AND SIZES



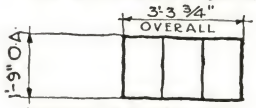
IN CONCRETE BLOCK CONSTRUTCTION FITS OPENING TWO BLOCKS WIDE BY THREE BLOCKS HIGH WITH A TROWELED SILL



FOR HOUSES WITH LOW GRADE LINE WORKS OUT EXCEPTIONALLY WELL IN BRICK CONSTRUCTION



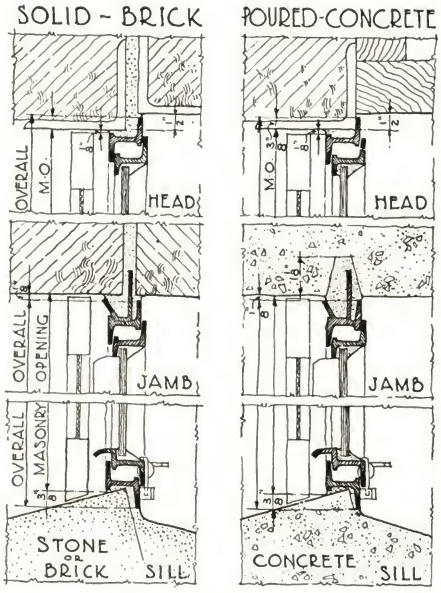
FOR HOUSES WITH A HIGHER GRADE LINE WORKS OUT WELL IN BRICK OR CONCRETE BLOCKS

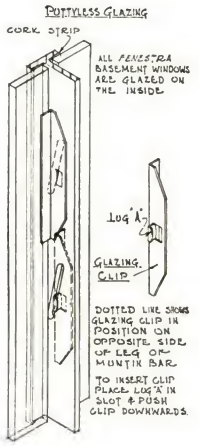


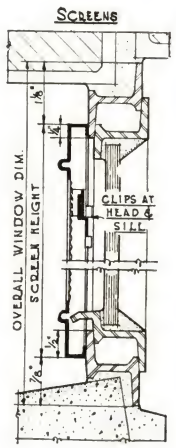
WORKS OUT WELL WITH EITHER BRICK OR CONCRETE BLOCK AND IS THE WINDOW MOST USED IN THE AVERAGE TYPE OF CONSTRUCTION

CAM ACTION LOCK

Cam action lock at sill. Hinges of substantial hook design make sash easily removable. Sill and jambs of frame in one continuous piece mitered and welded at corners. Jamb fins, spot welded to frame, provide solid anchorage.







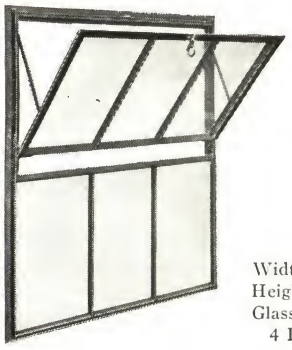
PUTTYLESS GLAZING

At slightly increased cost Fenestra Basement Windows may be obtained with angle glazing clips which hold the glass securely against cork cushion strips, rendering putty unnecessary. See details above.

SCREENS AND WIRE GUARDS

Metal-framed, bronze-mesh screens, with or without wire guards, available at extra cost. See details above.

FENESTRA "UTILITY" WINDOWS

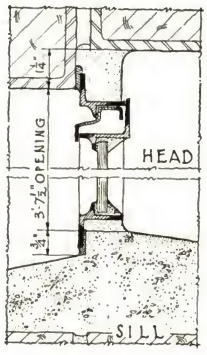


Width, 3′ 4½″
Height, 3′ 7½″
Glass, 2 Lts. 13″x20″; 4 Lts. 12″x20″

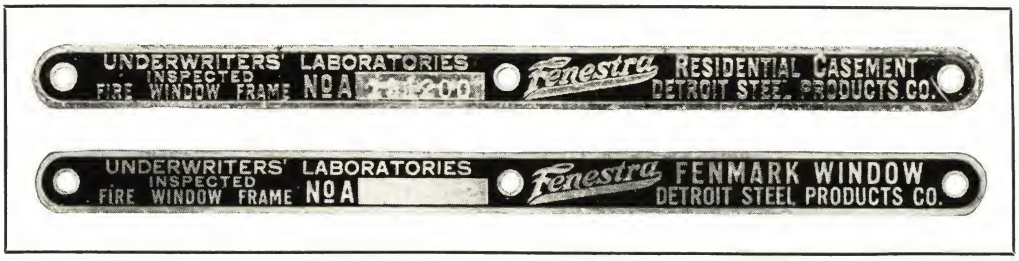
The Fenestra Utility Window is specially designed for small buildings, such as private garages, filling stations, shops, stores and basements high above the grade; also for barns, granaries, implement sheds, poultry and hog houses.

It offers all the advantages of steel window construction: more daylight and ventilation, greater ease of operation, protection against fire, theft and the weather. When closed, a spring catch automatically locks the ventilator.

Handily installed in all types of construction, the Fenestra Utility Window fits concrete block exactly—2½ blocks wide and 6 blocks high—with a sill.



UNDERWRITERS' WINDOWS



The following outside putty glazed Fenestra Windows can be furnished bearing the label of the Underwriters' Laboratories, Inc.:

FENMARK AND SCREENED FENMARK WINDOWS

All standard types and sizes may be labeled subject to the restrictions below. Multiples of these types may be used to fill openings up to 9′ wide, by bolting together two or more units having interlocking jamb bars, and to fill any width opening by the use of T-bar mullions.

Units can contain ventilators of the side-hung open-out type with friction or non-friction hinges, or a combination of side-hung open-out ventilators and projected-out ventilators.

Side-hung ventilators are limited to 54″ high. Projected-out ventilators can be introduced where fixed lights or projected-in ventilators are shown.

Locking hardware may be either iron or bronze. Operating hardware may be any of the types standardized for commercial use.

All glass must be ¼″ wire, panes being limited to an exposed area of 350 sq. in. by the introduction of vertical and horizontal muntins. Glass to be held by special coppered steel wire clips and putty.

FENMARK PROJECTED WINDOWS

All standard types and sizes may be labeled subject to the restrictions below. Multiples of these types may be used to fill openings up to 9′ wide by bolting together two or more units having interlocking jamb bars, and to fill any width opening by the use of T-bar mullions.

Ventilators must be of the projected-out type. Hardware may be either bronze or iron.

All glass must be ¼″ wire, panes being limited to an exposed area of 350 sq. in. by the introduction of vertical and horizontal muntins. Glass must be held by special coppered wire clips and putty.

FENCRAFT AND SCREENED FENCRAFT CASEMENTS

All standard types and sizes, exclusive of curved heads, may be labeled subject to the restrictions below.

Height of any unit is restricted to 6′6″. Ventilators may be of the side-hung type with friction or non-friction hinges, or top-hung, open-out type. Side-hung ventilators are limited to 54″ high.

Locking hardware may be either bronze or iron. Operators may be any of the types standardized for commercial use.

Glass must be ¼″ wire with an exposed glass area limited to 350 sq. in. Glass must be held by special coppered wire clips and putty.

FENWROUGHT AND SCREENED FENWROUGHT CASEMENTS

All standard types and sizes, with the exception of curved heads, may be labeled subject to the restrictions below.

Ventilators may be of the side-hung type with friction or non-friction hinges, or of the top-hung, open-out type. Locking hardware may be of either iron or bronze. Operators may be of the types standardized for commercial use. Glass must be ¼″ wire with exposed area limited to 200 sq. in. by the introduction of vertical and horizontal muntins. Glass must be held by special coppered wire clips and putty.

INDUSTRIAL WINDOWS

The following Fenestra Windows, inside glazed with glazing angles, can be supplied bearing the label of the Underwriters' Laboratories, Inc.

All standard types and sizes having over-all dimensions not in excess of 7′x12′ may be labeled subject to restrictions below. (Either dimension may be used as width or height.) Multiples of these sizes may be used to fill any width opening by use of T-bar mullion provided width between mullions is 7′ or less, and provided area is 84 sq. ft. or less.

Ventilators may be pivoted 2″ above center or 4″ down from top to open out or may be of projected open-out type. Total ventilator area limited to 3,000 sq. in.

All ventilators must be operated separately. Ventilators pivoted 2″ above center may have cam and chain or cam and stay operators. Ventilators pivoted 4″ from the top must have cam and stay operators. Projected ventilators may have standard operators of either cam handle or kickout type, in either bronze or iron with chain or pole operation.

All glass must be ¼″ wire and is limited to 48″ in either width or height and a total exposed area of not over 350 sq. in. Glass to be held by $\frac{7}{16}$x$\frac{5}{8}$″, 16-gauge pressed steel angles tapped to outside frame and ventilator bars and bolted through all muntin bars.

FENESTRA PIVOTED WINDOWS

SPECIFICATIONS

Notes are explanatory only and need not be included in the specifications.

GENERAL

HORIZONTALLY PIVOTED WINDOWS shall be Fenestra as manufactured by the Detroit Steel Products Company.

MATERIAL

All sections shall be especially designed, hot rolled, solid steel bars with heavy fillets in all re-entrant angles.

All frame members shall be special angle sections.

MUNTINS shall be especially formed T sections.

MULLIONS AND TRANSOM BARS shall be standard Fenestra, hot rolled, solid steel T sections.

(Note:—Use mullions where two or more windows are used side by side in the same opening. Use transom bars where two or more windows are used one above another. Horizontal structural mullions are not furnished by the window manufacturer.)

CONSTRUCTION

FRAMES AND VENTILATORS shall be mortise and tenon, air hammer riveted at all corners. Provide continuous two-point, flat-contact weathering between ventilators and frames.

MUNTINS shall be continuous from head to sill and from jamb to jamb, so interlocked as to increase their strength at the point of intersection. Joints at frames shall be mortise and tenon, air hammer riveted.

(Note:—All structural steel is furnished by others. Include in the steel specifications all punching to accommodate clips. Where masonry will interfere with installation of clips at time windows are erected, provide that all clip bolts be included and attached by steel contractor.)

ATTACHED HARDWARE

(Note:—Attach at the factory.)

All ventilators shall be horizontally pivoted and supported by external adjustable, special solid rolled steel butts, double machine riveted through window bars and weathering.

(Note:—Butts are set 2" above center unless otherwise specified. They may be set 4" below top of ventilator. If desired, so specify.)

All butts shall have 5/8" solid steel bolts equipped with washers and nuts; each pin shouldered to insure constant, free and easy ventilator operation.

All ventilators shall be provided with solid rolled steel Z bar brackets, triple machine riveted to ventilator sill for attachment of operating hardware.

DETACHED HARDWARE

Provide malleable iron cam latches and rolled steel stay bars or malleable iron latches, chain, chain catches and pulley brackets.

(Note:—For group operation of ventilators see Fenestra Mechanical Operating Devices.)

ERECTION

(Note:—Include in the Masonry Specifications that all masonry openings shall be accurately constructed in accordance with standard Fenestra installation details so that windows may be erected in prepared openings.)

(Note:—Include in the Masonry Specifications that all mortar grouting, pointing, etc., shall be done by the mason contractor after the windows are erected.)

All windows shall be erected in prepared openings by the Fenestra Construction Company under a separate contract.

All windows shall be set plumb and true, properly aligned and securely anchored before glazing.

Standard Fenestra sill anchors (2 for windows up to 6'6" wide; 4 for windows over 6'6" wide) shall be used: if the ventilator comes to the sill of the window; if the window is over 5'0" wide; in all multiple unit openings where the mullions are not anchored into the sills.

PAINTING

All windows shall be given one dip-coat of red mineral paint by the manufacturer before shipment.

(Note:—Include in the Painting Specifications that all windows should be given one additional coat after erection but before glazing. Further painting should be deferred until at least three weeks after glazing, to allow putty to set.)

(Note:—Where desired, Fenestra Construction Company, at reasonable added cost, will do field painting after erection. If desired, so specify including specification of paint and its application.)

GLASS AND GLAZING

(Note:—Include in the Glazing Specifications that glass sizes are to be either 12" x 18" or 14" x 20" but ventilator lights which abut on top, sides, or bottom of the ventilator must be trimmed 1" along the abutting edge.)

Glass shall be 1/4" rough wire, 1/4" factory ribbed, 1/8" factory ribbed, double strength.

(Note:—1/4" glass is recommended. Single strength glass is not recommended.)

Putty shall be a high grade of steel window putty.

(Note:—Ordinary wood sash putty must not be used.)

All windows shall be glazed from the inside, all glass being set in a bed of putty and secured by copper plated, steel spring glazing clips furnished by the window manufacturer. (4 clips to each fixed light; 6 clips to each ventilator light.)

Face putty shall be applied in a neat, clean-cut smooth manner.

(Note:—Do not paint until putty has thoroughly hardened.)

SCREENS

(Note:—Screens are not furnished by the window manufacturer but special metal screens may be had so arranged that the upper half of the screen is outside the ventilator, the lower half, inside.)

PIVOTED WINDOW FITTINGS AND HARDWARE



Horizontal Bar with Nick Cut Out



Vertical Bar Punched for Joint



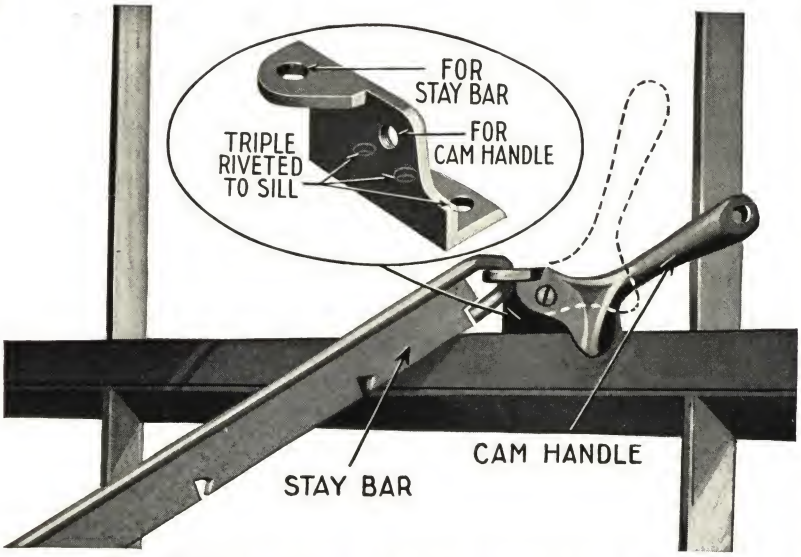
The Completed Fenestra Joint



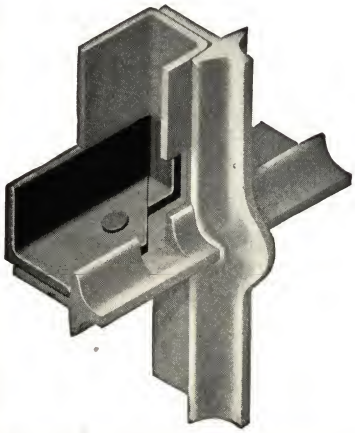
Spring Latch, Chain and Pulley at Head of Ventilator



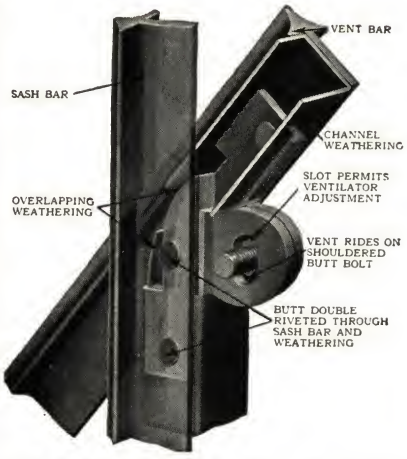
Vertical Bar Expanded to Receive Horizontal Bar



Cam Handle, Stay Bar and Triple Riveted Z-bar Bracket



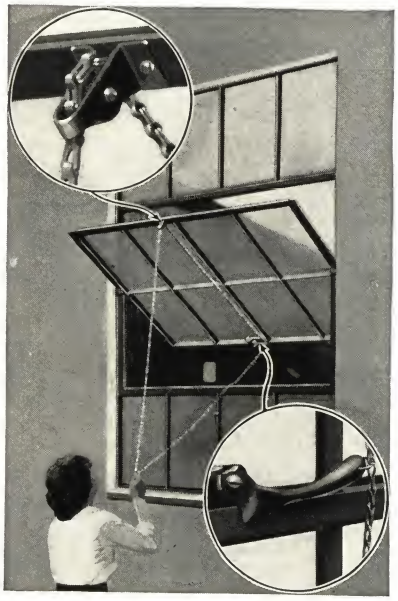
Weathering Member at Ventilator Sill, Mitered to Guide Water from Building



External, Adjustable, Fenestra Steel Butt



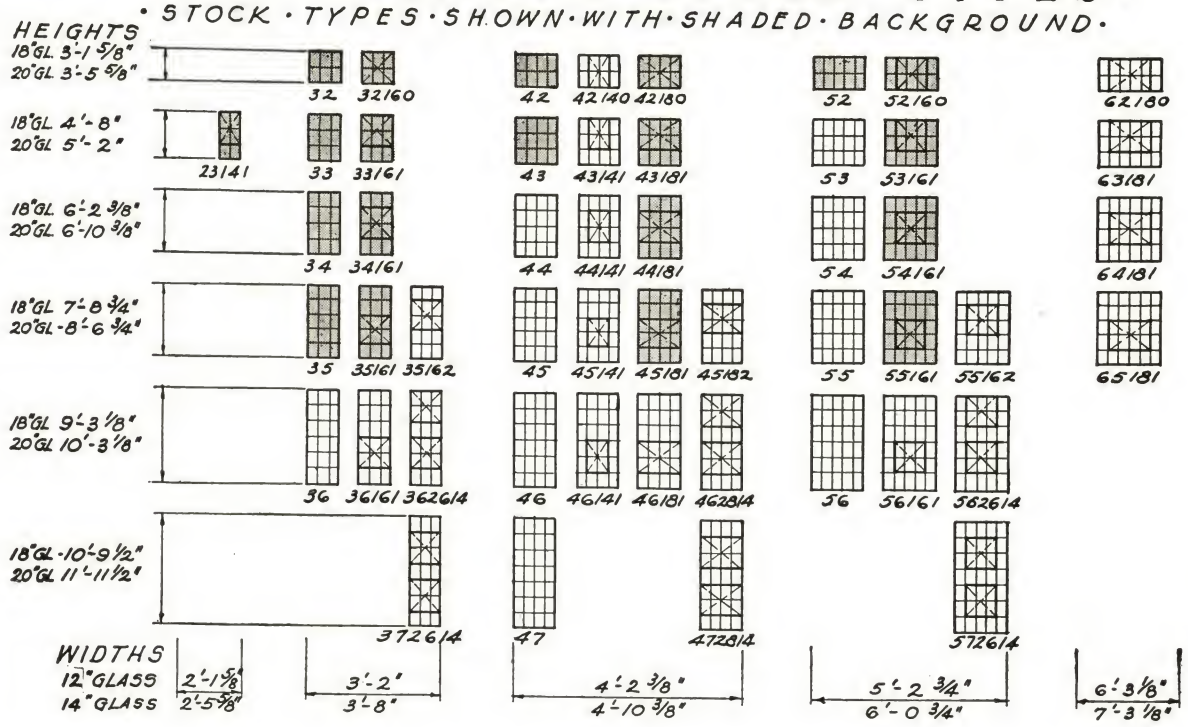
Spring Latch at Sill, Chain Cleats and Chain Passing up over Head Pulley



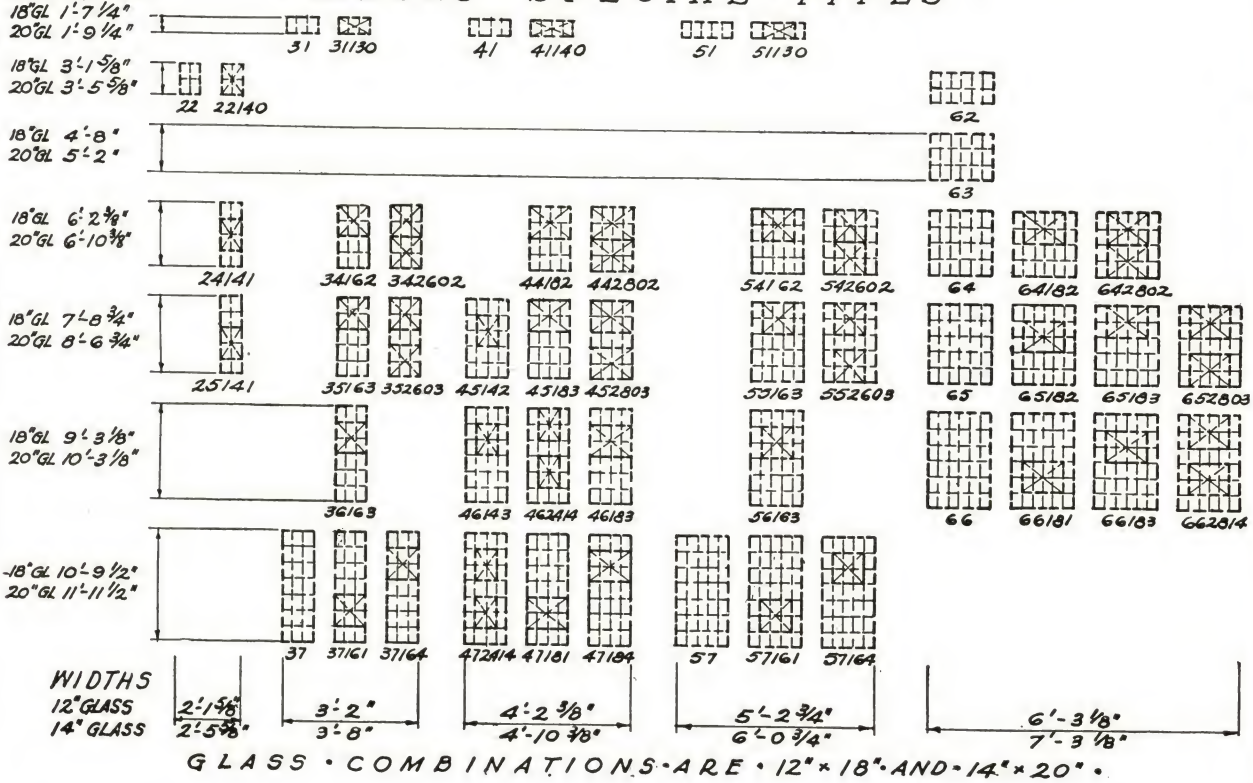
Cam Handle at Sill with Endless Chain Passing over Pulley at Head

• STANDARD • AND • STOCK • TYPES •

• STOCK • TYPES • SHOWN • WITH • SHADED • BACKGROUND •



• LISTED • SPECIAL • TYPES •



GLASS • COMBINATIONS • ARE • 12" × 18" • AND • 14" × 20" •

Fenestra
August 1929

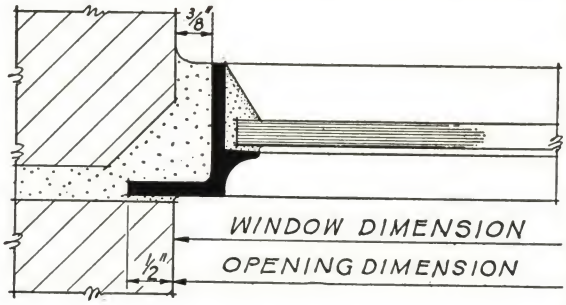
Horizontally Pivoted Windows
Types and Sizes

Plate No
L-102

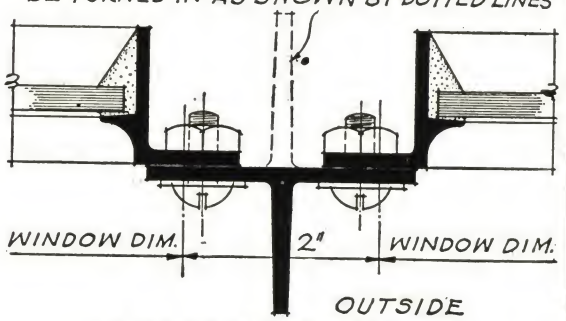
SYMMETRICAL COMBINATIONS

OPENING DIMENSIONS				NO. UNITS IN OPENING	NO. LIGHTS IN OPENING	ARRANGEMENT OF UNITS IN OPENING — FIGURES INDICATE THE NUMBER OF LIGHTS IN WIDTH OF EACH UNIT.
18" HEIGHTS		20" HEIGHTS				
PANES	DIM.	PANES	DIM.			
2	3'-1 5/8"	2	3'-5 5/8"			
3	4'-8"	3	5'-2"			
4	6'-2 3/8"	4	6'-10 3/8"			
5	7'-8 3/4"	5	8'-6 3/4"			
6	9'-3 1/8"	6	10'-3 1/8"			
7	10'-9 1/2"	7	11'-11 1/2"			
12" WIDTHS		14" WIDTHS				
* 2'-1 5/8"		* 2'-5 5/8"		1	2	2
3'-2"		3'-8"		1	3	3
4'-2 3/8"		4'-10 3/8"		1	4	4
4'-5 1/4"		5'-1 1/4"		2	4	2,2
5'-2 3/4"		6'-0 3/4"		1	5	5
6'-3 1/8"		7'-3 1/8"		1	6	6
6'-6"		7'-6"		2	6	3,3
8'-6 3/4"		9'-10 3/4"		2	8	4,4
9'-10"		11'-4"		3	9	3,3,3
10'-7 1/2"		12'-3 1/2"		2	10	5,5
10'-10 3/8"		12'-6 3/8"		3	10	3,4,3
11'-10 3/4"		13'-8 3/4"		3	11	3,5,3
11'-10 3/4"		13'-8 3/4"		3	11	4,3,4
12'-8 1/4"		14'-8 1/4"		2	12	6,6
12'-11 1/8"		14'-11 1/8"		3	12	4,4,4
13'-2"		15'-2"		4	12	3,3,3,3
13'-11 1/2"		16'-1 1/2"		3	13	4,5,4
13'-11 1/2"		16'-1 1/2"		3	13	5,3,5
14'-11 7/8"		17'-3 7/8"		3	14	4,6,4
14'-11 7/8"		17'-3 7/8"		3	14	5,4,5
15'-2 3/4"		17'-6 3/4"		4	14	3,4,4,3
16'-0 1/4"		18'-6 1/4"		3	15	5,5,5
16'-0 1/4"		18'-6 1/4"		3	15	6,3,6
16'-6"		19'-0"		5	15	3,3,3,3,3
17'-0 5/8"		19'-8 5/8"		3	16	5,6,5
17'-0 5/8"		19'-8 5/8"		3	16	6,4,6
17'-3 1/2"		19'-11 1/2"		4	16	4,4,4,4
17'-3 1/2"		19'-11 1/2"		4	16	3,5,5,3
17'-6 3/8"		20'-2 3/8"		5	16	3,3,4,3,3
18'-1"		20'-11"		3	17	6,5,6
18'-6 3/4"		21'-4 3/4"		5	17	3,4,3,4,3
19'-1 3/8"		22'-1 3/8"		3	18	6,6,6
19'-4 1/4"		22'-4 1/4"		4	18	3,6,6,3
19'-4 1/4"		22'-4 1/4"		4	18	4,5,5,4
19'-7 1/8"		22'-7 1/8"		5	18	3,4,4,4,3
20'-7 1/2"		23'-9 1/2"		5	19	3,5,3,5,3
21'-5"		24'-9"		4	20	5,5,5,5
21'-5"		24'-9"		4	20	4,6,6,4
21'-7 7/8"		24'-11 7/8"		5	20	4,4,4,4,4
21'-10 3/4"		25'-2 3/4"		6	20	3,3,4,4,3,3

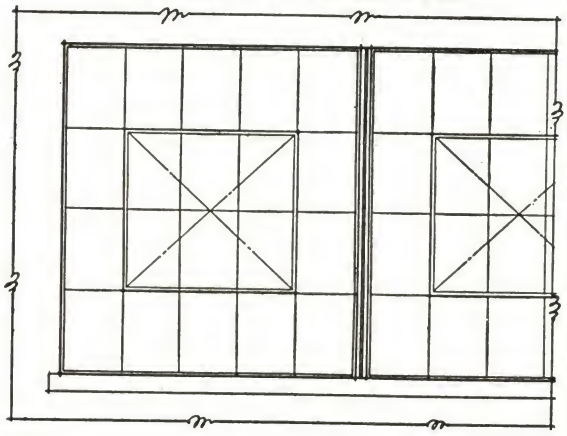
* TWO LIGHT WIDE UNITS ARE FURNISHED IN THREE LIGHT HEIGHTS ONLY

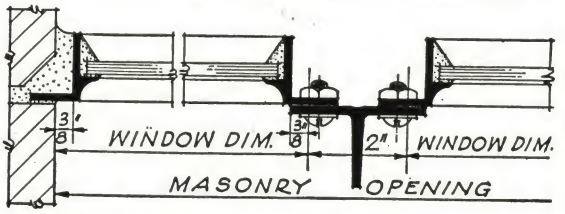


WHEN DESIRED STEM OF MULLION CAN BE TURNED IN AS SHOWN BY DOTTED LINES



SCALE: HALF FULL SIZE



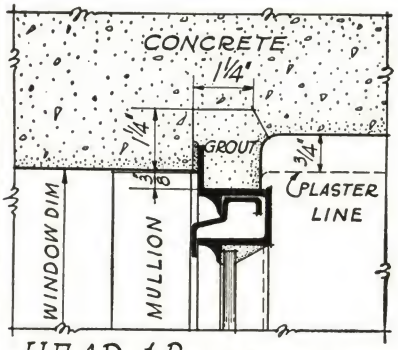


TYPICAL COMBINATION

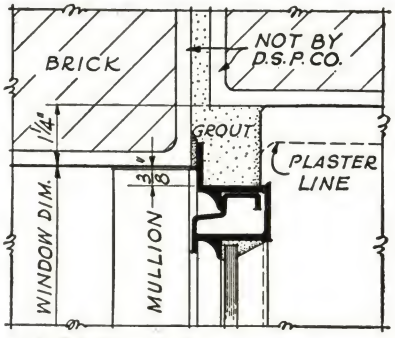
SCALE: 3" = 1'-0"

NOTE:- IN FIGURING OPENING SIZES FOR COMBINED UNITS, ADD TOGETHER THE WINDOW DIMENSIONS PLUS 2" FOR EACH VERTICAL MULLION. STANDARD COMBINATIONS ARE GIVEN IN THE TABLE. WHEN USING TABLE ALWAYS COMBINE 18" HEIGHTS WITH 12" WIDTHS AND 20" HEIGHTS WITH 14" WIDTHS.

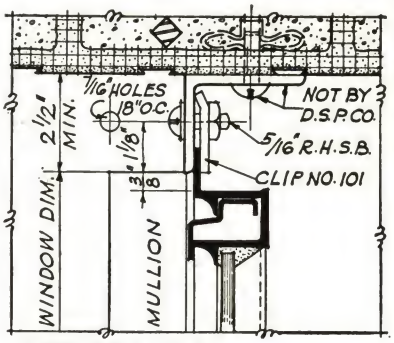
Fenestra August 1929 | *Horizontally Pivoted Windows* — *Standard Combinations* | **Plate No** L-103



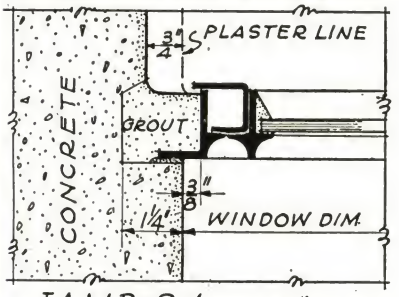
"HEAD-1-B" REBATE IN THE SOFFIT PERMITS INSTALLATION OF WINDOWS AFTER WALL IS BUILT.



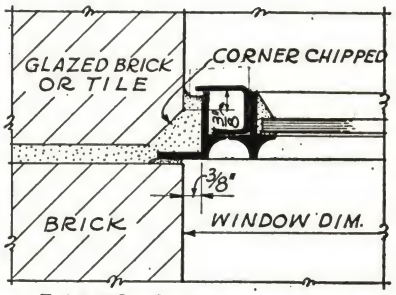
"HEAD-4-A" ANGLE SHOULD ALWAYS BE OFFSET AS SHOWN



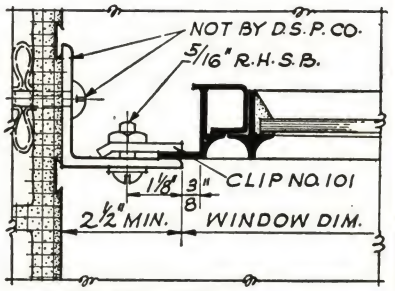
"HEAD" 7-A" STEEL ANGLE FRAME IN TILE OPENINGS.



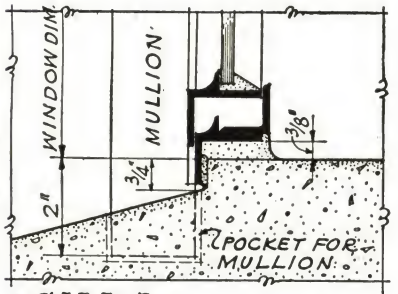
"JAMB-2-A FOR SINGLE OR MULTIPLE UNIT OPENINGS



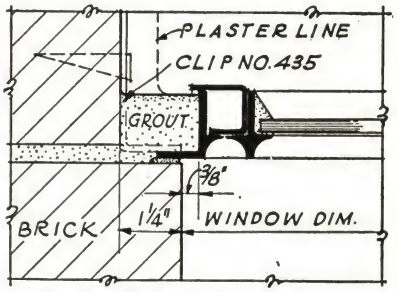
"JAMB-5" FOR MULTIPLE UNIT OPENINGS ONLY



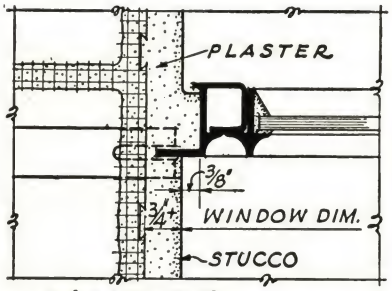
"JAMB-8-A" STEEL ANGLE FRAME IN TILE OPENINGS.



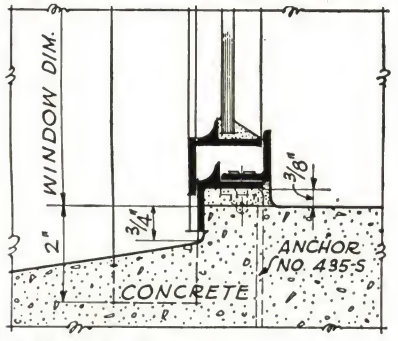
"SILL-3" PRECAST CONCRETE MAY ALSO BE USED FOR BRICK OR TILE CONSTRUCTION"



"JAMB-5-A" FOR SINGLE OR MULTIPLE UNIT OPENINGS.

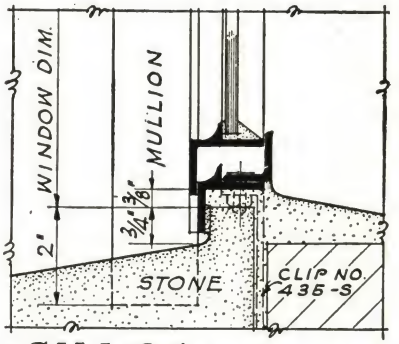


"JAMB-8-B" WITH SPLIT CLIP FURNISHED BY D.S.P. CO.



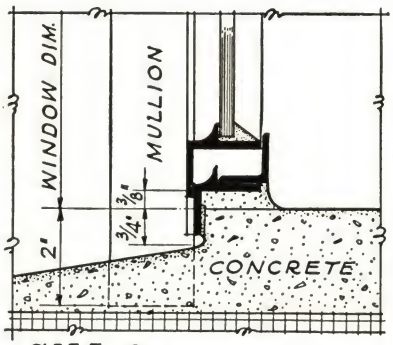
"SILL-3-A" POURED CONCRETE ANCHOR CLIP FURNISHED BY D.S.P.CO.

"CONCRETE"



"SILL-6-A" CUT STONE. AS ALTERNATES USE DETAILS 3 OR 3-A.

"BRICK"

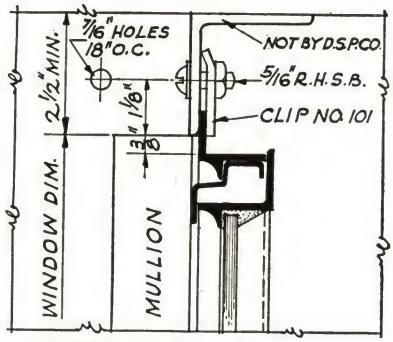


"SILL-9" CONCRETE SILL, POURED AFTER WINDOW IS SET

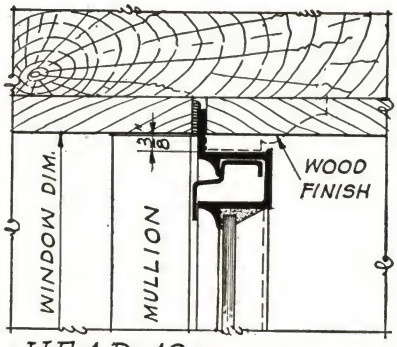
"TILE"

"SCALE: 3" = 1'-0"

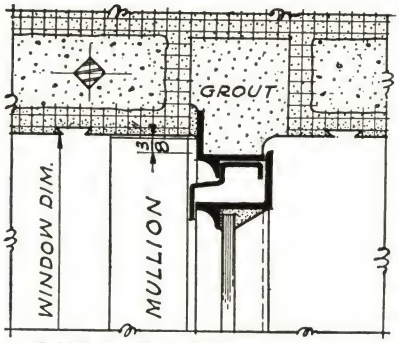
Fenestra, *August 1929*	*Horizontally Pivoted Windows* *Installation Details*	**Plate No** L-104



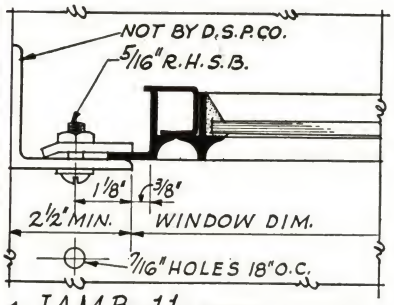
"HEAD-10" STEEL ANGLE.
CLIP & BOLT FURNISHED BY D.S.P.CO.



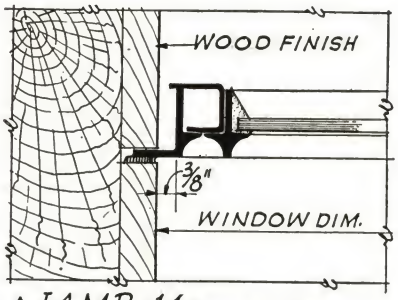
"HEAD-13" DOTTED LINES SHOW ALTERNATE FINISH."



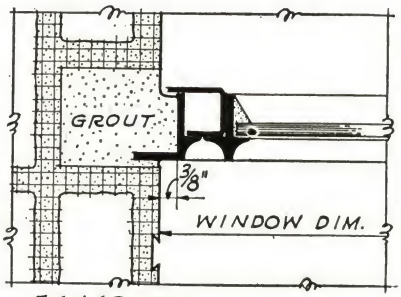
"HEAD-7" FOR TILE LINTEL WITH STEEL WINDOW RAGGLE AS SHOWN



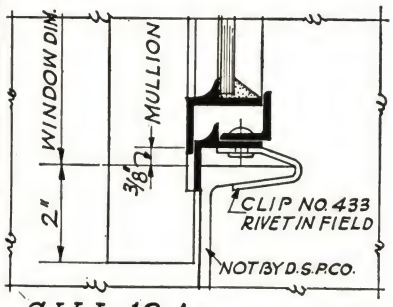
"JAMB-11" STEEL ANGLE
CLIP & BOLT FURNISHED BY D.S.P.CO.



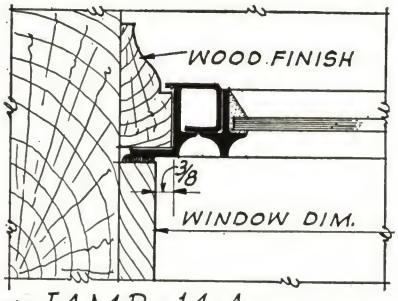
"JAMB-14" PLAIN TRIM.



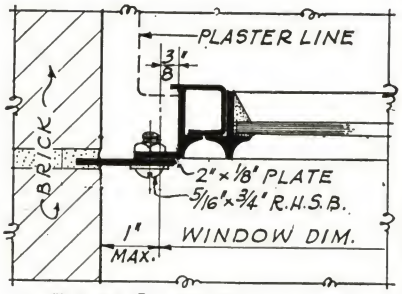
"JAMB-8" FOR TILE WITH STEEL WINDOW RAGGLE AS SHOWN.



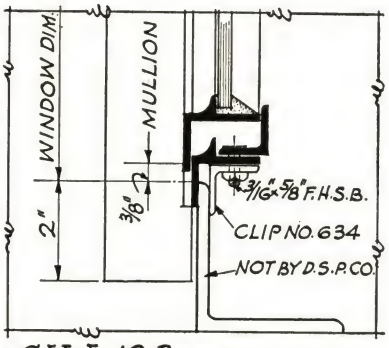
"SILL-12-A" STEEL CHANNEL
CLIP & RIVET FURNISHED BY D.S.P.CO.



"JAMB-14-A" MOLDING
FINISH ALTERNATE FOR JAMB-14

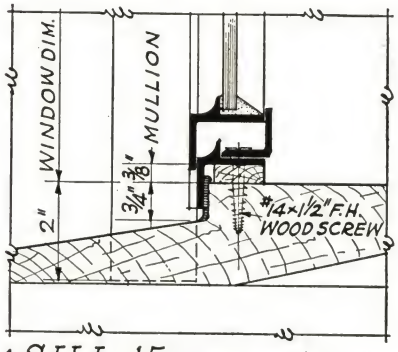


"JAMB-5-B" DETAIL USING JAMB PLATE



"SILL-12-B" STEEL ANGLE.
CLIP & BOLT FURNISHED BY D.S.P.CO.

"STEEL"



"SILL-15" WOOD APRON & SILL.

"WOOD"

"MISCELLANEOUS"

THE MULLIONS SHOWN WITH THESE DETAILS HAVE THE STEM TURNED OUT. IT IS ADVISABLE TO DO THIS AS GREATER STIFFNESS IS SECURED.

WITH STEEL WORK THIS IS ESSENTIAL IN ORDER TO AVOID NOTCHING OF THE STEEL OR A SPECIAL CUT-OFF OF MULLIONS.

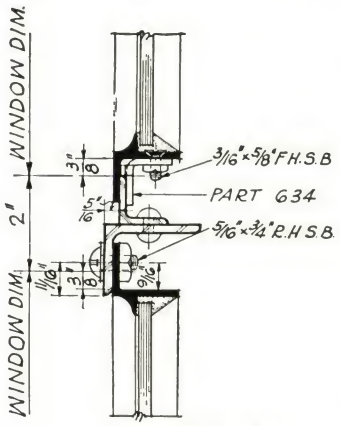
ANCHORING MULLIONS AT SILL AS SHOWN IS RECOMMENDED.

"SCALE: 3" = 1'-0"

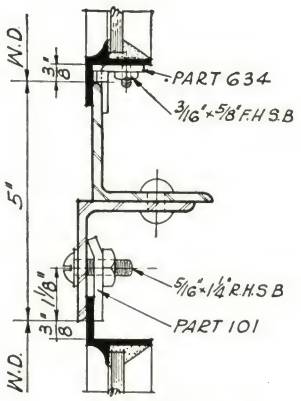
Fenestra August 1929

Horizontally Pivoted Windows
Installation Details

Plate No L-105



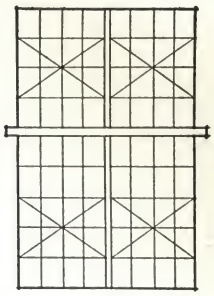
·TYPE-1·



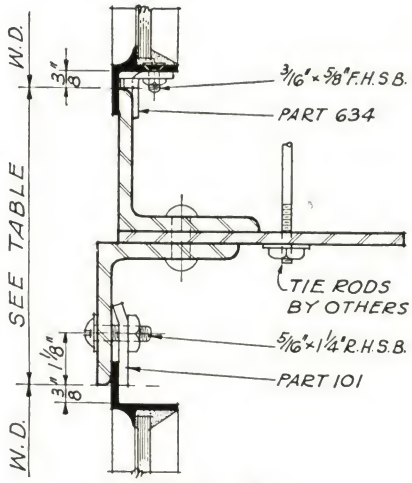
·TYPE-2·



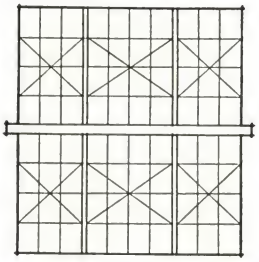
·TYPICAL OPENING·
·TYPE NO. 1



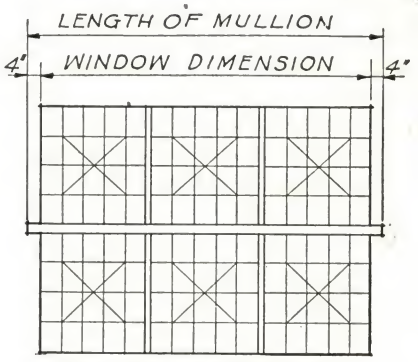
·TYPICAL·OPENING·
·TYPE·NO. 2·



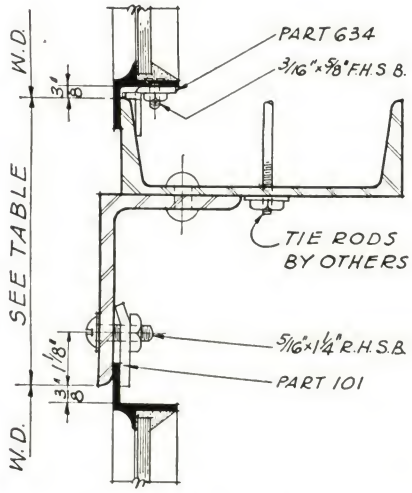
·TYPE-3·



·TYPICAL·OPENING·
·TYPES·NO.-3¢4·



·TYPICAL·OPENING·
TYPES·NO.3¢4·



·TYPE-4·

·DETAILS·SCALE. 3"-1'-0"·

·TABLE·OF·HORIZONTAL·MULLION·SIZES·

LIGHTS WIDE	MULL TYPE NO.	·ANGLES· REQ'D	·ANGLES· ·SIZE·	PLATE·OR CHANNEL	ESTIMATED WEIGHT OF MULL PER FT.	BETWEEN WINDOW DIMENS.
SINGLE UNIT OPENINGS	1	1	1"×1"×1/8"	NONE	3.0 LBS	2"
		1	2"×1½"×3/16"			
·12"×18" SIZE GLASS·						
3 TO 9	2	2	2½"×2½"×3/16"	NONE	6.5 LBS	5"
10 TO 13	3	2	2½"×2½"×3/16"	6"×¼" PLT.	11.5 LBS.	5¼"
10 TO 13	4	1	3½"×2½"×¼"	4" CHANNEL	10.5 LBS	5¼"
14 TO 18	3	2	3"×3"×5/16"	6"×¼" PLT.	17.5 LBS	6⅛"
14 TO 18	4	1	4"×3"×5/16"	6" CHANNEL	15.5 LBS.	6⅛"
·14"×20" SIZE GLASS·						
3 TO 8	2	2	2½"×2½"×3/16"	NONE	6.5 LBS.	5"
9 TO 11	3	2	2½"×2½"×3/16"	6"×¼" PLT	11.5 LBS	5¼"
9 TO 11	4	1	3½"×2½"×¼"	4" CHANNEL	10.5 LBS	5¼"
12 TO 16	3	2	3"×3"×5/16"	6"×¼" PLT.	17.5 LBS.	6⅛"
12 TO 16	4	1	4"×3"×5/16"	6" CHANNEL	15.5 LBS	6⅛"

TIE RODS SHOULD SUPPORT HOR. MULLION IN OPNGS. OVER 10'-0"

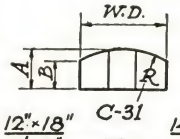
·SCALE 3"=1'-0"·

Fenestra August 1929

Horizontally Pivoted Windows
Horizontal Mullion Details

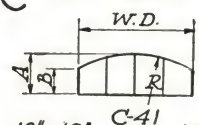
Plate No. L-107

CAMBER HEAD UNITS ONE PANE HIGH



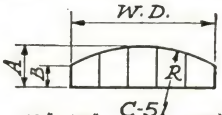
C-31

12"×18"	14"×20"
3'-2" - W.D. -	3'-8"
1'-6 1/8" - A -	1'-8 1/8"
1'-1" - B -	1'-2 1/4"
3'-2" - R -	3'-8"



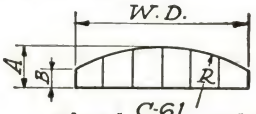
C-41

12"×18"	14"×20"
4'-2 3/8" - W.D. -	4'-10 3/8"
1'-6 1/8" - A -	1'-8 1/8"
-11 3/8" - B -	1'-0 5/16"
4'-2 3/8" - R -	4'-10 3/8"



C-51

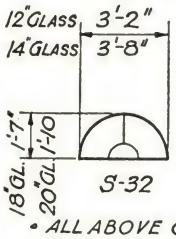
12"×18"	14"×20"
5'-2 3/4" - W.D. -	6'-0 3/4"
1'-6 1/8" - A -	1'-8 1/8"
-9 1/16" - B -	-10 3/8"
5'-2 3/4" - R -	6'-0 3/4"



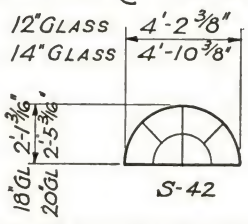
C-61

12"×18"	14"×20"
6'-3 1/8" - W.D. -	7'-3 1/8"
1'-6 1/8" - A -	1'-8 1/8"
-8 1/16" - B -	-8 7/16"
6'-3 1/8" - R -	7'-3 1/8"

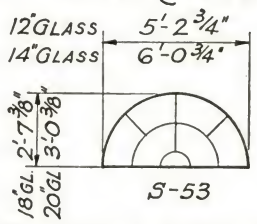
SEMICIRCULAR UNITS NOT OVER SIX PANES WIDE



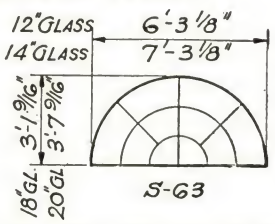
S-32



S-42



S-53



S-63

• ALL ABOVE CAMBER HEAD AND SEMICIRCULAR UNITS HAVE NO. 70 SECTION AT SILL FOR ATTACHMENT TO TOP OF SINGLE SQUARE HEAD UNIT, OR FOR INDIVIDUAL INSTALLATION. SEE FIG.-1 BELOW.

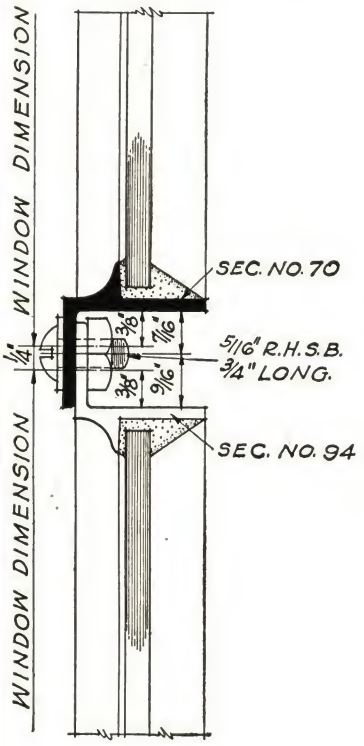


FIG.-1

SECTION THRU UNIT UP TO AND INCLUDING SIX PANES IN WIDTH.

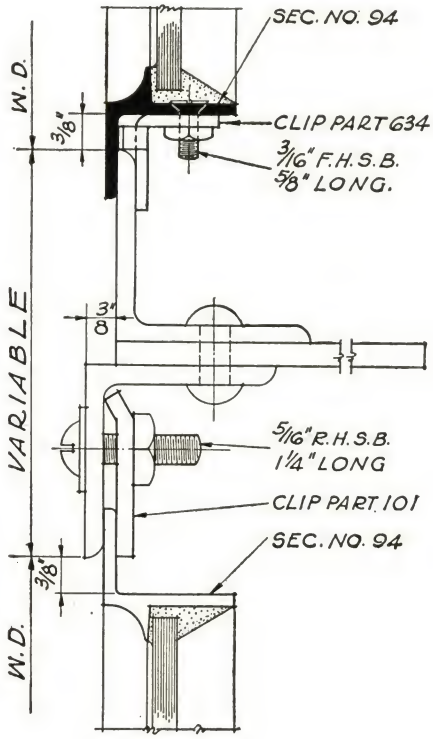
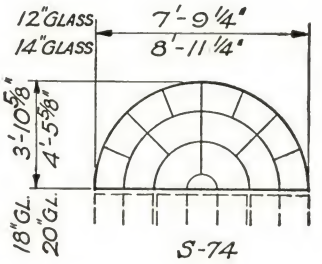


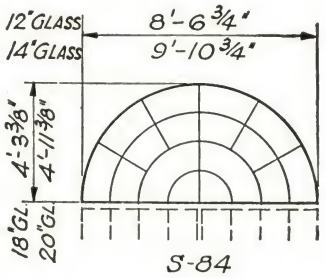
FIG.-2

SECTION THRU UNIT OVER SIX PANES IN WIDTH.

SEMICIRCULAR UNITS MORE THAN SIX PANES WIDE



S-74



S-84

SEMICIRCULAR UNITS MORE THAN SIX PANES WIDE HAVE NO. 94 SECTION AT SILL FOR ATTACHMENT TO MULTIPLE UNIT OPENING WITH STRUCTURAL HORIZONTAL MULLION, OR FOR INDIVIDUAL INSTALLATION. SEE FIG. 2

• DETAILS • SCALE: HALF • FULL • SIZE •

Fenestra, August 1929	Horizontally Pivoted Windows Camber and Semi-Circular Heads	Plate No. L-109

FENESTRA PROJECTED WINDOWS

COMMERCIAL TYPE — SPECIFICATIONS

GENERAL

Windows shall be Fenestra Commercial Projected as manufactured by Detroit Steel Products Company.

MATERIAL—CONSTRUCTION

(Note:—Same as these specifications for Fenestra Horizontally Pivoted Windows.)

ATTACHED HARDWARE

(Note:—Attach at the factory.)

Ventilators shall swing out from the bottom while sliding down from the top or swing in from the top while sliding up from the bottom, as indicated.

Each ventilator shall be accurately balanced on two supporting arms of solid spring steel attached to the ventilator with bronze shoulder pivots, equipped with bronze washers. Connections between supporting arms and window frame shall be made by malleable iron brackets rigidly supported on the horizontal frame members or muntins and double riveted to the vertical frame members or muntins with arms attached by bronze shoulder pivots.

Each ventilator shall be equipped with two channel shaped bronze friction shoes sliding vertically in the ventilator jambs and so constructed that through galvanized compression springs uniform tension is secured. Shoes shall be accurately gauged and located and solidly riveted in place to assure proper, constant pressure at the jambs.

Each *open-out* ventilator shall be equipped with two shouldered, alignment control bronze springs riveted to the channel jambs.

(Note:—The shoulders of these springs are so designed and located as to limit the downward travel of the friction shoes and stop all open ventilators in uniform alignment of approximately 60 degrees. When it is desired to open the ventilator at a greater angle or reverse for washing, light pressure on the springs depresses the shoulders and allows the friction shoes to slide past. As the ventilator is returned to a closed position, the action of the spring is automatic.)

Each *open-in* ventilator shall be equipped with a solid steel stop which prevents its opening farther than 90°

DETACHED HARDWARE

All hardware shall be (malleable iron) (bronze).

(Note:—Bronze at added cost over iron.)

Locking and Operating Devices.

(1) *For open-out ventilators within reach from floor*—Malleable iron cam handle attached to Z bar bracket by bolt and nut, Part 150.

(2) *For open-out ventilators beyond reach from floor*—Riveted malleable iron pole ring at head of ventilator, malleable iron cam handle.

(3) *For open-in ventilators within reach from floor*—Riveted malleable iron spring latch with finger ring handle at head of ventilator, Part 147.

(4) *For open-in ventilators beyond reach from floor*—Riveted malleable iron spring latch with endless chain, Part 146, at head of ventilator. Riveted iron chain guide, at sill, or riveted malleable iron spring latch with pole hook ring handle, Part 147, at head.

ERECTION—PAINTING—GLAZING

(Note:—Same as these specifications for Horizontally Pivoted Windows.)

PROVISIONS FOR SCREENS

(Note:—Include in the Carpentry Specifications the necessary clauses covering wood trim required in conjunction with screens. Space between inside screen and window must not be less than 2" to clear standard hardware.

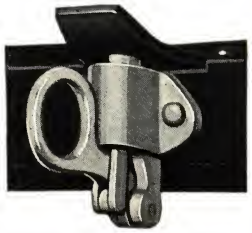
SCREENS AND SHADES

(Note:—On open-out ventilators, metal side hinged or vertical sliding screens may be used as desired. Rolling screens up to 6'0" wide may be used where entire window is covered. On open-in ventilators, metal (removable) (fixed) outside screens may be used.)

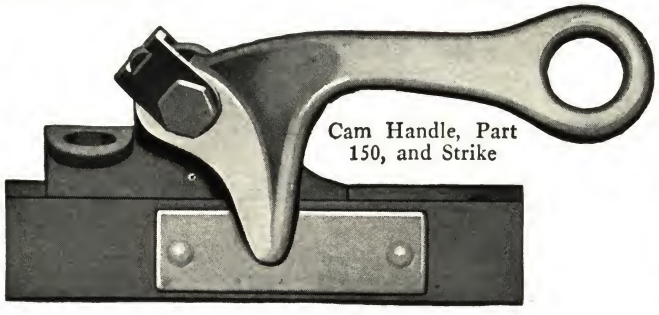
(Note:—Where desired the window manufacturer will furnish, at reasonable added cost, removable tubular steel frame, rewirable screens (baked enameled finish) with No. 16 mesh bronze screen cloth. These screens are well constructed and furnished completely adapted to and fitting the ventilator opening.)

(Note:—All shades must be located at least 2" from the inside face of the window for hardware clearance.)

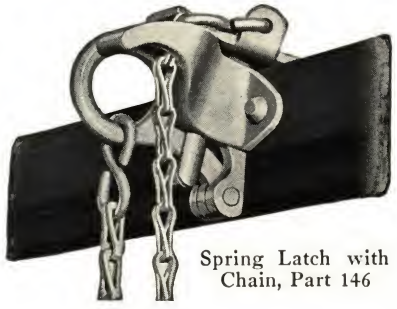
(Note:—Shade bracket clips, designed to attach by drilling and tapping two small holes at the top of each jamb section, are supplied at slight added cost. These clips are of sufficient depth to bring the shade bracket in the proper position and are slotted to accommodate any standard shade bracket. Shade clips cannot be used satisfactorily with rolling screens, but shade brackets may be attached to the under side of screen box.)



Spring Latch with Ring, Part 147

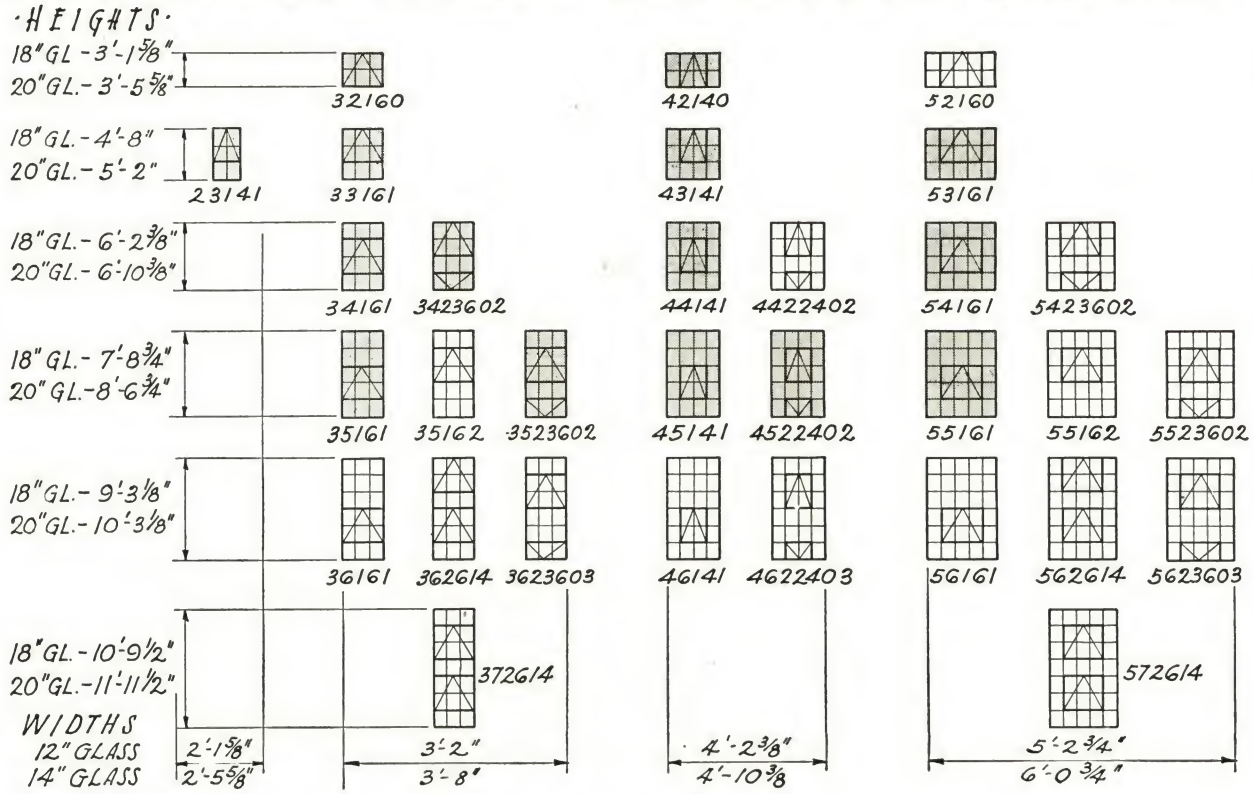


Cam Handle, Part 150, and Strike

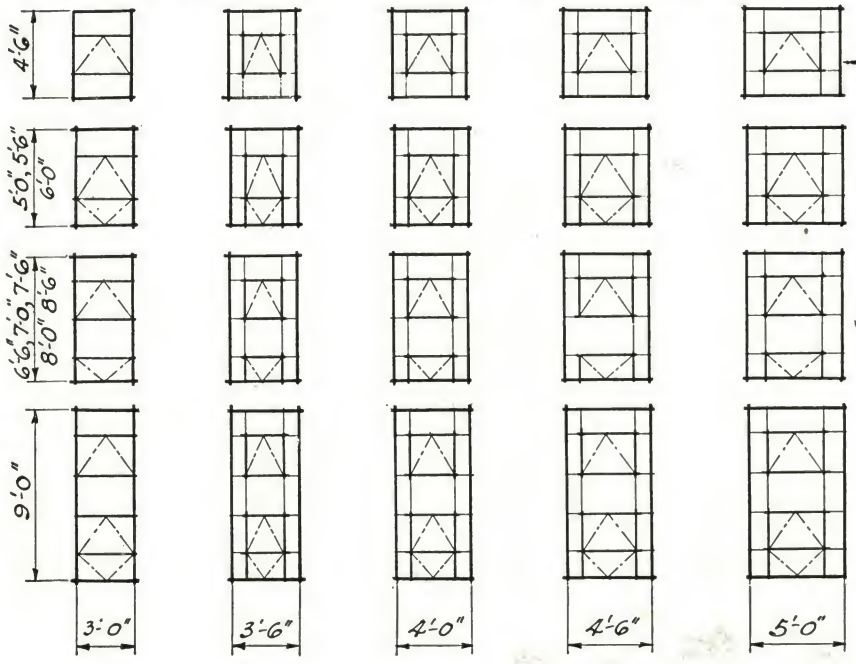


Spring Latch with Chain, Part 146

STANDARD TYPES ~ COMMERCIAL PROJECTED



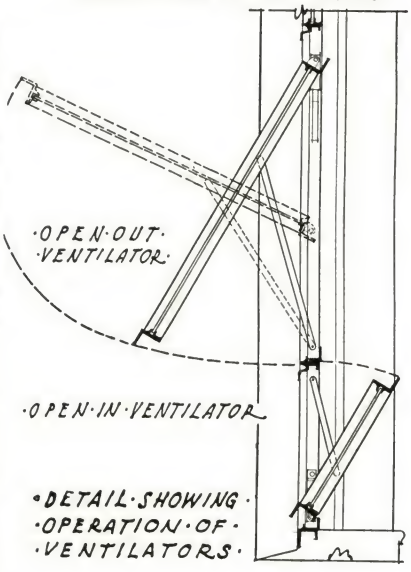
TYPICAL STANDARD TYPES & SIZES ARCHITECTURAL PROJECTED



NOTES

COMMERCIAL TYPES SHOWN SHADED ARE CARRIED IN STOCK

FOR NOMENCLATURE OF ARCH. PROJ. TYPES COMBINE WIDTH & HEIGHT. THIS TYPE IS #5046.



Fenestra 1932	Fenestra Projected Windows Commercial and Architectural Types	Plate No G-205

ARCHITECTURAL TYPE — SPECIFICATIONS

ARCHITECTURAL PROJECTED WINDOWS are similar to Commercial Projected types in general construction and operation, but differ chiefly in the following particulars:

FRAME MEMBERS are unequal leg channel sections.

Standard types vary from 3′0″ wide to 5′0″ wide including 3′6″, 4′0″, and 4′6″. Standard heights vary from 4′6″ to 9′0″ and include 5′0″, 5′6″, 6′0″, 6′6″, 7′0″, 7′6″, 8′0″, and 8′6″.

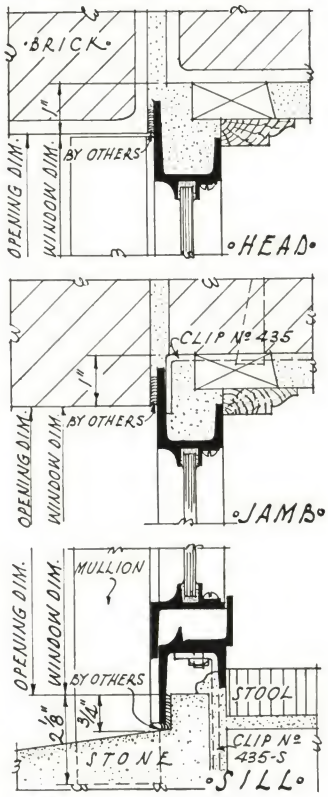
TRANSOM BARS are solid rolled steel Z bars and angles or structural angles and channels.

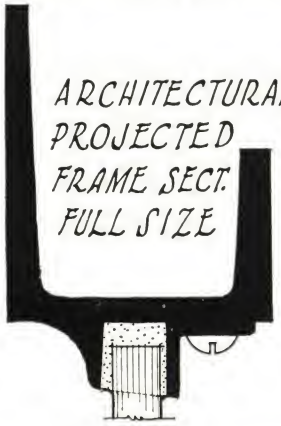
CAM HANDLE brackets are of malleable iron triple riveted to the ventilators.

Hardware is of the same general design as that used on Commercial Projected Windows but is standardized in bronze with oxidized finish.

GLASS is held by glazing angles.

ARCH. PROJECTED IN ·SOLID·BRICK·





NOTE: COMMERCIAL PROJECTED INSTALLATION DETAILS SAME AS FOR HORIZ. PIVOTED, PLATES L-104 & 105

COMMERCIAL PROJECTED WINDOWS
Symmetrical Combined Widths

12″x18″ Glass	14″x20″ Glass	Units Wide	Lights Wide	Number of Units and Lights per Unit
2′ 1⅝″	2′ 5⅝″	1	2	2
3′ 2″	3′ 8″	1	3	3
4′ 2⅜″	4′ 10⅜″	1	4	4
4′ 5¼″	5′ 1¼″	2	4	2, 2
5′ 2¾″	6′ 0¾″	1	5	5
6′ 6″	7′ 6″	2	6	3, 3
8′ 6¾″	9′ 10¾″	2	8	4, 4
9′ 10″	11′ 4″	3	9	3, 3, 3
10′ 7½″	12′ 3½″	2	10	5, 5
10′ 10⅜″	12′ 6⅜″	3	10	3, 4, 3
11′ 10¾″	13′ 8¾″	3	11	3, 5, 3
12′ 11⅛″	14′ 11⅛″	3	12	4, 4, 4
13′ 11½″	16′ 1½″	3	13	4, 5, 4
13′ 11½″	16′ 1½″	3	13	5, 3, 5
14′ 11⅞″	17′ 3⅞″	3	14	5, 4, 5
15′ 2¾″	17′ 6¾″	4	14	3, 4, 4, 3
16′ 0¼″	18′ 6¼″	3	15	5, 5, 5
17′ 3½″	19′ 11½″	4	16	4, 4, 4, 4
19′ 4¼″	22′ 4¼″	4	18	4, 5, 5, 4
20′ 7½″	23′ 9½″	5	19	5, 3, 3, 3, 5
21′ 5″	24′ 9″	4	20	5, 5, 5, 5

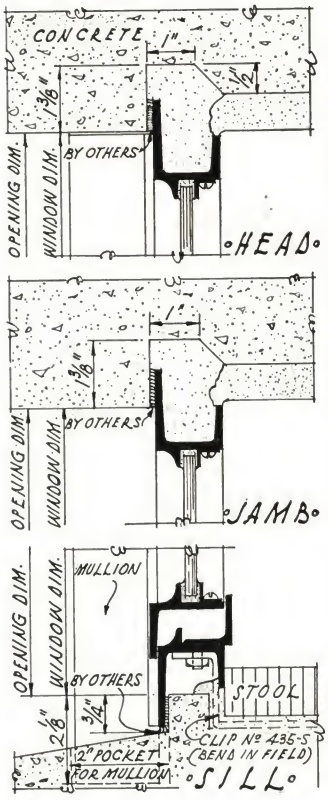
Combine width dimensions in Col. 1 with 12″ x 18″ glass height only.
Combine width dimensions in Col. 2 with 14″ x 20″ glass heights only.

ARCHITECTURAL PROJECTED WINDOWS
Symmetrical Combined Widths

Width of Opening	Units Wide	Lights Wide	Arrangement of Units in Opening (Letter "M" Indicates Mullion)
6′ 2″	2	2	3′ 0″—M—3′ 0″
7′ 2″	2	6	3′ 6″—M—3′ 6″
8′ 2″	2	6	4′ 0″—M—4′ 0″
9′ 2″	2	6	4′ 6″—M—4′ 6″
9′ 4″	3	3	3′ 0″—M—3′ 0″—M—3′ 0″
9′ 10″	3	5	3′ 0″—M—3′ 6″—M—3′ 0″
10′ 2″	2	6	5′ 0″—M—5′ 0″
10′ 4″	3	5	3′ 0″—M—4′ 0″—M—3′ 0″
10′ 4″	3	7	3′ 6″—M—3′ 0″—M—3′ 6″
10′ 10″	3	5	3′ 0″—M—4′ 6″—M—3′ 0″
10′ 10″	3	9	3′ 6″—M—3′ 6″—M—3′ 6″
11′ 4″	3	5	3′ 0″—M—5′ 0″—M—3′ 0″
11′ 4″	3	7	4′ 0″—M—3′ 0″—M—4′ 0″
11′ 4″	3	9	3′ 6″—M—4′ 0″—M—3′ 6″
11′ 10″	3	9	3′ 6″—M—4′ 6″—M—3′ 6″
11′ 10″	3	9	4′ 0″—M—3′ 6″—M—4′ 0″
12′ 4″	3	7	4′ 6″—M—3′ 0″—M—4′ 6″
12′ 4″	3	9	4′ 0″—M—4′ 0″—M—4′ 0″
12′ 4″	3	9	3′ 6″—M—5′ 0″—M—3′ 6″

Use these dimensions with any height dimension.

ARCH. PROJECTED IN ·CONCRETE·CONSTR·





Fenestra 1932

Fenestra Projected Windows
Installation Details

Plate Nº G-206

CONTINUOUS WINDOWS

SPECIFICATIONS

Notes are explanatory or advisory only and need not be included in the specifications.

(Note:—Intermediate structural vertical members should be provided approximately 8′ to 12′ apart.)

(Note:—Structural Steel Girts, at heads and sills of Continuous Windows, are not furnished by the window manufacturer, and should be provided for in the Structural Steel Specifications.)

(Note:—Sheet metal flashing at heads, sills, and ends of runs is not furnished by the window manufacturer, and should be provided for in the Roofing and Sheet Metal Specifications.)

GENERAL

CONTINUOUS TOP HUNG WINDOWS shall be *Fenestra* as manufactured by Detroit Steel Products Company.

(Note:—Fenestra Continuous Windows are particularly designed for use in monitor and sawtooth roof construction where the plane of the windows is on a slope. They may be used in vertical planes where necessary.)

(Note:—Standard units of Continuous Windows measure 20′ in length (dimension points equal the clear opening.) We recommend for the economical arrangement of operator arms that units vary on multiples of 4′ (8′, 12′, 16′). Smaller units may be used if necessary, in widths varying in multiples of 2′ (8′, 10′, 12′, 14′, 16′, 18′.)

MATERIAL

All sections shall be especially designed, hot rolled, solid steel bars with heavy fillets in all re-entrant angles. HEAD AND END JAMB MEMBERS shall be special angles. MUNTINS shall be special T's 1⅜″ deep.

SILLS shall be special design sections with a long downstanding leg bent at the end to make close contact with the building construction.

CONSTRUCTION

All members of the window shall be accurately fitted and rigidly riveted at the joints to form standard panel units. Panels shall be joined, end to end midway between T muntins, by splice plates bolted to head and sill members.

(Note:—Panels are joined at the time of erection.)

At the ends of all swing sections next the building construction there shall be provided stationary 1′ panels.

Between the ends of swing sections there shall be provided stationary 2′ panels.

The joint between ends of swing sections and stationary end sections (and stationary intermediate sections) shall be covered and protected by a specially formed, 14-gauge, steel channel with one leg secured to the end angle of the swing section and designed to overlap the end angle of the stationary section.

Where so indicated, provide 2′ wide storm panels secured to stationary end (and intermediate) panels by a steel plate and to the sill by sill clips. Panels shall underlap the swing window section and shall be provided at sill with a formed continuous drip board, set over the sill flashing.

ATTACHED HARDWARE

(Note:—Attach at the factory.)

All CONTINUOUS WINDOWS shall be top hung on heavy malleable iron butts, with ⅜″ brass pins, spaced 4′ apart on centers. Butts shall be rigidly riveted to the head angle and furnished with bolts for attachment to the building girts.

ERECTION

All CONTINUOUS WINDOWS shall be erected by the Fenestra Construction Company, under a separate contract.

All windows shall be erected in a thoroughly workmanlike manner ready for glazing.

PAINTING

All windows shall be given one dip-coat of red mineral paint by the manufacturer before shipment.

(Note:—The following should be provided for in the Painting Specifications:

"One additional coat of paint should be applied after erection but before glazing. Further painting should be deferred until at least three weeks after glazing to allow putty to set. One or more additional coats may then be applied as required.")

(Note:—Where desired, the Fenestra Construction Company at reasonable added cost will do field painting after erection. If required, so specify here, including specification for paint and its application.)

GLASS AND GLAZING

Glass shall be ¼″ rough wire glass.

Putty shall be a high grade of steel window putty.

(Note:—Ordinary wood sash putty must not be used.)

All CONTINUOUS WINDOWS shall be glazed from the outside. All glass shall be set in a heavy bed of putty and secured at muntins and end angles by angle clips secured with bolts. Face putty shall be applied at sills in a neat, clean-cut, smooth manner.

(Note:—Do not paint until putty has thoroughly hardened.)

CONTINUOUS FIXED WINDOWS

(Note:—The Specification for Continuous Fixed Windows is the same as that for Continuous Top Hung Windows except that all window units are stationary (no swing sections). Heavy steel angle clips bolted to the window head and the building girts are substituted for the butts. Steel sill clips, furnished with the window and shipped flat, are bolted to the sill of the window and bent around the steel sill girt to rigidly secure the window in position at the bottom.)

CONTINUOUS BOTTOM HUNG WINDOWS

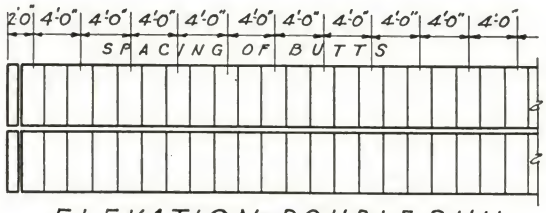
(Note:—In general the specification for Continuous Bottom Hung Windows is the same as that for Continuous Top Hung Windows except in the following particulars:

[a] The head section is a special T.

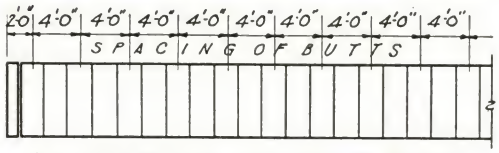
[b] The sill section is a special angle designed to take the butts attached to a special girt.

[c] The weathering caps are attached, with the legs out, to the fixed end or intermediate panels instead of to the swing sections.

[d] The windows are glazed on the inside with face putty at both head and sill.)



ELEVATION-DOUBLE RUN



ELEVATION-SINGLE RUN

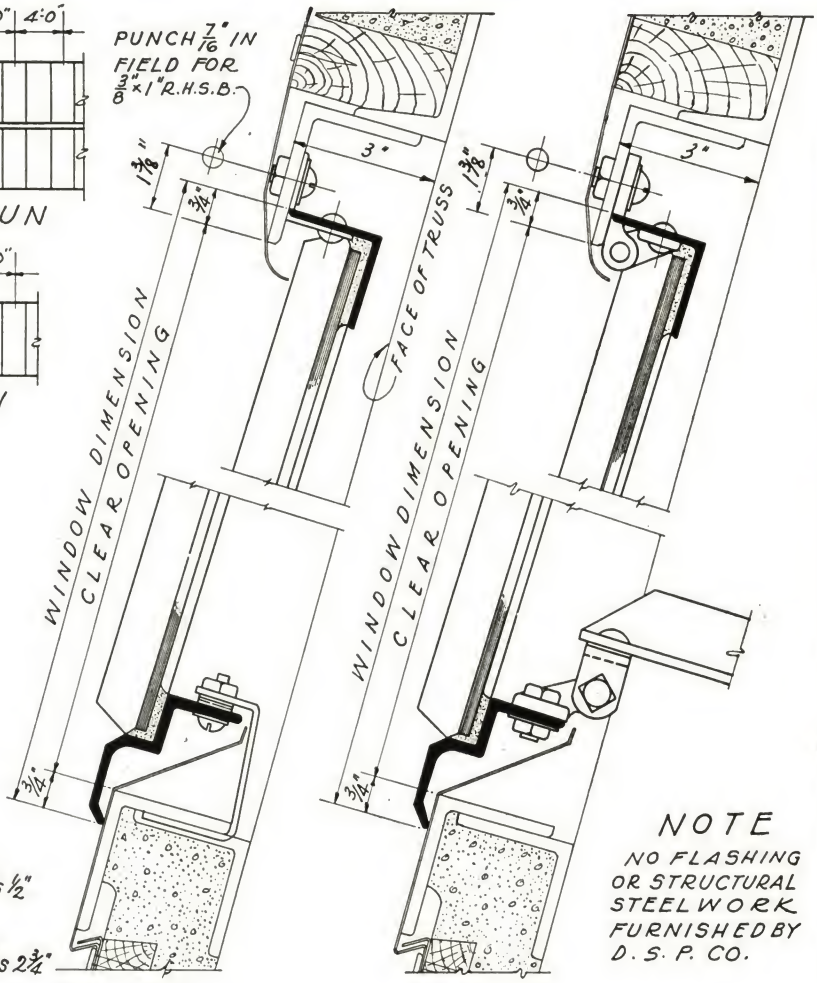
WINDOW HEIGHT	GLASS WIDTH	GLASS HEIGHT
3'-0"	23 1/2"	2'-9 1/4"
4'-0"	23 1/2"	3'-9 1/4"
5'-0"	23 1/2"	4'-9 1/4"
6'-0"	23 1/2"	5'-9 1/4"

TABLE OF WINDOW DIMENSIONS AND CLEAR OPENINGS.	
WINDOW-D.	CLEAR O.
3'-0"	2'-10 1/2"
4'-0"	3'-10 1/2"
5'-0"	4'-10 1/2"
6'-0"	5'-10 1/2"

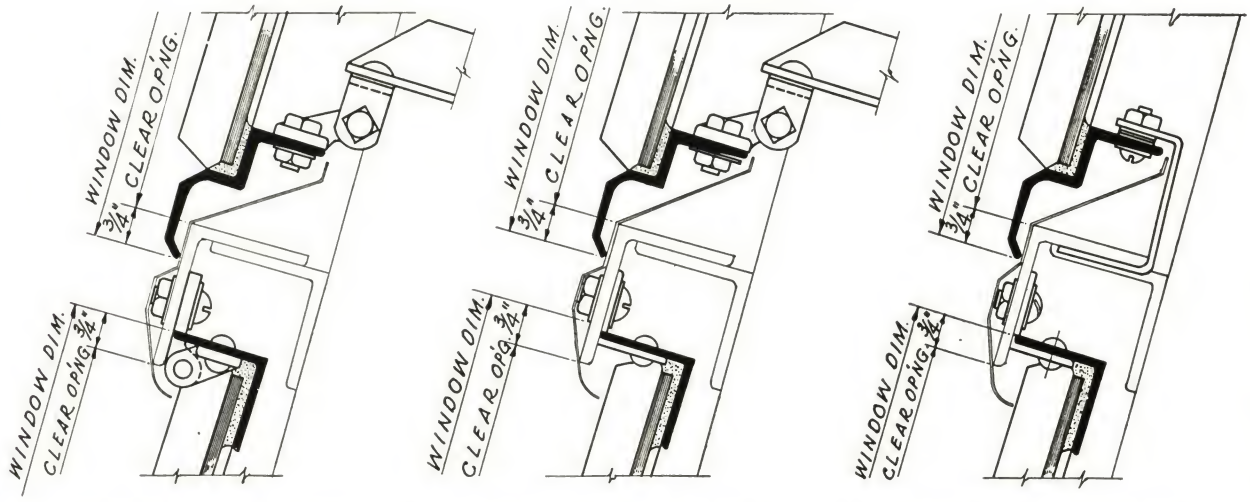
GLASS SIZES

WIDTH
EQUALS BAR CENTERS MINUS 1/2"

HEIGHT
EQUALS SASH DIMENSION MINUS 2 3/4"

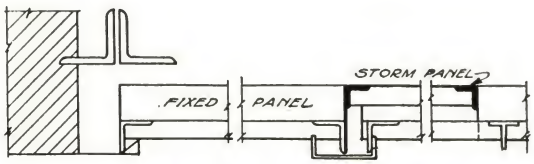


NOTE
NO FLASHING OR STRUCTURAL STEEL WORK FURNISHED BY D. S. P. CO.

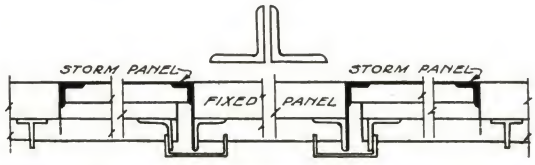


SCALE: 3" = 1'-0"

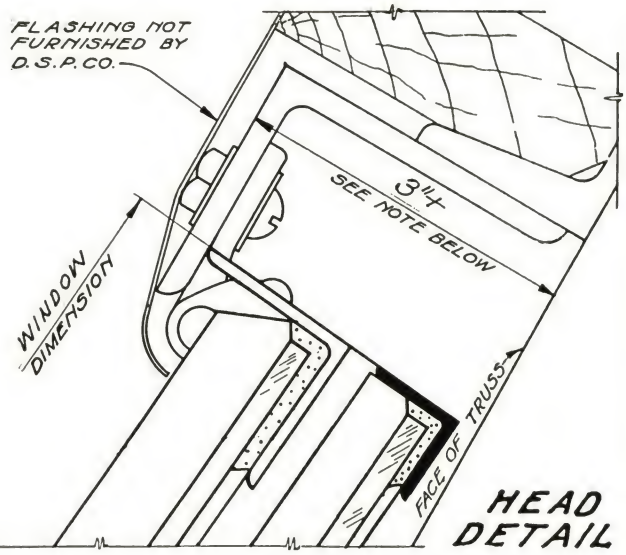
Fenestra, August 1929	Continuous Windows, Top Hung Typical Cross Sections	Plate No P-102



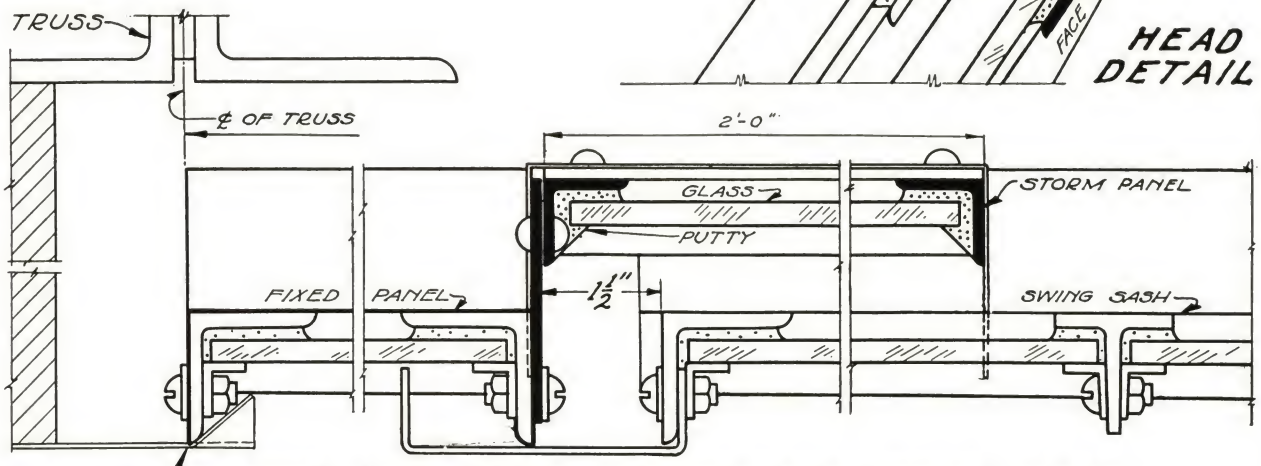
TYPICAL DETAIL AT END OF SWING RUN



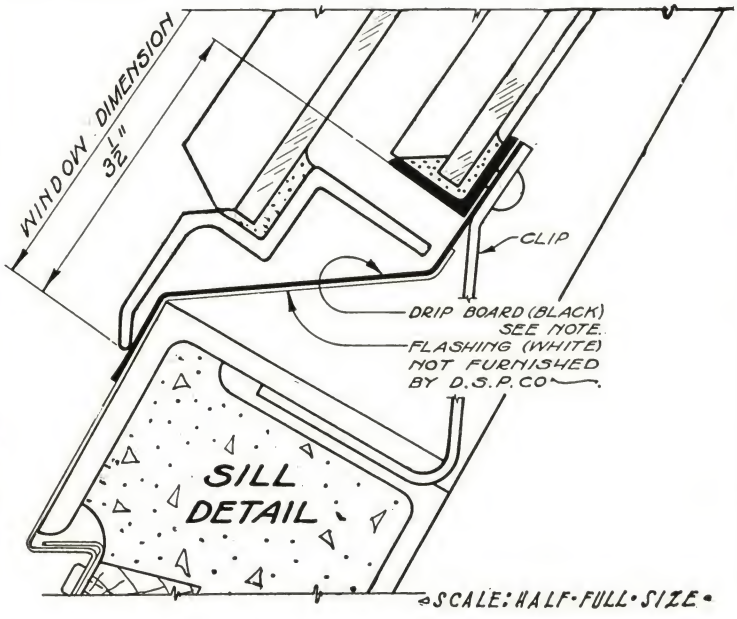
TYPICAL DETAIL BETWEEN SWING RUNS



HEAD DETAIL



TYPICAL HORIZONTAL SECTION THRU STORM PANEL.



NOTE

Storm panels can be used only with top hung windows. They are recommended only for windows 30° or less off the vertical.

When panels are used in front of vertical steel members or diagonal bracing a clear distance of not under 4 in. must be used.

A drip board (shown in black at sill) is furnished as part of panel. This drip should not be confused with flashing at sill which is not furnished by DETROIT STEEL PRODUCTS COMPANY.

The height of glass in panel is equal to window dimension minus 4 in. The glass width is 1 ft. 11½ in.

Fenestra, August 1929	*Continuous Windows, Top Hung* *Storm and End Panels*	Plate No P-104

FENESTRA OPERATING DEVICES

SO many different conditions are encountered in designing Fenestra operators that the following descriptions and limits should be regarded as explanatory and advisory only.

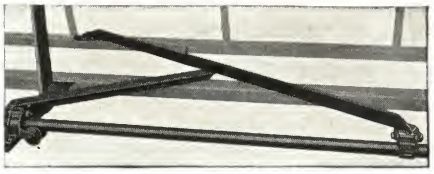
Fenestra operators are not sold as separate products but only as a means of mechanically opening and closing Fenestra windows. All Fenestra operators are erected by our own erection department, the Fenestra Construction Company, which supplies the necessary support brackets for both power and transmission lines, lines the operator plumb and true and leaves it in good working order.

All operating equipment, especially electrically controlled equipment, needs occasional inspection and lubrication. Provision should be made for reaching powers or motors without undue inconvenience.

CONTINUOUS OPERATOR

Designed to operate one or several continuous windows in line (top hung or bottom hung) in either vertical or sloping planes. Unusually heavy construction and extreme care in assembly give this operator unusual strength and reliability. The power is applied through straight line motion levers. Since the leverage increases faster than the load, the operation becomes continuously easier as the windows open. This is an exclusive Fenestra principle.





Above—The Fenestra Continuous Power. Right—Continuous Lever Arm Assembly

Power is a case-hardened, machine cut, high carbon steel worm operating a special alloy, non-ferrous bronze worm gear with straight face, machine cut teeth and extra heavy hub and rim. Worm and worm shaft are turned down from a solid steel bar. Worm and gear are oil encased in an oil-tight box. Worm shaft is provided with ball thrust bearing.

Worm gear fits over a 1″ square steel shaft which drives a high carbon steel, heat-treated pinion in mesh with high carbon steel rack, carrying machine cut teeth. Worm gear and pinion are broached out to fit the shaft with the permanence and reliability of a single piece. Rack is suspended from hangers rigidly clamped to the transmission line, thus transmitting power in a horizontal direction. A steel stop clutch, rigidly attached to the worm shaft, operates to cut off the power as the window is closed.

Power transmission line is 1″ wrought iron pipe in 20′ lengths joined by solid steel plugs with a drive fit riveted in two directions. Operating arms are steel angles,



Continuous Operator on a Run of Continuous Top Hung Sash

one arm twice as long as the other. One end of the short arm is pivoted to the center of the long arm, the other end attached by a universal pivot to a housing on the operator support. One end of the long arm is attached to the window and the other end is clamped through a universal joint to the transmission line. Operating arms are spaced approximately 10′ on centers.

Power is operated: (a) By chain and chain wheel, the hub of the latter being broached to fit the flattened end of the worm shaft and secured by a set screw and cotter pin. (b) By electrical power unit operating through a sprocket and chain as in Rack and Pinion operator.

Power may be located near either end of the run, not closer than 20′ to the end. For limits of operation see a Fenestra representative, as numerous factors such as arrangement of windows, their height and the degree of opening, must be considered.

WORM AND GEAR OPERATOR

Designed for ventilators horizontally pivoted 2″ above center. May be used with top pivoted ventilators. Power consists of a machine cut, cast iron worm, equipped



Worm and gear power, power line and operating arm

with ball thrust bearings, operating a cast iron segmental worm gear assembled in a steel housing. Hub of the gear reamed to fit power transmission line and rotate it on the gear axis. Power line is of 1″ black wrought iron pipe

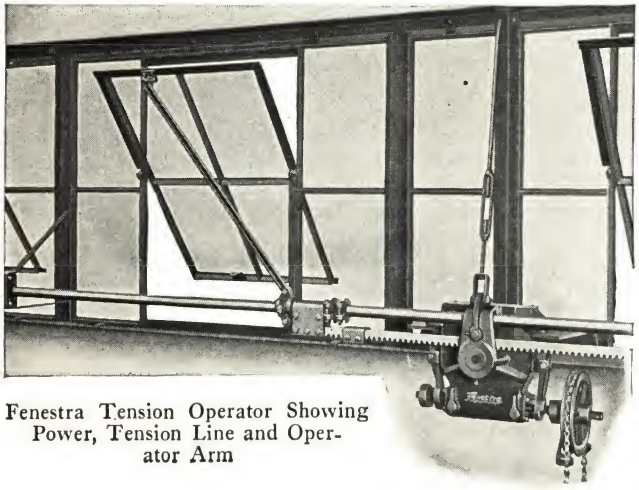
made continuous by steel plugs with a drive fit in two directions. Adjustable steel operating arms are rigidly clamped to the transmission line and attached to the ventilators by steel brackets.

Power is operated: (a) By a chain passing over a chain wheel which is broached to accurately fit the flattened end of the worm shaft and secured by a set screw and cotter pin. (b) By a 1″ black wrought iron pipe connected to the worm shaft and carried down vertically to a miter gear (with removable crank) encased in a gear box.

Power may be vertical or inclined, located at either end or at any intermediate point. Operator limited to 12 single 2-pane high vents in a single run and 40′ on either side of the power. Multiple runs limited to 9 single 2-pane high vents and 20′ on either side of the power. Miter gears limited to 9 single 2-pane high vents each.

TENSION OPERATOR

Designed to operate long runs of horizontally pivoted ventilators. In general construction and design Tension operator is similar to Continuous operator. Power and transmission lines are the same, except that each power is equipped with a double stop so that all movement is



Fenestra Tension Operator Showing Power, Tension Line and Operator Arm

stopped and power cut off both when the vents are closed and when they are fully open.

Operating arms are adjustable, straight, steel channels rigidly attached to the tension line by malleable iron and steel swivel clamps. Arms attach to the vents by steel pivot hinges.

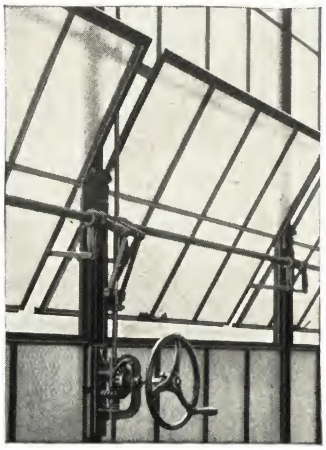
Power may be attached at either end of the run not closer to the end than 20′. Operator limited (single power) to 300′.

SCREW TYPE OPERATOR

Designed for use in high openings, such as power house bays, filled entirely with windows and structural mullions. May be used with ventilators pivoted 2″ above center or 4″ down from the top. Lies close to the windows, out of the way of cranes. May be concealed in the walls, if desired, at extra cost.

Two types of power are available: (a) Open bevel gears, manually operated by a hand wheel. Power to be assembled in an open cast iron case. (b) Electrical power with gears assembled and oil encased in a dust-proof gear box. Power to be connected either directly through a universal joint or by sprocket and chain drive.

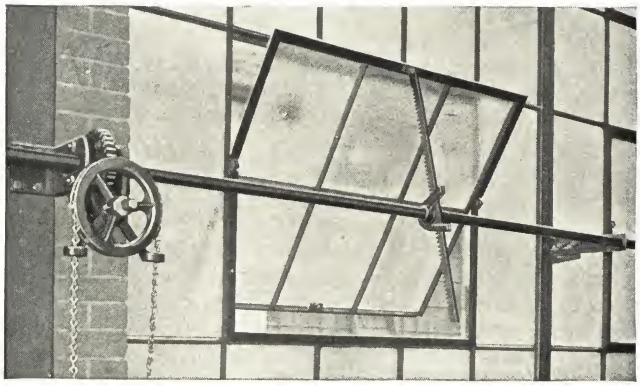
Either power operates a ¾″ vertical, threaded steel shaft upward or downward. To this shaft are connected heavy, cast iron cross heads, which operate cast iron rocker arms, which in turn are connected to the transmission line. Transmission line is 1″ wrought iron pipe with drive fitted steel plugs and rotates to operate pivoted lever arms (two to each vent), which connect with the ventilator jamb bars. Power may be located at either end of the run or at any intermediate point. Operator limited (single power) to 20 2-pane high vents pivoted 4″ from top or 50 2-pane high vents pivoted 2″ above center. One row of fixed lights at the sill of the window usually is required to permit clearance of power.



Screw Type Operator

RACK AND PINION OPERATOR

Designed for ventilators pivoted 4″ from the top or with vents pivoted 2″ above center. Three types of power are available: (a) Light power: 32 to 1 reduction. Cut steel worm equipped with ball thrust bearings, operating a cast iron worm gear assembled in a steel housing. (b) Heavy power: 45 to 1 reduction. Machine cut steel worm equipped with ball thrust



Rack and Pinion Operation of Pivoted Ventilators

bearings operating a semi-steel worm gear assembled and oil encased in a dust-proof gear box. (c) Electrical power: 71 to 1 reduction. Machine cut steel worm equipped with ball thrust bearings operating a semi-steel worm gear assembled and oil encased in a dust-proof gear box.

Power line is 1″ wrought iron pipe to which pinions are rigidly attached. Operating arms are straight steel

racks attached to vents and clamped in mesh with the pinions.

Light and heavy powers may be operated (a) by chain and chain wheel or (b) by crank and miter gear (similar to worm and gear operators). Electrical power is operated by a cast iron sprocket wheel keyed to the worm shaft and motor driven through a chain drive. The electrical equipment is mounted directly beneath and joined to the power gear case forming one complete power unit.

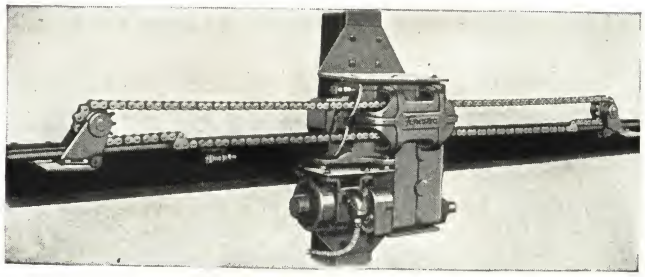
Power may be either vertical or inclined, located at either end of the run or at any intermediate point. Light and heavy operators in single runs limited to 80′ and 12 horizontally pivoted vents on either side or 40′ and 6 top pivoted vents on either side. Double runs limited to half that of single runs. Electrical powers in single runs limited to 300′ for horizontally pivoted vents or 150′ for top pivoted vents. In double runs, electrical powers are limited to 150′ for horizontally pivoted vents and 75′ for top pivoted vents.

SUPER-POWER OPERATOR

For exceptionally large industrial buildings where unusual operating service is desired on long runs of continuous top hung windows, we are prepared to supply the Fenestra super-power which, in connection with continuous operator transmission line and lever arms, will handle conveniently top hung continuous windows in runs up to 600′.

The utmost care has been used both in workmanship and materials to produce a device that combines smooth, even, efficient action with superlative strength and durability.

The power consists of a heavy, double, spur gear reduction of especially heat-treated alloy steel and a case-hardened steel worm engaging a heavy, special alloy,



The Fenestra Super-power

non-ferrous bronze worm gear. Shafts for all spur gears are of heat-treated alloy steel with generously proportioned bearings. The worm shaft has, in addition, combination radial and thrust bearings of ball bearing type. The entire mechanism is enclosed in an accurately machined oil-tight case.

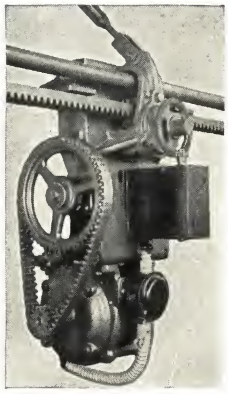
The power is usually located in the center of the run, operating a transmission line on either side through a heavy, continuous, roller type, chain drive. The motor is direct connected to the power by means of spur gears.

Conditions demanding the use of this super equipment are unusual. We strongly recommend consultation with Fenestra engineers who will be glad to make suggestions without obligation.

ELECTRICAL EQUIPMENT

The following specifications cover the electrical equipment for Fenestra operating devices:

All mechanical operators, electrically controlled, shall be provided by the operator manufacturer, with complete electrical equipment, as hereinafter specified. The operator manufacturer shall provide complete wiring diagrams.



Continuous Power Electrically Controlled

Motors shall be of type best adapted to the power equipment, of high torque and ample horsepower.

(Note:—Motors operating on 220-volt or 440-volt, 60-cycle, 3-phase, alternating current are recommended. Direct current motors are not carried in stock, but if alternating current is not available a special motor for 230-volt, direct current, can be supplied.)

(Note:—Specify current furnished.)

Motors shall be connected to power by means of sprockets and chains, or direct connected through universal joints as best adapted to power requirements. Standard magnetic reversing switches shall be enclosed in steel boxes and so designed that the movement of the ventilator, either in opening or closing, may be stopped or started at any point by manipulation of push buttons.

Limit switches shall be positive in action and rigidly attached to the power to form an integral part of the power unit. All limit switches shall be enclosed, yet accessible for adjustment so as to positively limit the motion of the ventilator in either direction.

Push button stations "open," "close" and "stop" shall be of rugged construction to withstand hard usage. Buttons shall be recessed in cover so that they cannot be accidentally operated.

(Note:—The following provisions should be made in the Electrical Specifications:

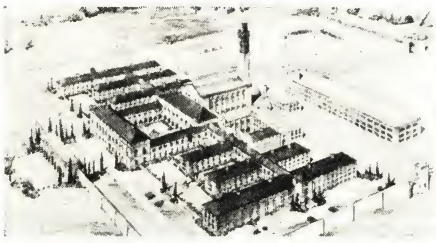
The electrical contractor shall install magnetic reversing switches and push button stations and shall furnish and install safety type line switches. He shall also furnish all conduit, fittings and wire and do all wiring in accordance with the wiring diagram between the electrical equipment furnished by the window operator manufacturer and that furnished by himself.

All materials and workmanship shall meet the requirements of the National Electric Code and all Local and State Inspection Bureaus.

Conduit shall be galvanized or black enameled. Wire shall be rubber covered N. E. C. Exposed conduit shall be run in a systematic, sightly manner, parallel with structural features of the building and rigidly and neatly secured. Where walls are plastered, conduit shall be concealed.

The electrical contractor shall carry fire, workmen's compensation, and public liability insurance. He shall guarantee his work for a period of one year after completion. Defect in the work and material furnished by him, developing during the above named period, shall be promptly and satisfactorily made good at his expense.)

FENESTRA DETENTION WINDOWS



Federal Penitentiary,
Lewisburg, Pa.



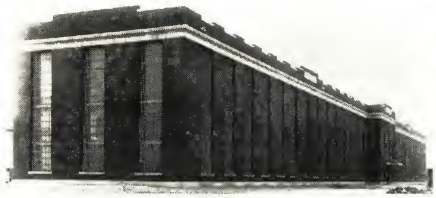
Boys' Vocational School,
Lansing, Mich.



Detroit House of Correction,
Detroit, Mich.



Michigan State Hospital,
Traverse City, Mich.



Erie County Penitentiary,
Wende, N. Y.



Michigan State Prison,
Jackson, Mich.

The term "Detention Windows" is used to designate collectively, what is really an extremely varied assortment of windows, all designed to function as windows should, and, at the same time provide a certain amount of restriction.

How much restriction is desired? That is the fundamental question to be carefully analyzed before any window suggestions can be offered, and the answer depends to a large extent on the character of the institution. Consider, for example, the following: (1) Homes for eccentric old people. (2) Reform schools for minors. (3) Hospitals for the mildly deranged. (4) Asylums for the violently insane. (5) Prisons for city, county, state and Federal criminals.

As the degree of detention varies, so also does the design and construction of the windows to be recommended.

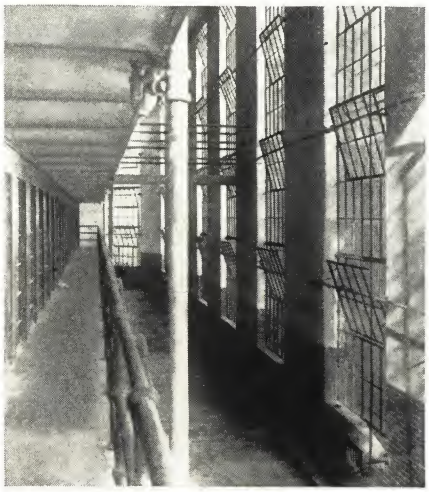
Fenestra Detention types cover the entire range from casement and projected designs, with large ventilators slightly restricted as to opening up to heavy 1¾" sections, 6"x9" glass lights, one-light high ventilators and the strength and rigidity of prison bars.

Combinations may include open-in and open-out ventilators; screened or unscreened; with or without grilles; fixed units in connection with movable wood sash; ventilators with limiting stops; ventilators with special keyed locks; ventilators with fixed units, or with prison bars outside.

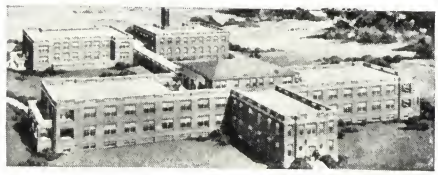
Fenestra Engineers will be glad to co-operate in designing the type of window suitable for any institution and any purpose.



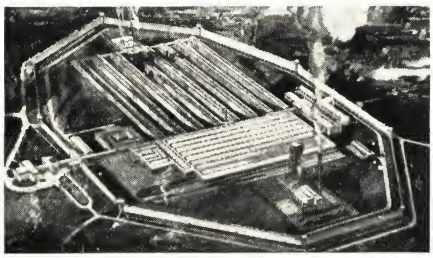
State Hospital, Crownsville, Md.



Wisconsin State Prison,
Waupun, Wis.



Berks County Sanitarium, Berks Co., Pa.



Eastern State Penitentiary,
Graterford, Pa.



Oregon State Asylum,
Pendleton, Ore.

AIRPLANE HANGAR DOORS

SPECIFICATIONS

(Note:—Practical limits are determined largely by shipping facilities, height of tunnels, width of bridges, etc.)

GENERAL

All doors shall be Fenestra Airplane Hangar Doors as manufactured by the Detroit Steel Products Company.

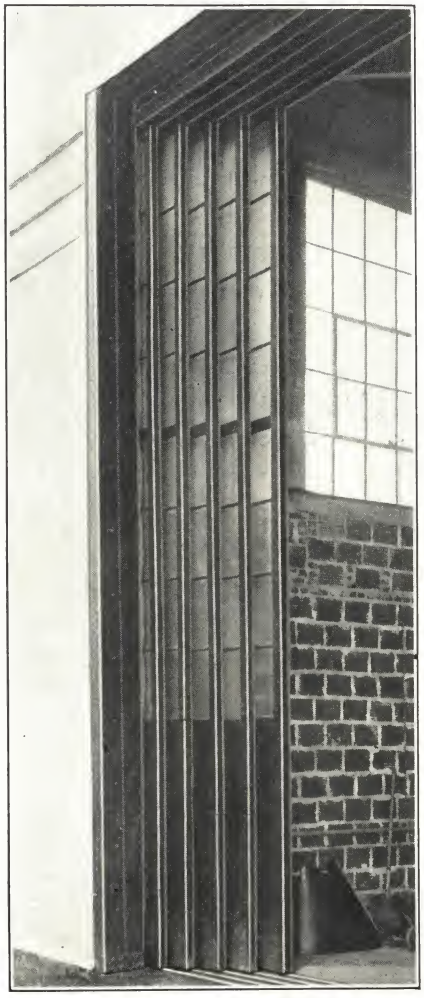
MATERIAL

(Note:—All framing to be included with the Miscellaneous Structural Steel or Ornamental Iron or under other specification divisions.)

Upper part of doors shall be provided with glass panels constructed of solid rolled steel frame sections and muntin bars of 1⅜" depth. Lower panels shall consist of solid 13-gauge steel plates.

(Note:—Doors of the same general design as those shown above can be furnished with structural rails and stiles.)

All door stiles and rails shall be made of (2½"x2½") (3"x3½") (4"x 2½") steel tubing. Rails shall be solidly welded to stiles at all junctions. Weathering between doors on adjacent tracks shall consist of rubber strips, secured by continuous metal retainers to the stile of one door, making contact weathering against the stile of adjacent door. Weathering between doors on the same track shall be of steel.



Fenestra "Straight Slide" Hangar Doors



Fenestra "Round the Corner" Hangar Doors

CONSTRUCTION

Frames of glass panels shall be mortise and tenon, air hammer riveted, and welded at all corners. Muntins shall be continuous from bottom to top and from side to side, so interlocked at intersections as to increase the rigidity and strength—joints at frames shall be mortise and tenon, air hammer riveted. Solid panels shall be secured to tube frame.

(Note:—Where glazing angles are specified all glass shall be secured with glazing angles mitered at corners. Angles shall be secured with machine screws tapped to frame, and with machine screws and nuts to muntins.)

All doors shall rest on double flanged, malleable iron wheels so designed as to roll on steel tracks carrying the entire weight of the doors. Each wheel shall be mounted by housings and plates, and equipped with roller or swivel ball bearings and Alemite lubricated.

Bronze bushed malleable iron rollers shall be attached to the head rail of each door, to serve as guides and reduce friction, and minimize the transverse load on structural steel members.

(Note:—Hinged pilot doors supplied as specified.)

Unless otherwise specified a swing door, to fold back against the wall, will be furnished at each end of the door opening, to provide track clearance for curved track type doors.

ATTACHED HARDWARE

Suitable locking hardware, such as friction bolts, cremone bolts, etc., shall be supplied for each door.

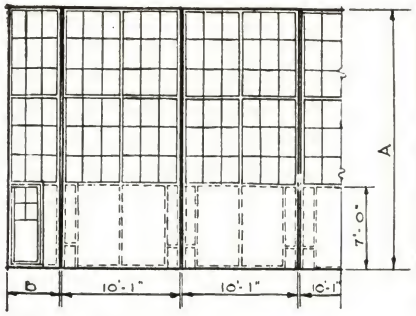
ERECTION

All doors shall be erected by the Fenestra Construction Company under a separate contract.

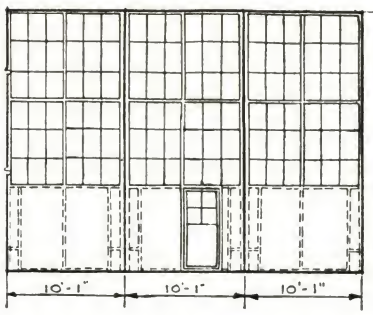
PAINTING—GLAZING

(Note:—Same as Painting and Glazing Specifications for Horizontally Pivoted Windows.)

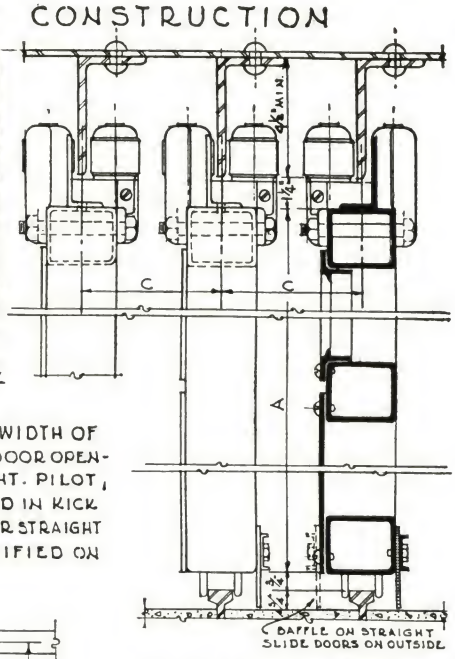
TYPES AND SIZES ~ DETAILS OF CONSTRUCTION



TYPICAL ROUND THE CORNER



TYPICAL STRAIGHT SLIDE

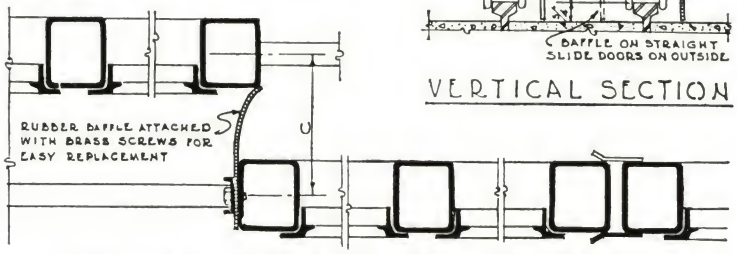


VERTICAL SECTION

NOTE

FOR DIMENSION "B" - WIDTH OF END SWING DOORS - SEE DOOR OPENING TABLE AT LOWER RIGHT. PILOT DOORS WILL BE FURNISHED IN KICK PLATE OF ANY END SWING OR STRAIGHT SLIDE DOOR WHEN SPECIFIED ON ORDER.

TABLE OF STANDARD SIZES		
ALL ROLLING DOORS ARE 10'-1" WIDE		
HEIGHT OF DOOR (DIM. "A")	SIZE OF TUBE	TRACK SPACING DIM. "C"
16'-0"	2½" x 2½"	5¼"
18'-0"	2½" x 2½"	5¼"
18'-0"	3" x 2½"	6"
20'-0"	3" x 2½"	6"
22'-0"	3" x 2½"	6"
22'-0"	4" x 2½"	7"
25'-0"	4" x 2½"	7"
28'-0"	4" x 2½"	7"

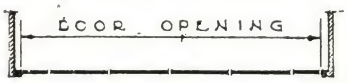


TYPICAL HORIZONTAL SECTION.

TYPICAL DOOR OPENINGS

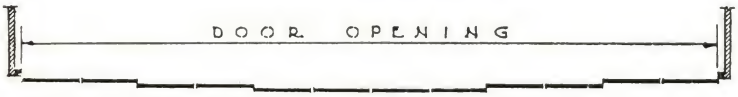


MULTIPLE TRACK SYSTEM



ROUND THE CORNER DOORS

SINGLE TRACK SYSTEM



OUTSIDE SLIDING ~ SHOWING TWO DOORS PER TRACK



INSIDE SLIDING ~ SHOWING ONE DOOR PER TRACK

PATENTS PENDING

	DOOR OPENING	NO. OF 10'-1" ROLLING DOORS	NO. OF TRACKS	DIM. "B" - END SWING DOOR 2 REQ'D.
ROUND THE CORNER DOORS	50'-0"	4	1	4'-8"
	60'-0"	5	1	4'-8"
	70'-0"	6	2	4'-8"
	80'-0"	7	2	4'-8"
	80'-0"	7	1	4'-6"
	90'-0"	8	2	4'-8"
	90'-0"	8	1	4'-6"
	100'-0"	9	2	4'-8"
	100'-0"	9	1	4'-6"
	110'-0"	10	2	4'-6"
	120'-0"	11	3	4'-6"
	130'-0"	12	3	4'-6"
	140'-0"	13	3	4'-6"
	150'-0"	14	3	4'-6"
	160'-0"	15	3	4'-6"

	DOOR OPENING	NO. OF DOORS IN OPENING	NO. OF TRACKS	DOORS PER TRACK
STRAIGHT SLIDE DOORS	50'-0"	5	3	1
	60'-0"	6	3	1
	70'-0"	7	4	1
	80'-0"	8	2	2
	80'-0"	8	4	1
	90'-0"	9	3	2
	90'-0"	9	5	1
	100'-0"	10	3	2
	100'-0"	10	5	1
	110'-0"	11	3	2
	120'-0"	12	3	2
	130'-0"	13	4	2
	140'-0"	14	4	2
	150'-0"	15	4	2
	160'-0"	16	4	2

Fenestra *August 1929*

Airplane Hangar Doors
Types and Sizes

Plate No *Y-122*

FENESTRA BYRNE DOORS



Fenestra Byrne Door in the Hangar of the Continental Airways, Inc., Chicago, Ill.

The Fenestra Byrne Door has the following advantages which will appeal at once to any one with a practical knowledge of hangar door construction or operation:

(1) It is built entirely in one piece which eliminates the time and effort needed to move sectional doors of either sliding or lifting types.

(2) It opens or closes, silently, in the shortest possible time and with minimum effort. Hand operation, 50 to 90 seconds; Electric, 18 to 30 seconds; Pull, about 15 pounds.

(3) It can be operated from one position which is accessible either from within or without and protected in case of fire.

(4) It does not occupy valuable ground space at the sides of the hangar.

(5) It does not occupy floor space nor does it blind or restrict windows in the sidewall, when open.

(6) It requires no floor tracks which fill up with dirt or snow.

(7) It operates in the severest winter weather; guides cannot clog or freeze.

(8) When open, it forms a canopy across the entire door opening, adding 6′ to 10′ to the roofed area and protected floor space.

(9) Its first movement in opening is a vertical lift of 8″ which clears any ordinary snow or ice outside.

(10) When closed, it weathers with a flat contact at head, jambs and sill; unsurpassed as a storm protector and fuel saver.

(11) It requires only 8½″ clearance above the top of the door opening.

(12) It can be installed in most hangars without changing the design in any way, and with practically no additional structural steel.

(13) The Fenestra Byrne principle has had over four years of development and satisfactory use.

Fenestra Byrne Doors are constructed from structural shapes, neatly fitted and solidly welded and can be designed up to 28′ high and 150′ wide. The upper 1′ and lower 7′ of the door are covered by 13-gauge kick plates, the intermediate section being filled with Fenestra fixed windows.

In opening, the door lifts vertically 8″, then tilts as it rises until, when fully open, it is practically horizontal, half inside and half outside of the door opening.

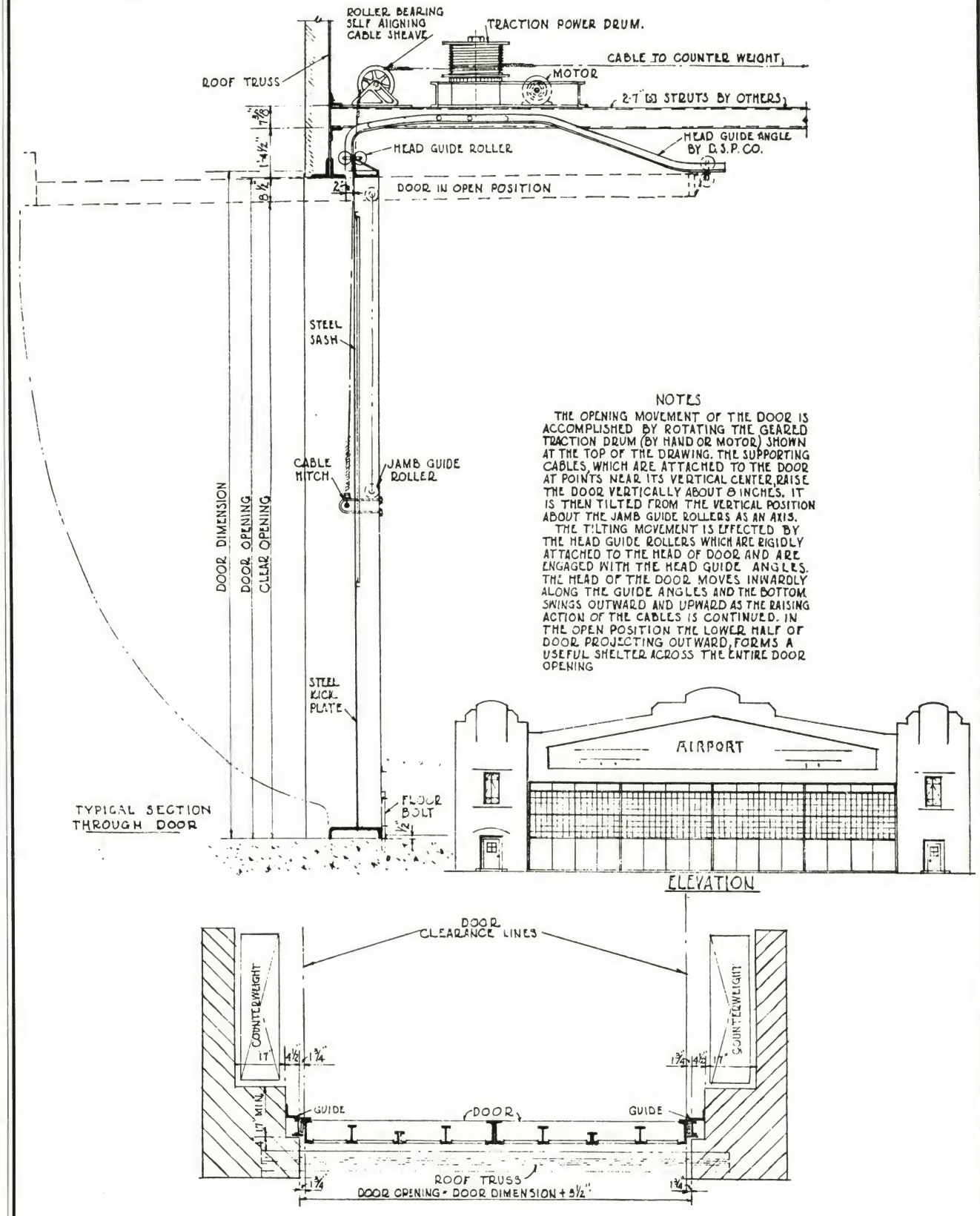
Operation is by means of heavy, high tensile alloy steel cables, spaced about 20′ on centers. These cables, attached near the center of gravity, extend up the outside of the door and are carried over roller bearing sheaves around a central power drum with traction grooves and thence to conveniently located counterweights. Each cable has a liberal safety factor so that even if one or more cables were broken, those remaining would be ample for support.

The central power drum is rotated on a vertical axis by a worm and worm-gear power unit, either electrically or manually operated. Hand operation is by means of a heavy wheel and endless manila rope. Power operators are equipped with auxiliary hand operators and the change from power to hand operation or vice versa is instantaneous.

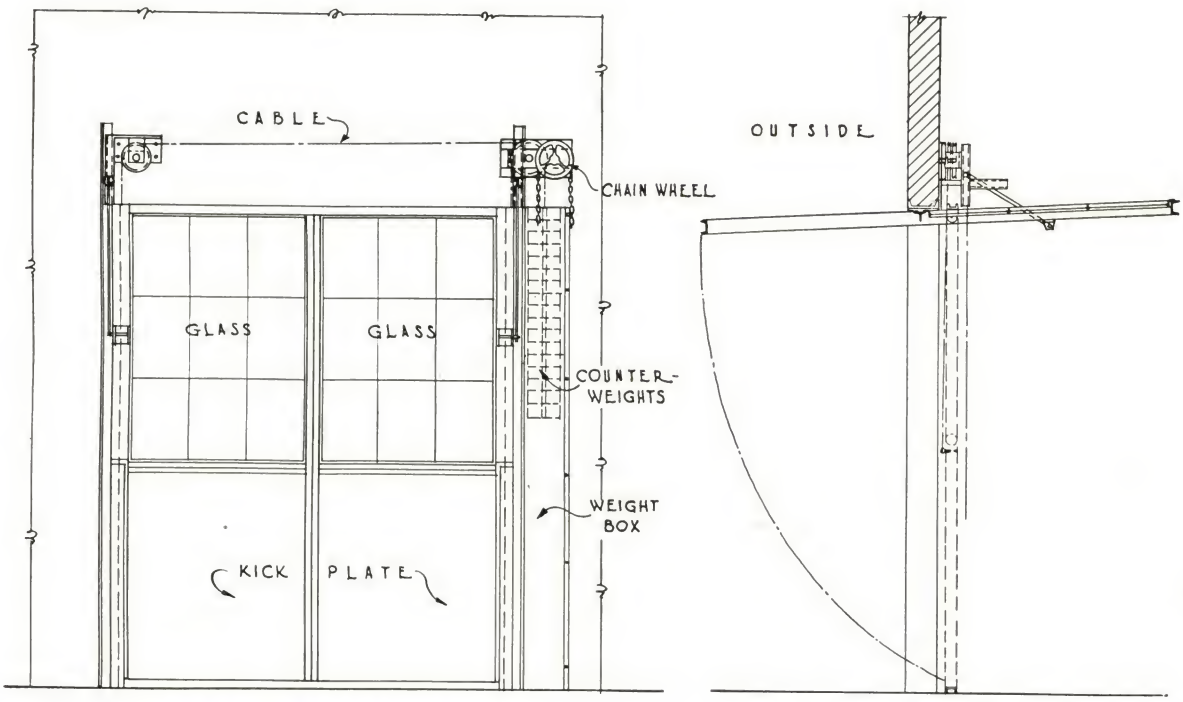
Solenoid or mechanical brakes and limit switches are provided to insure absolute safety and positive control.

When closed, the door weathers at the head with a combined sliding and pressure contact, flat, definite and positive against a flexible base attached to the building construction. At the jambs, a similar contact is made with solid steel weathering bars. At the sill, the door fits tight against the rabbeted concrete floor.

Floor bolts and positive anchors at the head are provided to lock the door against any wind pressure.



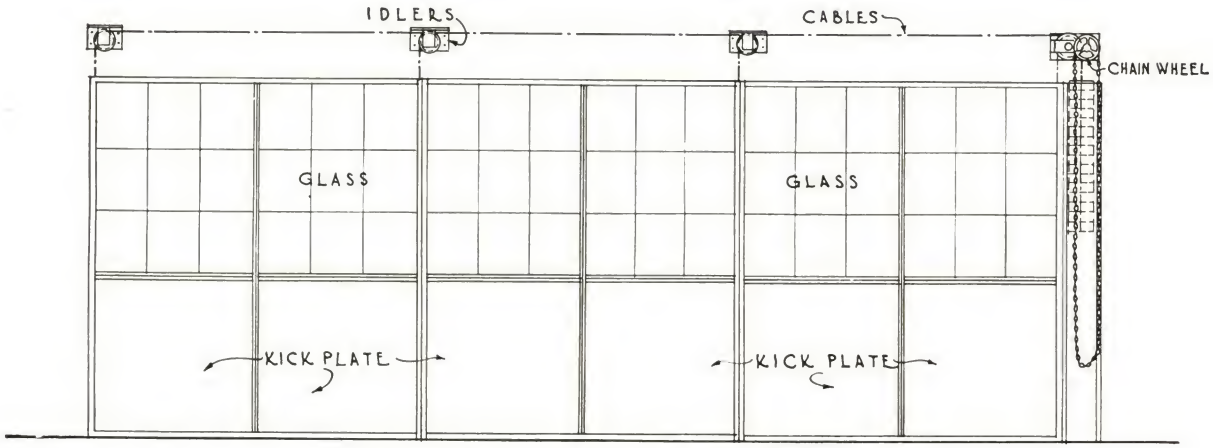
Fenestra, 1932	*Fenestra Byrne Hangar Doors* *General Details*	Plate No Y-620-1



INSIDE ELEVATION VERTICAL SECTION

FENESTRA BYRNE DOOR FOR SMALL OPENINGS

CAN BE FURNISHED EITHER WITH OR WITHOUT HAND CHAIN OPERATOR



INSIDE ELEVATION

FENESTRA BYRNE DOOR FOR WIDE OPENINGS

FOR WAREHOUSE DOORS UP TO 40'-0" IN WIDTH EQUIPPED WITH MULTIPLE CABLE SYSTEM OF OPERATION

Fenestra, 1932	*Byrne Warehouse Doors* *General Details*	Plate No. Y-621-1

COMMERCIAL STEEL DOORS

SPECIFICATIONS

GENERAL

All doors shall be Fenestra Commercial Steel Doors, swinging or sliding as indicated, manufactured by the Detroit Steel Products Company. All swing doors shall be provided with pressed steel door frames.

MATERIAL

Stiles and rails shall be 14-gauge sheet steel, the meeting rail to be a special shaped section and all others to be formed and welded into 1⅝″ x 4″ tubes.

Muntins and astragals shall be solid rolled steel sections.

Lower panels to be 18-gauge sheet steel.



Commercial Swing Door



Commercial Double Sliding Doors

CONSTRUCTION

Door corners shall be mitered and assembled over heavy reinforcement which shall extend at least 8½″ in two directions from the corner and provide a base for attachment of hinges or clevises. Mitered joints shall be face welded around the entire miter and ground smooth.

Steel panels shall be spot welded to stiles and rails.

Muntins shall be interlocked at points of intersection and pivot ended and welded into the stiles or rails.

All double doors shall have astragals rigidly attached to the left-hand leaf.

DETACHED HARDWARE—SWING DOORS

Supply Half Surface, Loose Pin, Sherardized, Steel Hinges.

(Note:—Two hinges for each leaf are supplied for all doors up to 8′ 0″ high. For doors higher than 8′ 0″, three hinges are supplied.)

Japanned Steel Tee Latch and Keeper and Japanned Steel Cabin Hook shall be supplied as standard on all single and double swing doors.

Note:—Bronze mortise cylinder locks, master-keyed if desired, may be had at extra cost.)

Japanned Wrought Steel Chain Bolt and Foot Bolt shall be supplied, one each on the inactive leaf of each double swing door.

DETACHED HARDWARE—SLIDING DOORS

Pressed steel clevises shall be supplied for attachment at upper reinforced corners to accommodate trolley hangers.

Supply one Japanned Steel Safety Hasp for attachment to each active leaf with staple for inactive leaf or door frame.

(Note:—We do not supply padlocks.)

Supply two Japanned Steel Flush Pulls for attachment one on each side of each sliding door leaf.

Supply standard, deep channel tracks, supported on 2′ centers by U-shaped track brackets of heavy gauge steel. Supply heavy duty, four wheel, roller bearing trolleys with adjustable trolley hangers for attachment to clevises.

Guides shall be solid rolled steel angles with flaring edges. Binders shall be formed bar steel. Center stops on double sliding doors shall be malleable iron castings.

DOOR FRAMES

(Note:—Frames for sliding doors are not furnished by D. S. P. Co.)

Door frames shall be 13-gauge sheet metal formed into specially designed 1½″ x 4″ channels with self-contained rebate.

All door frames shall extend 1″ below the finished floor line for anchorage.

All door frames shall anchor to structural steel or shall be equipped with bar steel anchors, to extend into the masonry, approximately 18″ apart.

ERECTION

(Note:—At reasonable cost, Fenestra Construction Company will erect doors and frames. If desired, so specify.)

PAINTING

All doors and frames shall be given one brush coat of red oxide paint at the factory.

(Note:—Include in the Painting Specifications that all doors and frames should be given at least one additional coat of paint after erection.)

(Note:—Where desired, Fenestra Construction Company will do field painting after erection, at slightly added cost. If desired, so specify including specifications for paint and its application.)

GLASS AND GLAZING

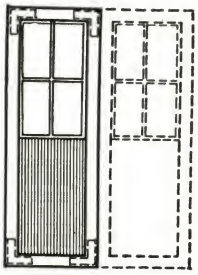
Glass shall be ¼″ rough wire, ¼″ factory ribbed, or ⅛″ factory ribbed.

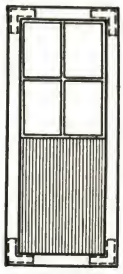
(Note:—¼″ glass is recommended. Single or double strength glass should not be used. Glass is not furnished by D. S. P. Co.)

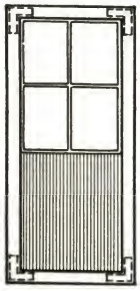
Putty shall be high grade steel window putty.

(Note:—Ordinary wood sash putty must not be used.)

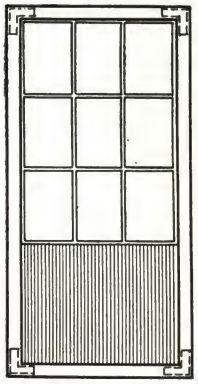
All doors shall have glass set in a bed of putty and held in place by steel glazing angles mitered at the corners.


2670


3070


3676


4080

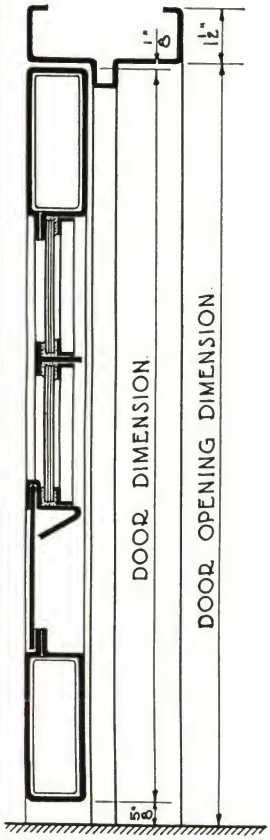

50100

STOCK SIZES

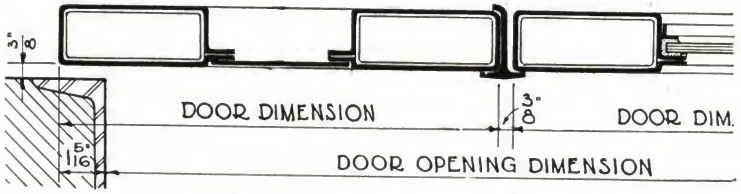
DOOR	SIZE OF DOOR WIDTH	SIZE OF DOOR HEIGHT	SWING OPENING WIDTH	SWING OPENING HEIGHT	SLIDE OPENING WIDTH	SLIDE OPENING HEIGHT	GLASS SIZES
SINGLE DOOR							
2670	2'-5 5/8"	6'-11 1/4"	2'-6"	7'-0"	2'-3"	6'-10 1/2"	10 1/2 x 16 1/2
3070	2'-11 5/8"	6'-11 1/4"	3'-0"	7'-0"	2'-9"	6'-10 1/2"	13 1/2 x 16 1/2
3676	3'-5 5/8"	7'-5 1/4"	3'-6"	7'-6"	3'-3"	7'-4 1/2"	16 1/2 x 19 1/2
4080	3'-11 5/8"	7'-11 1/4"	4'-0"	8'-0"	3'-9"	7'-10 1/2"	12 7/8 x 22 1/2
50100	4'-11 5/8"	9'-11 1/4"	5'-0"	10'-0"	4'-9"	9'-10 1/2"	16 7/8 x 22 7/8
DOUBLE DOOR							
5070	2-2'-5 5/8"	6'-11 1/4"	5'-0"	7'-0"	4'-9"	6'-10 1/2"	10 1/2 x 16 1/2
6070	2-2'-11 5/8"	6'-11 1/4"	6'-0"	7'-0"	5'-9"	6'-10 1/2"	13 1/2 x 16 1/2
7076	2-3'-5 5/8"	7'-5 1/4"	7'-0"	7'-6"	6'-9"	7'-4 1/2"	16 1/2 x 19 1/2
8080	2-3'-11 5/8"	7'-11 1/4"	8'-0"	8'-0"	7'-9"	7'-10 1/2"	12 7/8 x 22 1/2
100100	2-4'-11 5/8"	9'-11 1/4"	10'-0"	10'-0"	9'-9"	9'-10 1/2"	16 7/8 x 22 7/8

NOTES

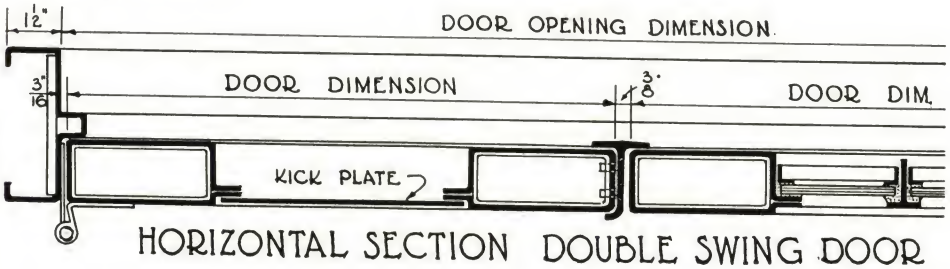
ALL TYPES SHOWN ABOVE ARE FURN. EITHER SINGLE OR DOUBLE, SWING OR SLIDING DOORS ~ ALL DOORS ARE SHIPPED WITH ALL HARDWARE DETACHED EXCEPT LOCK (ON SWING DOOR) IS ATTACHED. FRAMES (FOR SWING DOORS) SHIPPED KNOCKED DOWN FOR ASSEMBLY IN FIELD.



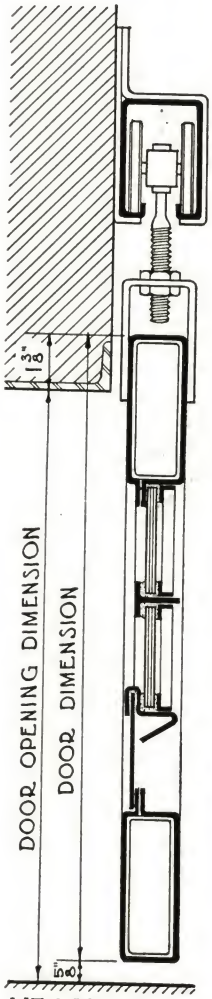
VERTICAL SECT. SWING DOOR



HORIZONTAL SECTION THRU DOUBLE SLIDING DOOR



HORIZONTAL SECTION DOUBLE SWING DOOR



VERTICAL SECTION SLIDE DOOR

Fenestra 1932

Commercial Steel Doors
Swinging and Sliding Types and Details

Plate No Y-505

FENESTRA INDUSTRIAL DOORS

Fenestra Industrial Doors are designed in types which swing, slide, fold, roll, lift or pivot. They may be operated either manually or electrically.

Doors designed especially for airplane hangars are shown on preceding pages. Industrial and commercial doors shown here are intended for use in warehouses, mills, garages, roundhouses, car shops, powerhouses, piers, freight depots, fire stations, factories, grain elevators, police stations and the utility departments of apartments and office buildings.

Fenestra Engineers are equipped to solve unusual door problems. Where openings of unusual size are encountered or peculiar methods of operation are necessary, Fenestra Engineers will be glad to make suggestions and layouts without cost or obligation.

Since door frames, in all cases, should be installed when the building is erected to insure proper anchorage, while the doors themselves should be installed after the building is completed, we strongly recommend that door frames be included in the Structural Steel or Ornamental Iron Specifications, including slotted sliding door thresholds and track supports where required. Frames should be made to the exact dimensions given by the door manufacturer and erected plumb and true.

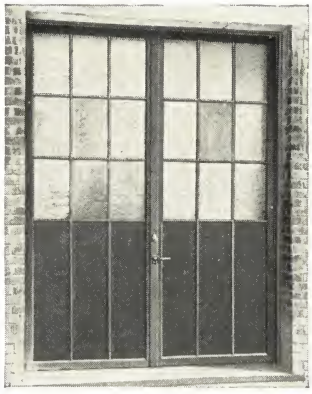
Where particularly desired, 4″ channel frames for swing doors only, will be furnished with the doors at added cost.

SWINGING AND SLIDING DOORS

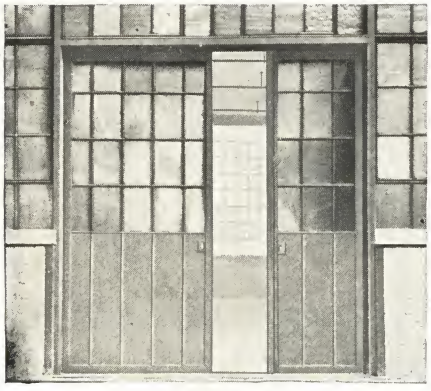
Fenestra Swing and Slide Doors are manufactured of pressed tube or tubular steel in single and double units.



Single Swing Door



Double Swing Doors



Double Sliding Doors

Closures, guides and meeting rail astragals are heavy steel plates. Tubular stiles and rails are mitered and welded at corners. Stiles are reinforced at the butts by heavy steel plates.

Panel frames are assembled in a manner similar to fixed industrial windows.

Glass is set in putty and secured by angle clips attached to the frames by machine screws. Where necessary, stiles are tapped to receive hardware which is applied at time of erection.

Swinging tubular doors are equipped with 6″ x 4½″ butts; channel trim doors with 4½″ x 4½″ butts. Both types have non-rising, loose butt pins.

All swinging single doors are equipped with standard, bronze faced, mortise cylinder locks, or japanned iron tee latches and strikes. Both single and double swinging doors are equipped with malleable iron or bronze handles and bronze faced cylinders and escutcheons. Inactive leaves of double swinging doors have standard top and bottom steel shot bolts, top bolt chain operated.

Sliding doors are equipped with combination flush and projecting iron handles, one on each door, solidly riveted to the panels; also hinged hasps and staples. They hang from standard steel tracks on adjustable roller bearing trucks and track brackets.

Special hardware, such as master keyed locks, standard fire exit panic bolts, door checks, etc., may be had at extra cost, if specified in advance.

FENESTRA BI-FOLD DOORS

Furnished in pressed tube, structural steel or tubular steel construction. Upper leaf fitted with steel windows or solid steel plates. Lower leaf, steel plate only. Furnished with hand chain operators or doors smaller than 12′ x 10′ may be operated by direct hand lift.



Bi-fold Door



Vertical Lift Door

FENESTRA VERTICAL LIFT DOORS

Furnished in pressed tube, structural steel or tubular steel. Conserve floor area or platform space. Counterbalanced — easily operated. Double leaf door requires headroom equal to half door height plus 1′ 8″. Furnished with hand chain or electric operator, or smaller sizes may be operated by direct hand lift. May be installed in any building where headroom permits.

FENESTRA PIER DOORS

Designed for heavy duty in piers and railroad terminals. Divided horizontally into three sections, the top two hinged together and to the top of the door opening. The bottom section (about half the door height) slides vertically in guides until its lower part engages the middle section. The nested sections then swing inward and upward to full door opening. When open, door is entirely within the building. Supplied in structural channel stiles and rails or tubular steel rails. Hand or power operation. Upper sections may be fitted with windows.



Pier Door

FENESTRA ACCORDION DOORS



Roundhouse Doors



Accordion Doors

Fenestra Accordion Doors are suitable for roundhouses and buildings that require extra large door openings. Hinges are heavy steel forgings accurately machined and fitted with large steel pins. Pilot doors can be installed where desired, equipped with cylinder locks. Main doors are fitted only with hasp and staple.

FIRE STATION AND GARAGE DOORS

For fire stations, public garages, bus terminals and motor repair shops, Fenestra Doors, either double swinging or accordion type, supply a wide, high opening with ample clearance for cars or trucks. Either type may be arranged to open in or out, manually operated or electrically connected to a remote control station. Of tubular construction and heavily reinforced, these doors are built for heavy and constant usage. When equipped with especially designed, quick-acting operator mechanism, they are peculiarly adapted to fire stations and police stations. Doors of similar design are recommended for electric railway car barns.



Garage Doors



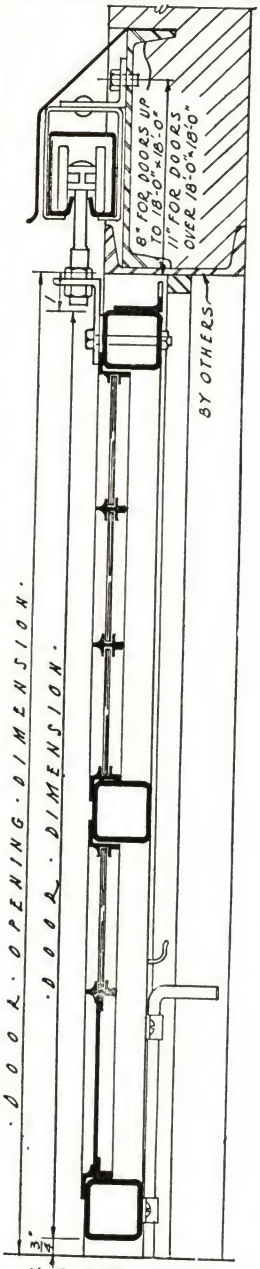
In a Car Barn

FENESTRA DOOR HARDWARE

Two standard types of hardware are regularly furnished with Fenestra Industrial Doors.

Our Series 100 Hardware with steel shroud plates and cast sheaves, fitted throughout with roller and ball bearings has been especially developed for high speed operation. Our Series 500 Heavy Duty Hardware is furnished with larger sizes of Fenestra Doors. Hand chain operator consists of chain pocket wheels and heavy duty spur gear drive mounted on anti-friction bearings and enclosed in an oil-tight case. Hand chain, chain wheel and guard are included.

FLASHING BY OTHERS

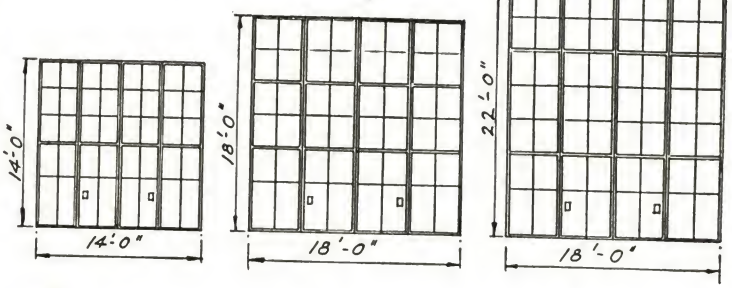


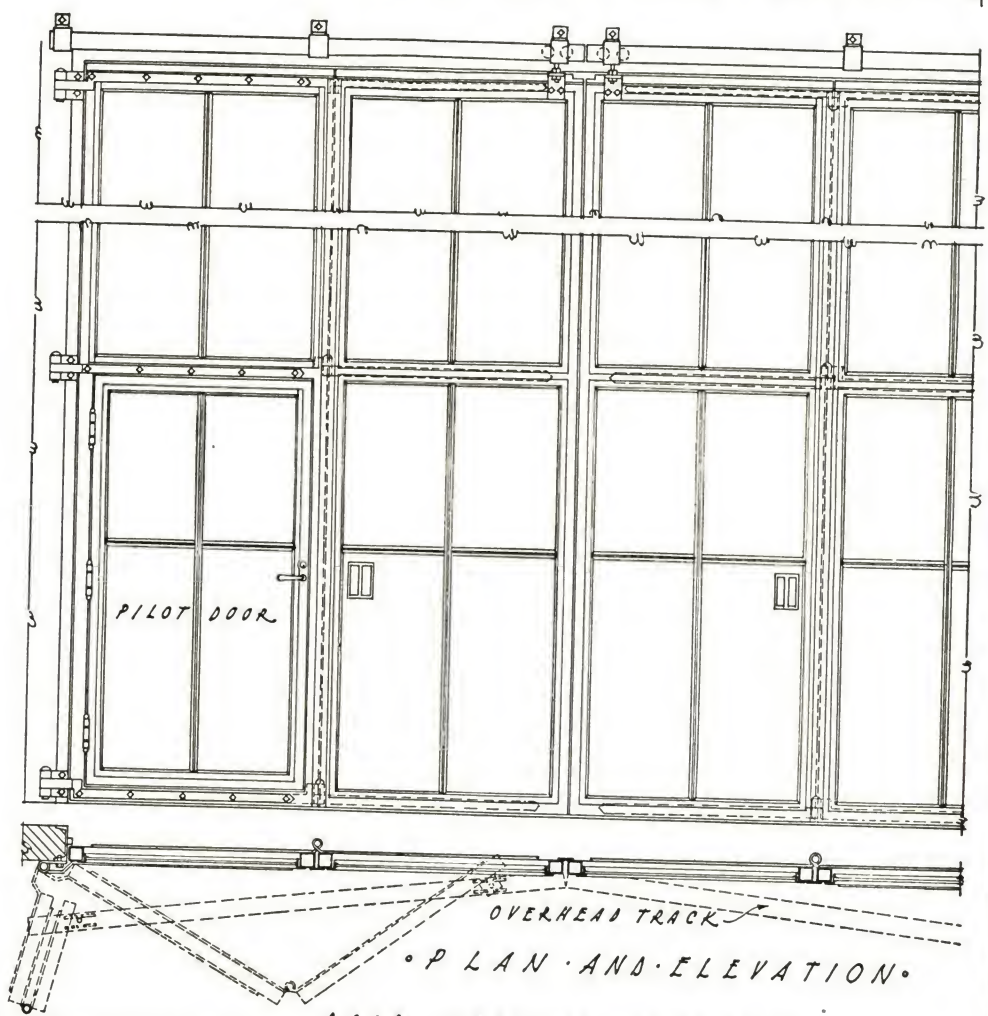
VERTICAL SECTION

•NOTE• THESE DOORS ARE LIMITED TO 18'-0" IN WIDTH AND 22'-0" IN HEIGHT. GLAZING ANGLES ARE SUPPLIED BUT DOORS ARE FURNISHED UNGLAZED. THEY ARE EQUIPPED WITH NECESSARY HARDWARE INCLUDING TRACK WITH HANGERS AND TROLLEY, DOOR PULLS, CANE BOLTS AND HINGES

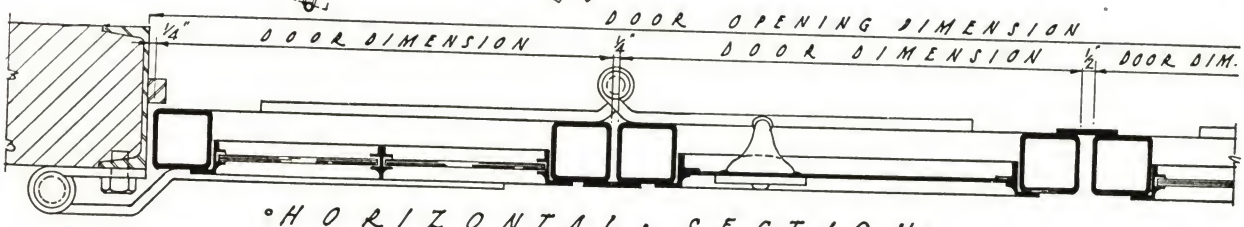
PILOT DOORS MAY BE INSERTED IN ANY UNIT IF DESIRED.

•STANDARD•TYPES•





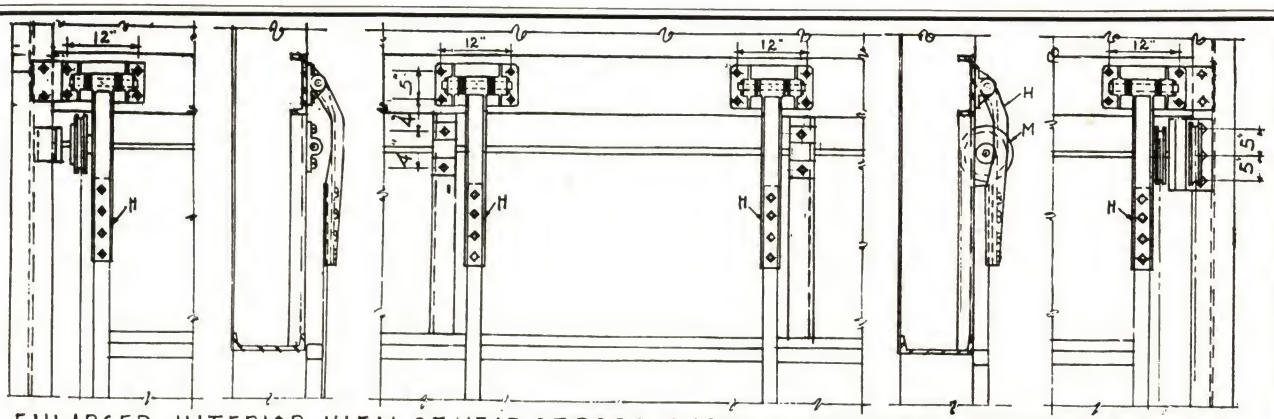
•PLAN•AND•ELEVATION•



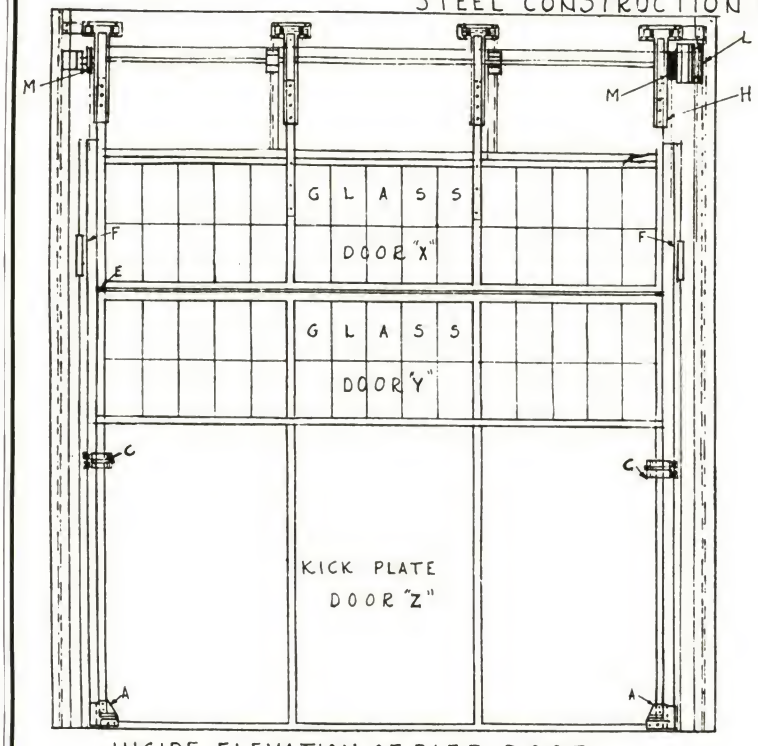
•HORIZONTAL•SECTION•

•SCALE: 1½"=1'-0"•

Fenestra 1931	*Fenestra Accordion Doors* *Elevations and Details*	**Plate No** Y-301



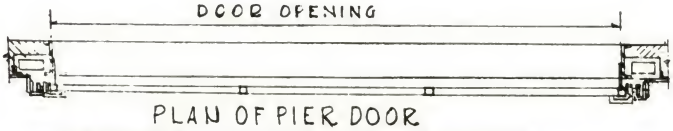
ENLARGED INTERIOR VIEW OF HEAD OF DOOR SHOWING HINGES AND OPERATOR MECHANISM
STEEL CONSTRUCTION BUILDING



INSIDE ELEVATION OF PIER DOOR
STEEL CONSTRUCTION BUILDING

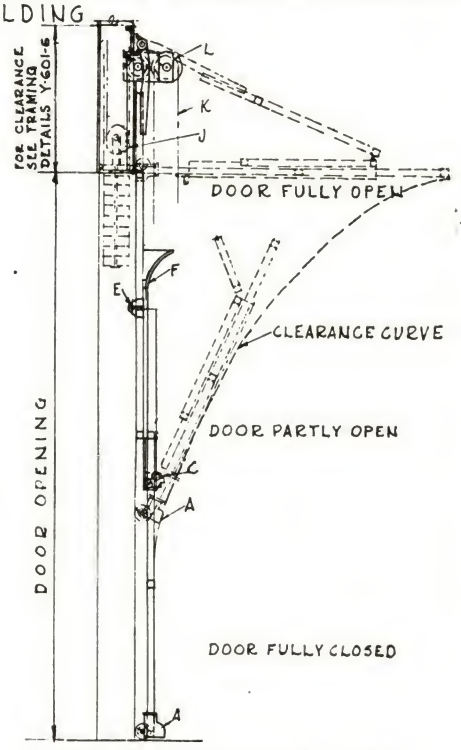


PLAN OF PIER DOOR
STEEL CONSTRUCTION BUILDING

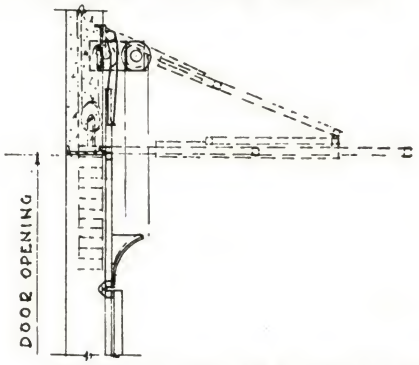


PLAN OF PIER DOOR
MASONRY CONSTRUCTION BUILDING

METHOD TO DETERMINE THE HEIGHT OF DOOR SECTIONS X, Y AND Z. (H) = DOOR OPENING IN HEIGHT
$\left(X=\frac{H}{4}-6"\right)$, $\left(Y=\frac{H}{4}-6"\right)$ AND $\left(Z=\frac{H}{2}+1'\text{-}2\frac{3}{4}"\right)$

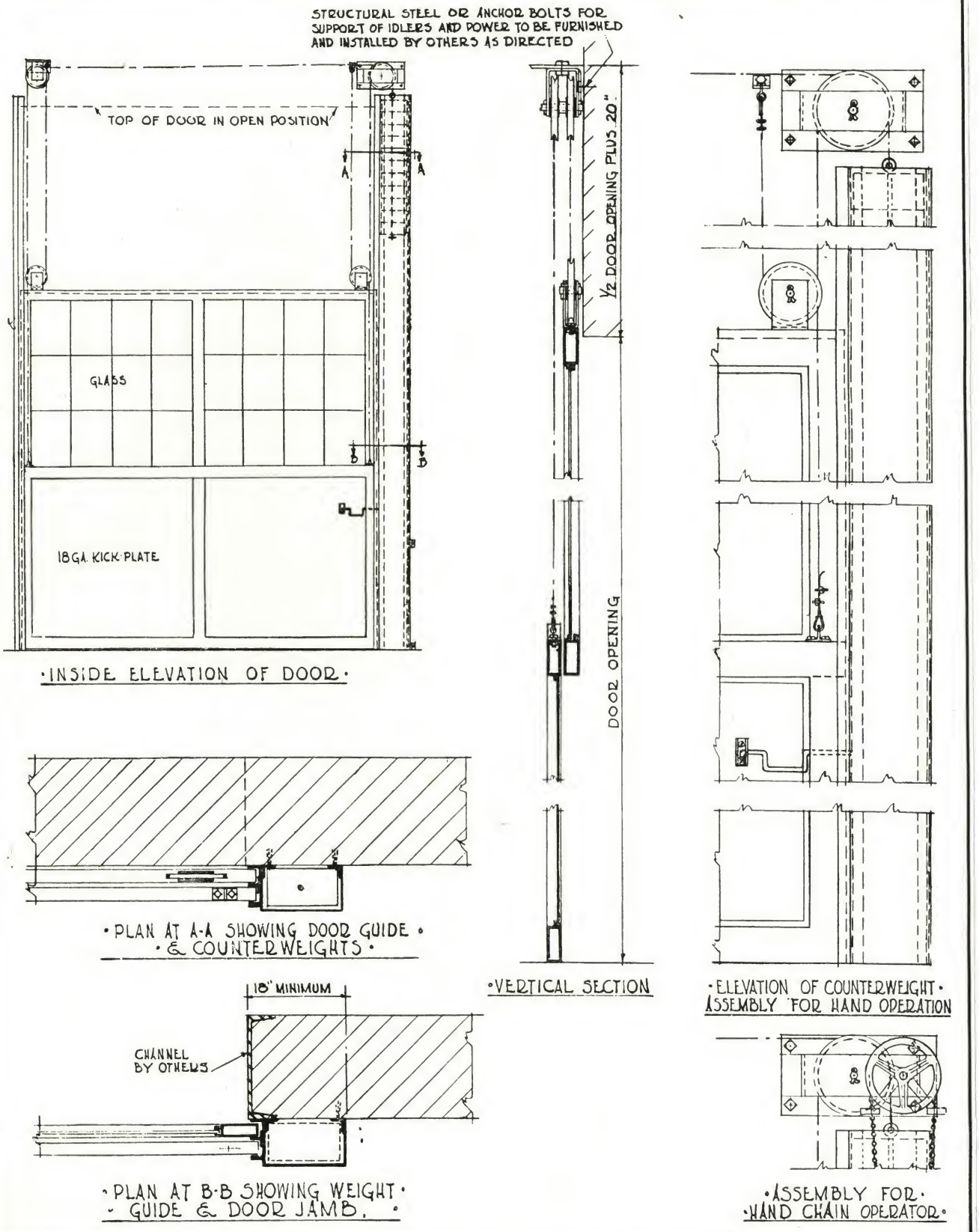


SECTION THRU PIER DOOR
STEEL CONSTRUCTION BUILDING



SECTION THRU HEAD OF PIER DOOR
MASONRY CONSTRUCTION BUILDING

Fenestra, 1932	*Fenestra Pier Doors* *General Details*	Plate No Y-601-1



·INSIDE ELEVATION OF DOOR·

·PLAN AT A-A SHOWING DOOR GUIDE · · & COUNTERWEIGHTS ·

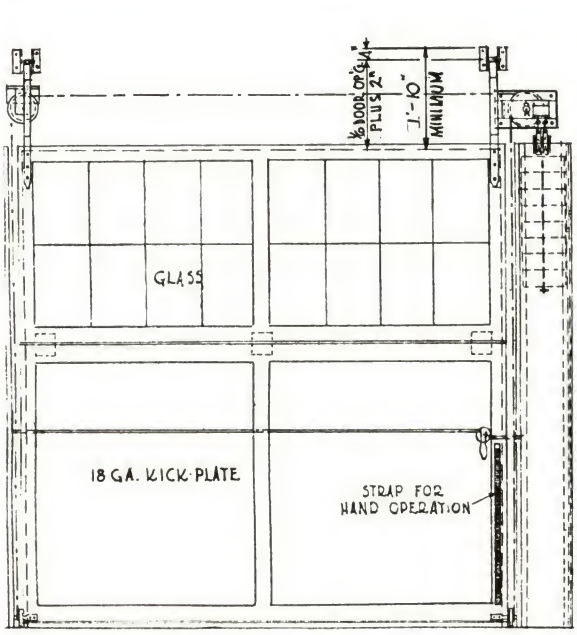
·VERTICAL SECTION

·ELEVATION OF COUNTERWEIGHT· ASSEMBLY FOR HAND OPERATION

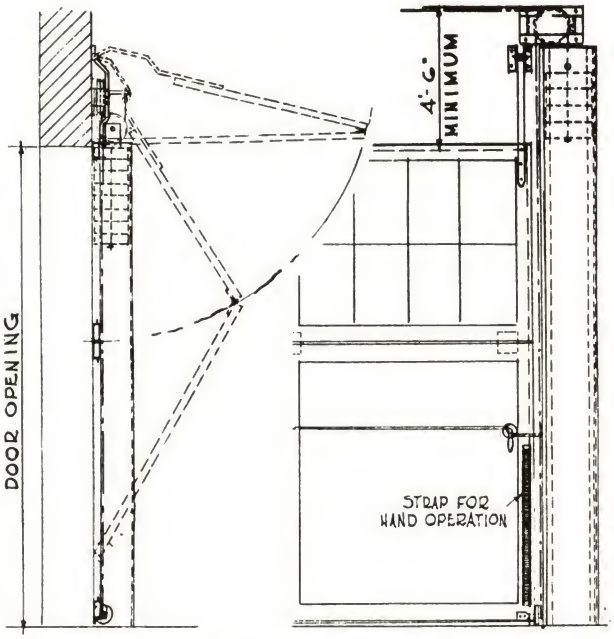
·PLAN AT B-B SHOWING WEIGHT· · GUIDE & DOOR JAMB. ·

·ASSEMBLY FOR· ·HAND CHAIN OPERATOR·

Fenestra 1932	*Fenestra Vertical Lift Doors* *General Details*	Plate No Y-602-6



·INSIDE ELEVATION OF DOOR·
·WHEN HEADROOM IS LIMITED·



·VERTICAL SECTION·
·THRU DOOR·

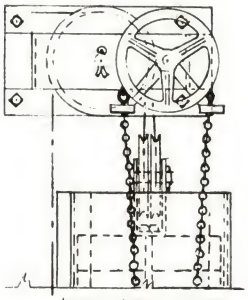
·PART ELEVATION ~
·WHEN HEADROOM PERMITS·

·NOTES·

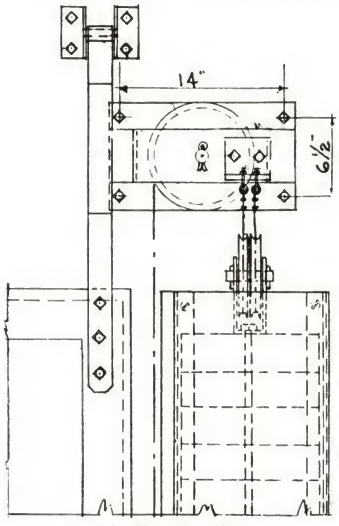
STRUCTURAL STEEL OR ANCHOR BOLTS FOR SUPPORT OF IDLERS AND POWER TO BE FURNISHED AND INSTALLED BY OTHERS AS DIRECTED

FOR ELEVATIONS & SIZES OF TYPES SEE PL. Nº Y-604-T5.

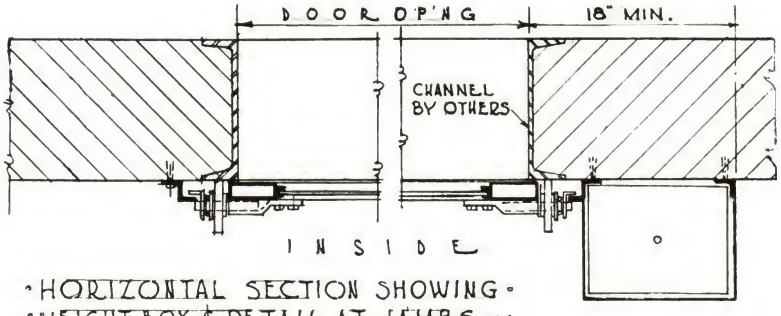
FOR DETAILS OF STRUCTURAL & TUBULAR BIFOLD DOORS SEE PLATE Nº Y-604-22.



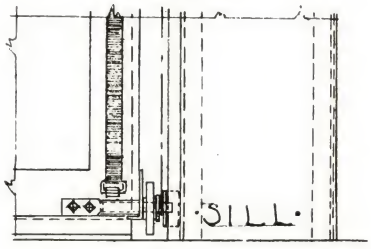
·ASSEMBLY FOR·
·HAND CHAIN OPERATOR·



·HEAD·

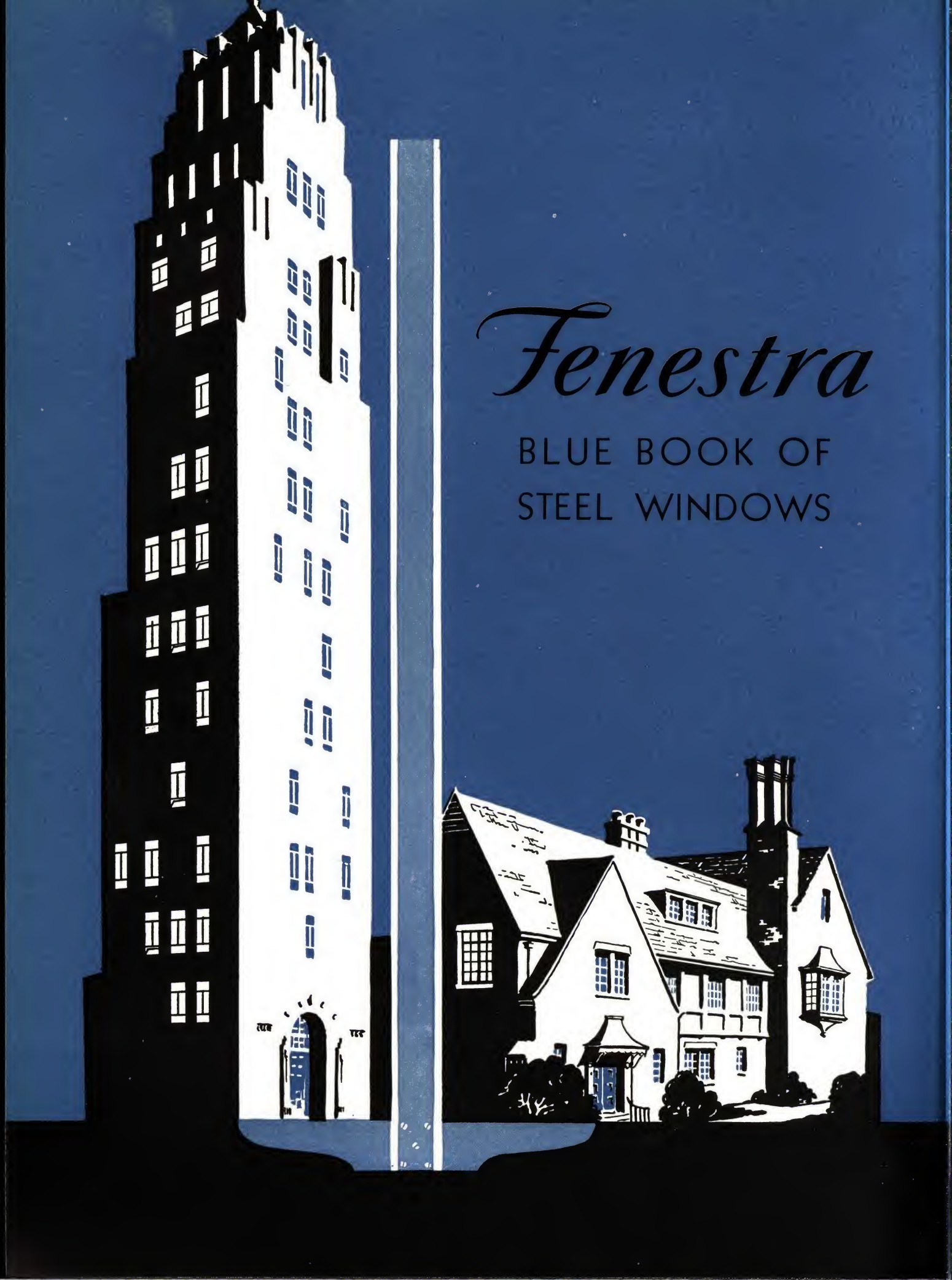


·HORIZONTAL SECTION SHOWING·
·WEIGHT BOX & DETAIL AT JAMBS~·



·ELEVATION OF COUNTERWEIGHT·
·ASSEMBLY FOR HAND OPERATION·

Fenestra, 1932	*Bi-Fold (Jack Knife) Doors* — *General Details*	Plate Nº Y-604-21



Fenestra

BLUE BOOK OF STEEL WINDOWS

WINDOWS

DOUBLE HUNG & CASEMENT

of

ARCHITECTURAL BRONZE
NICKEL SILVER
ALUMINUM



GENERAL·BRONZE·CORPORATION

DISTINCTIVE PRODUCTIONS IN·ALL·METALS
LONG ISLAND CITY, N.Y.

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BRONZE ENDURES FOR ALL TIME. It is foremost among the group of non-ferrous (non-rusting) alloys, whose base is copper, employed for architectural and building purposes. It has perpetually recorded and preserved civilization's progress and man's art expressions from time immemorial.

Buildings equipped with Bronze work possess certain recognized qualities of dignity, refinement and permanence which tenants quickly detect and which emphasize the owner's pride of possession.

The Bronze Industry has been revolutionized during the last quarter of a century. New alloys, new processes and new construction have been so developed that Bronze Work, heretofore deemed economically impossible for any but costly monumental structures, is now available for the better grade buildings of every class; as is evidenced by a constantly increasing demand and use.

The extruded process has developed a group of standardized metals known as extruded bronze, extruded nickel, and extruded aluminum. This process consists of forcing semi-molten billets through steel dies, forming profiled sections of such uniformity and precision that even fine watch mechanisms can be made from extruded sections. These physical, structural and accuracy values are ideally adapted to architectural work.

GENERAL BRONZE CORPORATION, by extensive engineering study, research and development, has standardized a series of Metal Building Specialties in non-ferrous metals, at the same time preserving those traditional construction methods accepted as worthy of the time-honored qualities of this so-called semi-precious metal.

In the following pages we have endeavored to show the excellent qualities of "Polachek" Patented Double Hung and Casement Windows which are fabricated in this construction and by these methods. The advantages gained in mechanical precision, through the use of Extruded Sections, are augmented by the painstaking care of skilled bronze artisans and mechanics in machining, fitting and assembling. They meet every requirement of efficient service, preserve the exacting standards of fine Bronze work and will endure as long as the structures of brick and stone in which they are set.



NEW YORK LIFE INSURANCE BUILDING

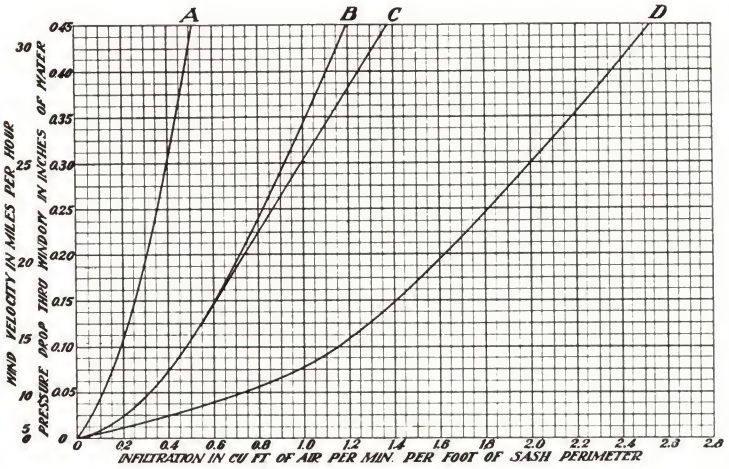
Cass Gilbert, Architect *Starrett Brothers & Eken, Builders*

BRONZE WINDOWS

of the "Polachek" Double Hung Type Throughout

AIR INFILTRATION TESTS THROUGH STANDARD WINDOWS

TYPICAL CURVES OF TESTS



TABULATED RESULTS OF TESTS

WIND VELOCITY (*Miles per hour*)		15	25	30
From AMERICAN SOCIETY OF HEATING AND VENTILATING ENGINEERS GUIDE 1931	D. H. Metal Window Non-Weatherstripped	1.2	2.0	2.8
	D. H. Metal Window Weatherstripped	0.5	1.0	1.3
	Wood Window Weatherstripped	0.5	0.9	1.2
From tests by University of Wisconsin, 1931, of "Polachek" Patented Double-Hung Windows		0.2	0.4	0.5

These Curves Show Average Air Infiltration Through the Several Windows Listed Under Varying Wind Velocity Conditions

A—"Polachek" patented double-hung bronze window tests made by University of Wisconsin, March, 1931, under the most severe conditions, such as leaving the sash unlocked, etc.

B—Typical wood window—metal weather strips—from data in "The American Society of Heating and Ventilating Engineers Guide," 1931.

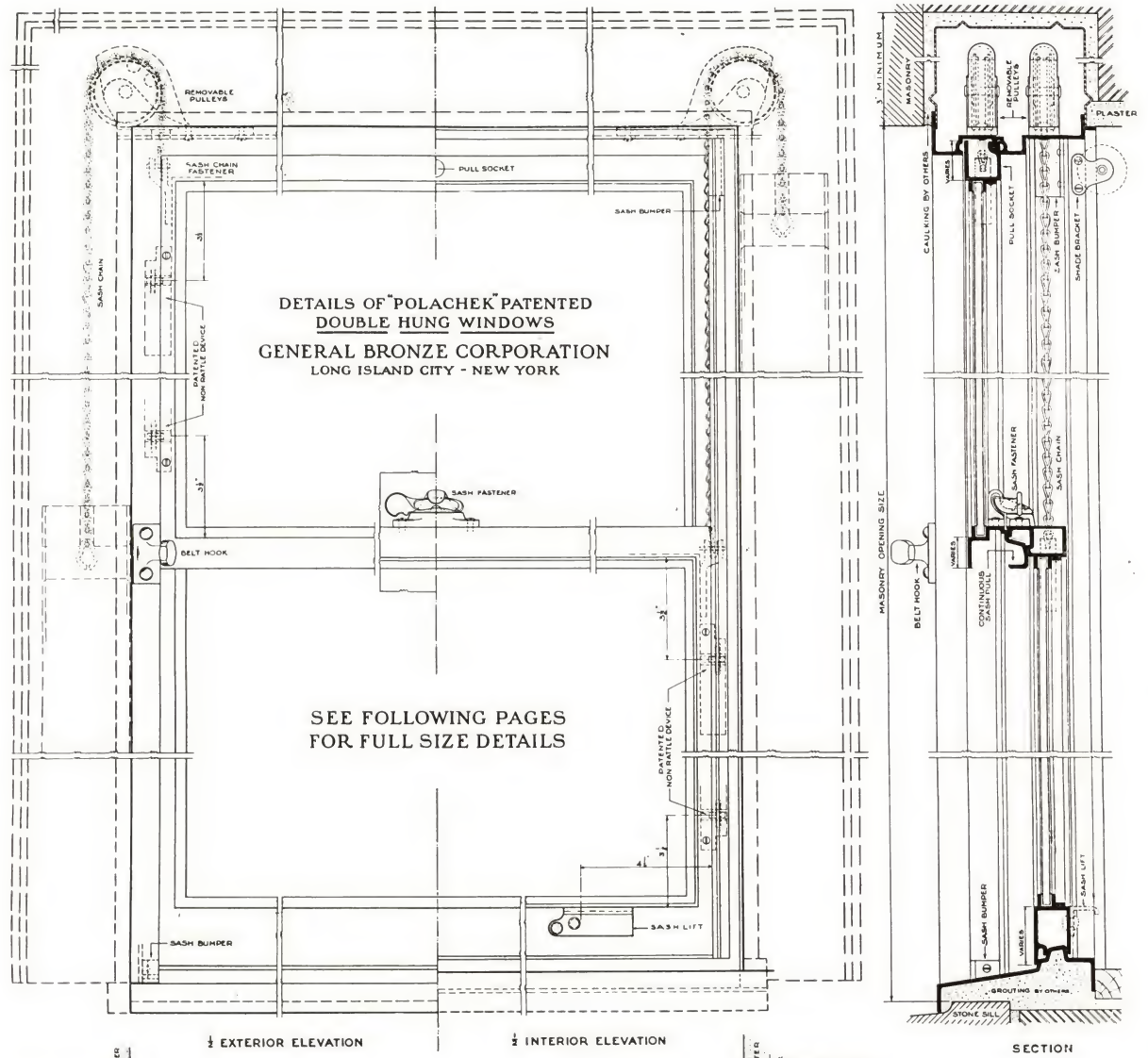
C—Typical double-hung metal window weatherstripped, from data in "The American Society of Heating and Ventilating Engineers Guide," 1931.

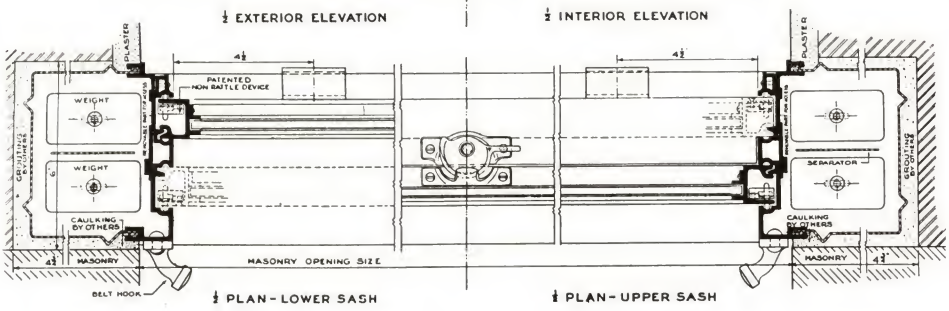
D—Typical double-hung metal window without weatherstripping, from data in "The American Society of Heating and Ventilating Engineers Guide," 1931.

Careful Design and Construction Throughout Have Made the "Polachek" Window, Produced in either Bronze or Aluminum, Stand Out as Finest.

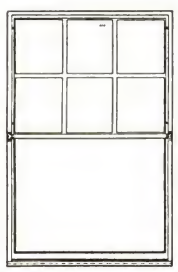
Salient Features of "Polachek" Double-Hung Windows Are Permanent Features

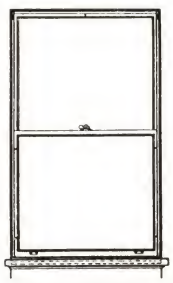
What They Are—	Why They Are—
(1) Easy operation.	(1) Rigid construction and exact alignment which prevent binding on the vertical movement, and lever type lifts to break contact at the sill.
(2) Rattleproof.	(2) A concealed device, built into the side stiles and instantly adjustable, prevents all lateral movement of sash when in any position.
(3) Weatherproof.	(3) Weatherstripping is formed through steel dies as an integral part of main sash and frame members and to the same thickness. The University of Wisconsin tests prove the effectiveness of this sealing. Immovable from its initial position, too heavy to bend, too thick to wear out, this weatherstripping can never lose its effectiveness.
(4) Maximum daylight opening.	(4) Careful designing of self-reinforced members has reduced face widths to the minimum compatible with rigid construction requirements.
(5) Minimum maintenance cost.	(5) Pulleys and chain are readily replaceable. Sash and frame, being of extra heavy non-ferrous metal, and so fitted and assembled that no joint can ever open or leak, will outlast the useful life of the building without repairs, replacements or painting.

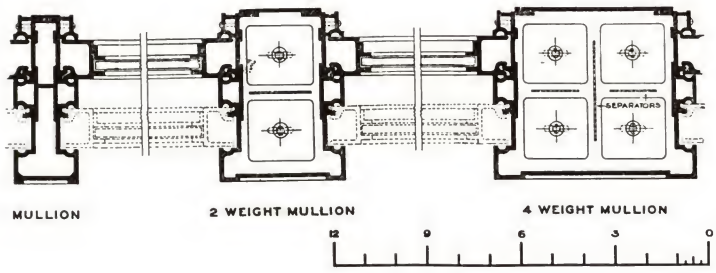

REMOVABLE PULLEYS
SASH CHAIN FASTENER
PULL SOCKET
SASH BUMPER
SASH CHAIN
PATENTED NON RATTLE DEVICE
DETAILS OF "POLACHEK" PATENTED
DOUBLE HUNG WINDOWS
GENERAL BRONZE CORPORATION
LONG ISLAND CITY - NEW YORK
SASH FASTENER
BELT HOOK
SASH LIFT
SEE FOLLOWING PAGES
FOR FULL SIZE DETAILS
½ EXTERIOR ELEVATION
½ INTERIOR ELEVATION
3" MINIMUM
MASONRY
PLASTER
CAULKING BY OTHERS
VARIES
SHOE BRACKET
MASONRY OPENING SIZE
CONTINUOUS SASH PULL
GROUTING BY OTHERS
STONE SILL
SECTION

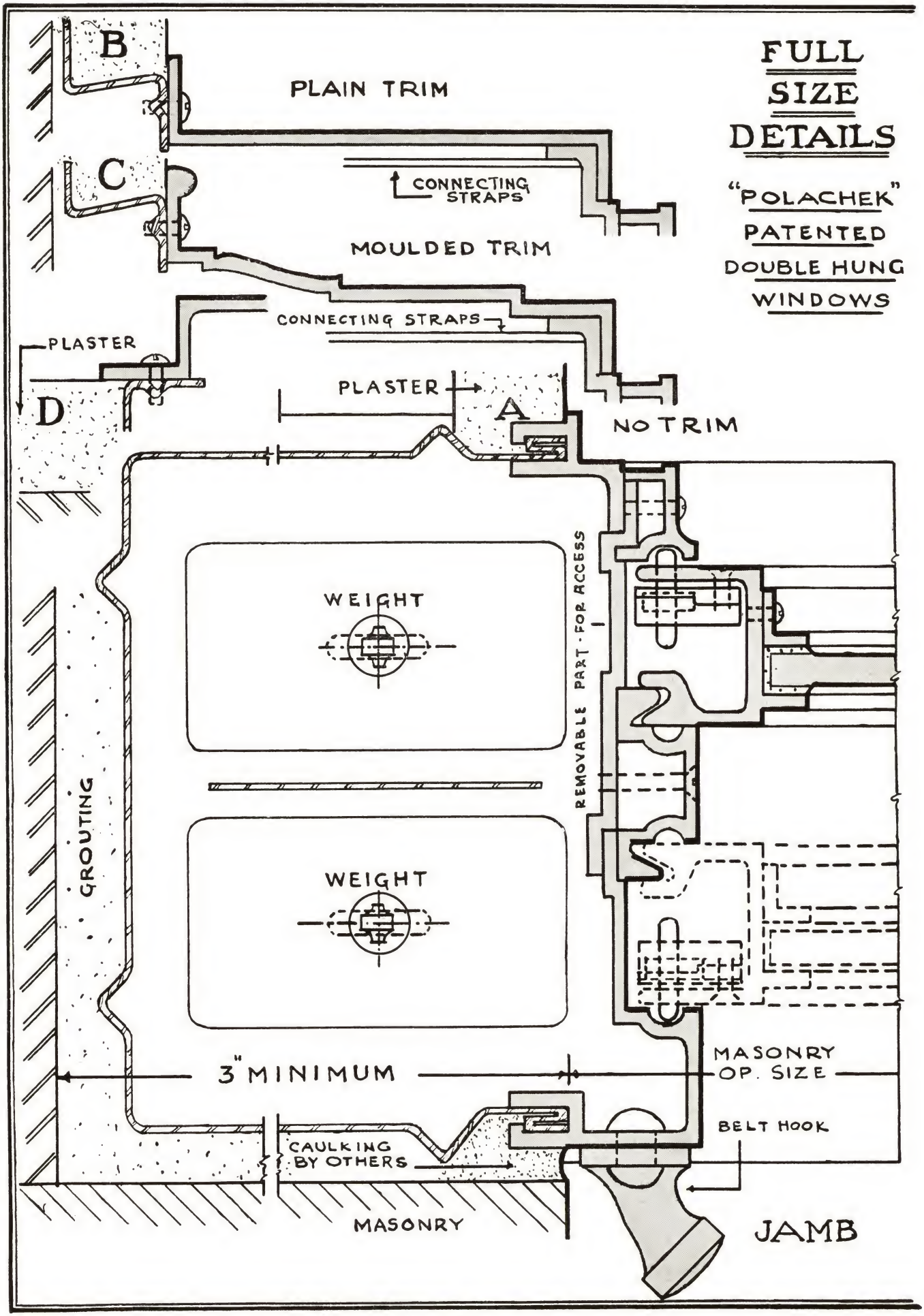

PLASTER
PATENTED NON RATTLE DEVICE
WEIGHT
SEPARATOR
CAULKING BY OTHERS
MASONRY
MASONRY OPENING SIZE
BELT HOOK
½ PLAN - LOWER SASH
½ PLAN - UPPER SASH

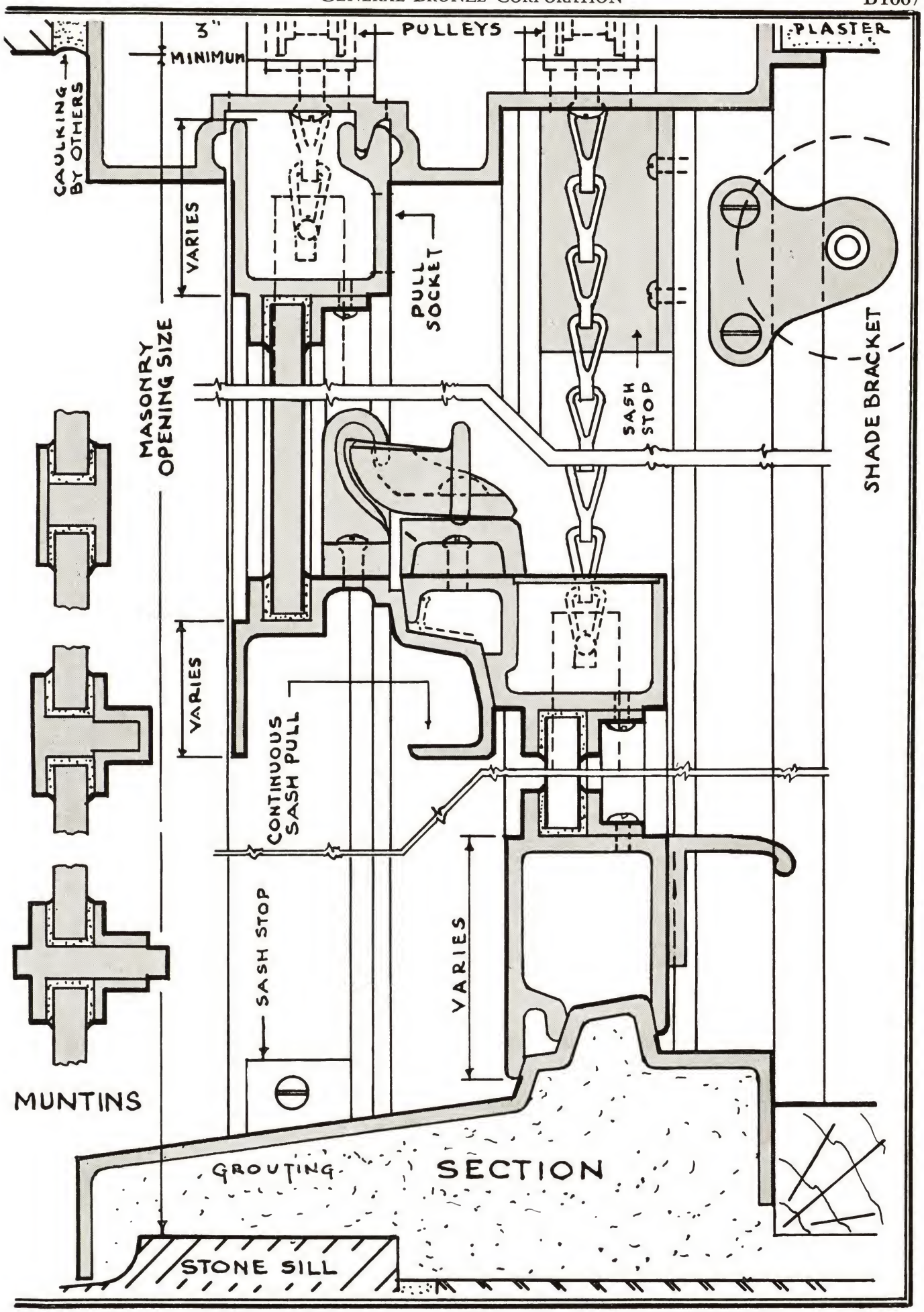

MUNTINS

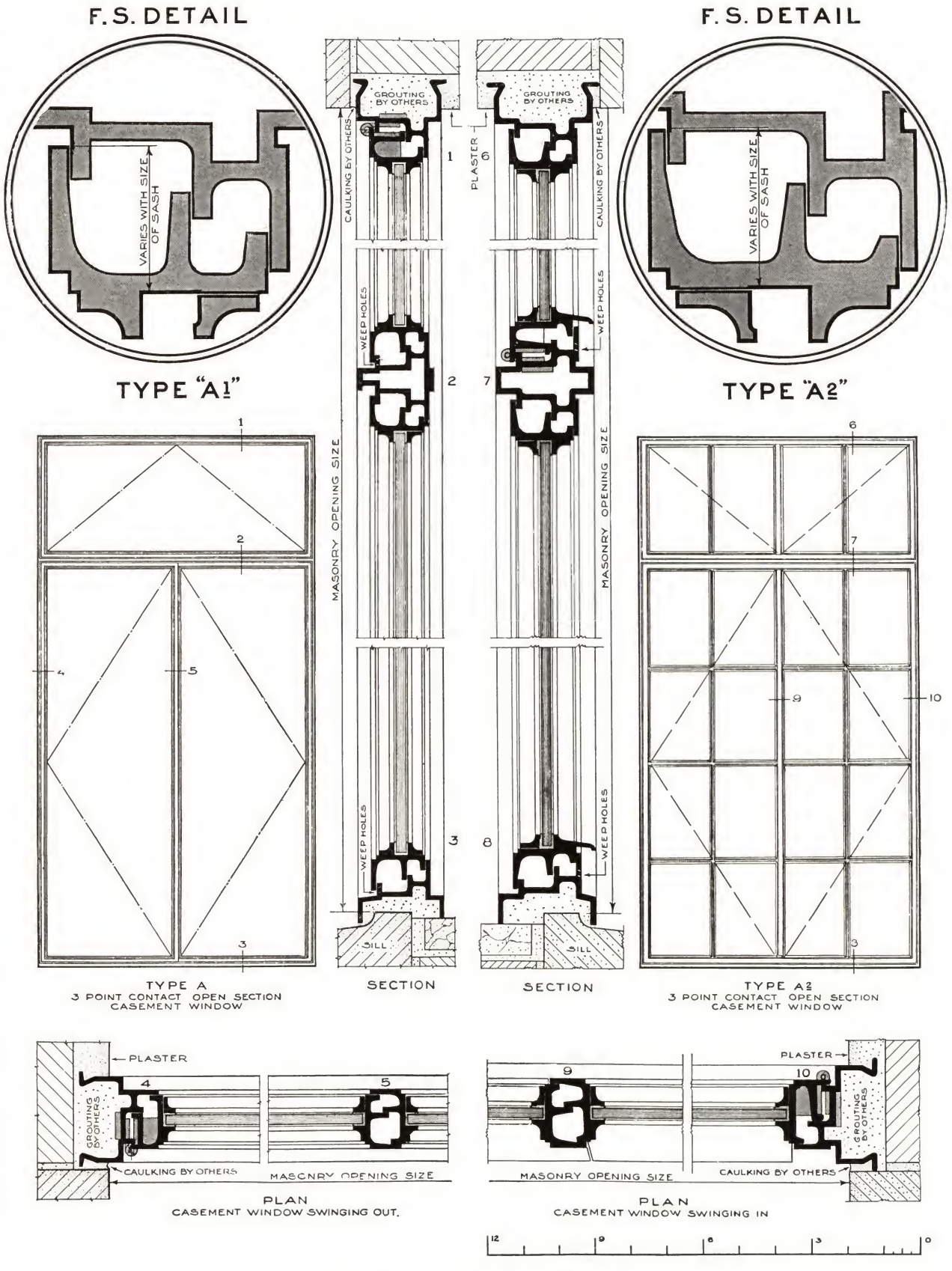

EXTERIOR ELEVATION OF WINDOW
WITH MUNTINS


INTERIOR ELEVATION OF WINDOW
TWO LIGHT

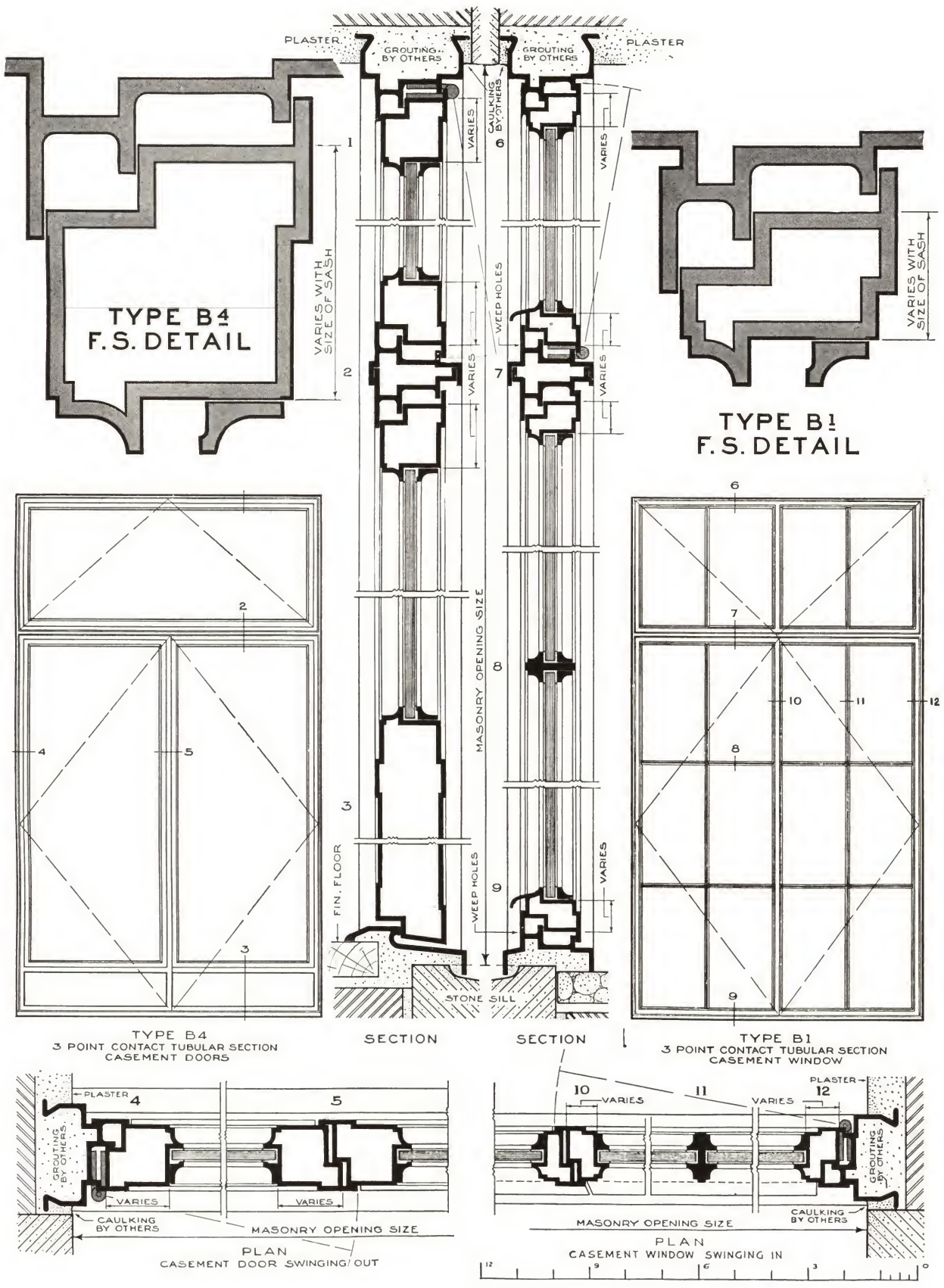

SEPARATORS
MULLION
2 WEIGHT MULLION
4 WEIGHT MULLION
12
9
6
3
0


FULL SIZE DETAILS
"POLACHEK" PATENTED DOUBLE HUNG WINDOWS
B
PLAIN TRIM
C
CONNECTING STRAPS
MOULDED TRIM
CONNECTING STRAPS
PLASTER
D
PLASTER
A
NO TRIM
WEIGHT
REMOVABLE PART - FOR ACCESS
GROUTING
WEIGHT
3" MINIMUM
MASONRY OP. SIZE
BELT HOOK
CAULKING BY OTHERS
MASONRY
JAMB


3" MINIMUM
PULLEYS
PLASTER
CAULKING BY OTHERS
VARIES
PULL SOCKET
MASONRY OPENING SIZE
SASH STOP
SHADE BRACKET
VARIES
CONTINUOUS SASH PULL
SASH STOP
VARIES
MUNTINS
GROUTING
SECTION
STONE SILL

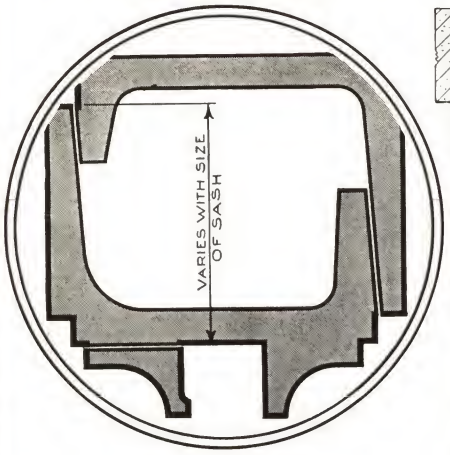


DETAILS OF TYPES A "POLACHEK" CASEMENT WINDOWS



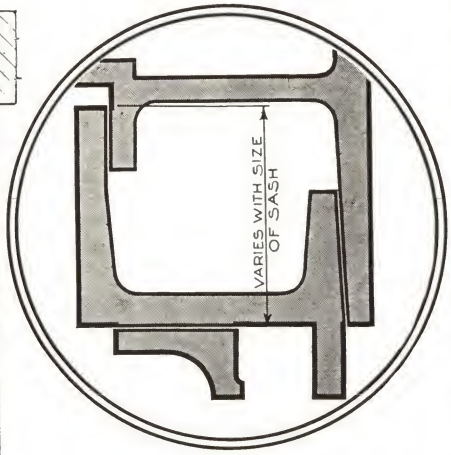
DETAILS OF TYPE B
"POLACHEK"
CASEMENT DOOR AND WINDOW

F.S. DETAIL

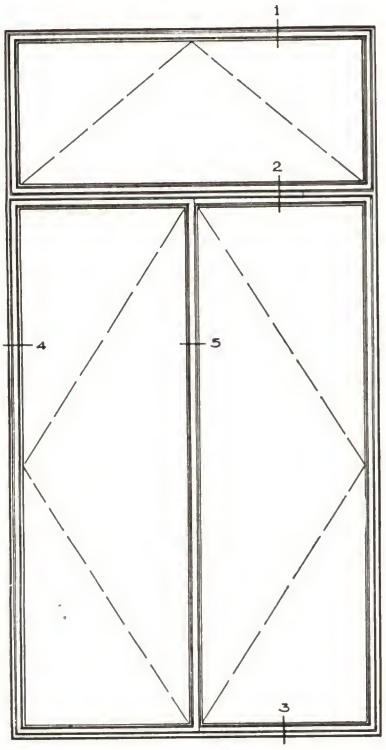


TYPE "C2"

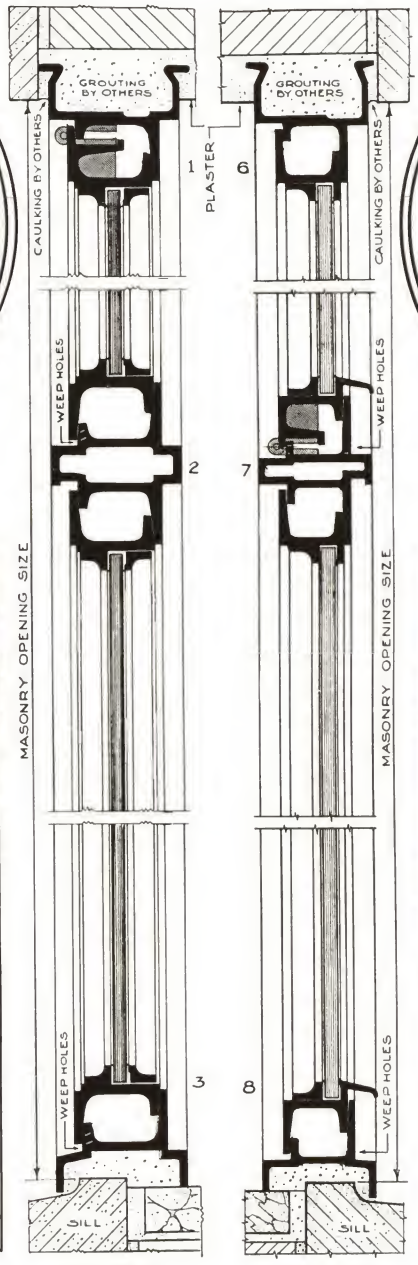
F.S. DETAIL



TYPE "C1"

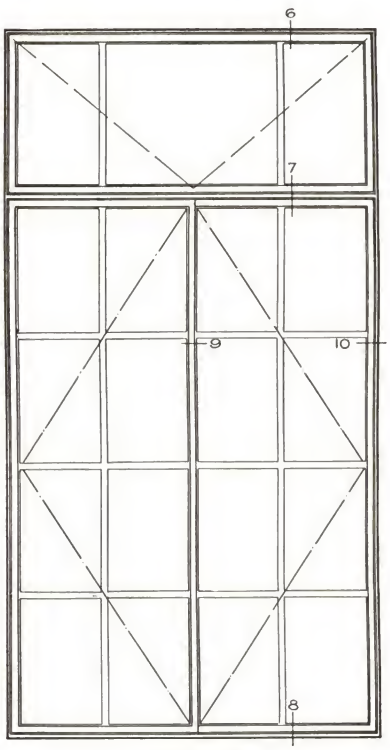


TYPE C2
2 POINT CONTACT OPEN SECTION
CASEMENT WINDOW

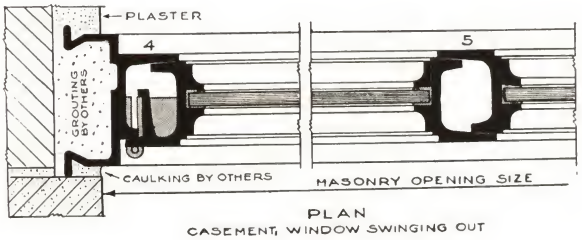


SECTION

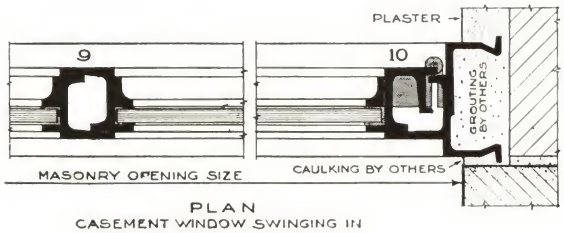
SECTION



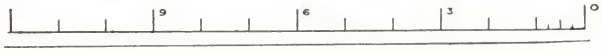
TYPE C1
2 POINT CONTACT OPEN SECTION
CASEMENT WINDOW



PLAN
CASEMENT WINDOW SWINGING OUT



PLAN
CASEMENT WINDOW SWINGING IN

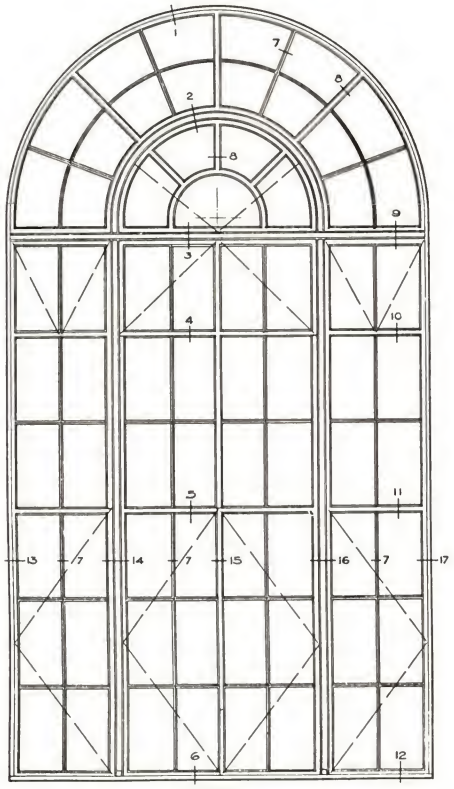


DETAILS OF TYPES C
"POLACHEK"
CASEMENT WINDOWS

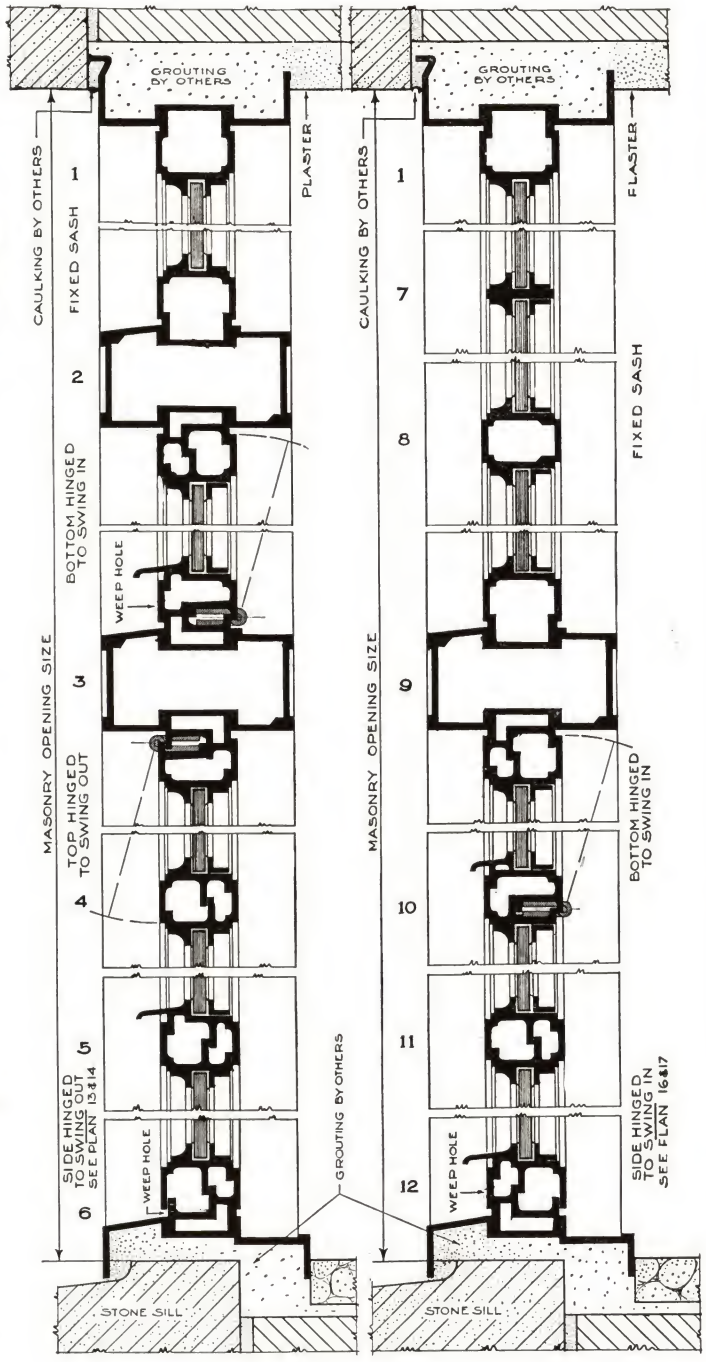
F.S. DETAIL



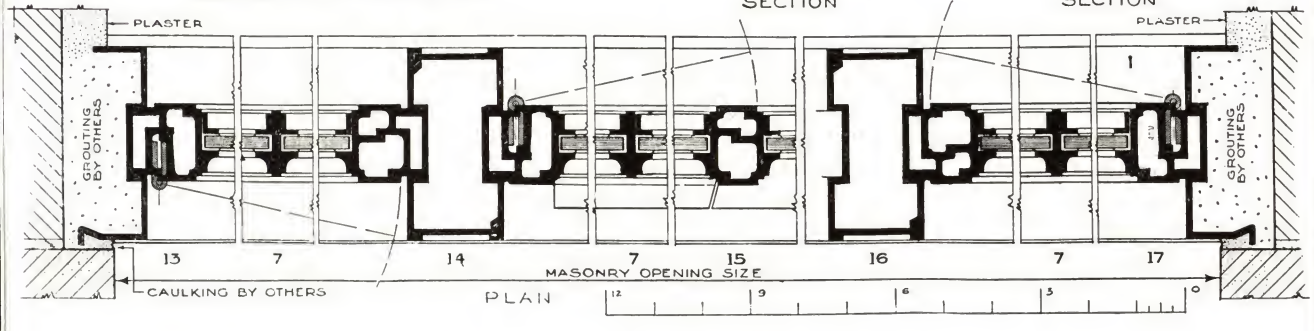
TYPE "A1"



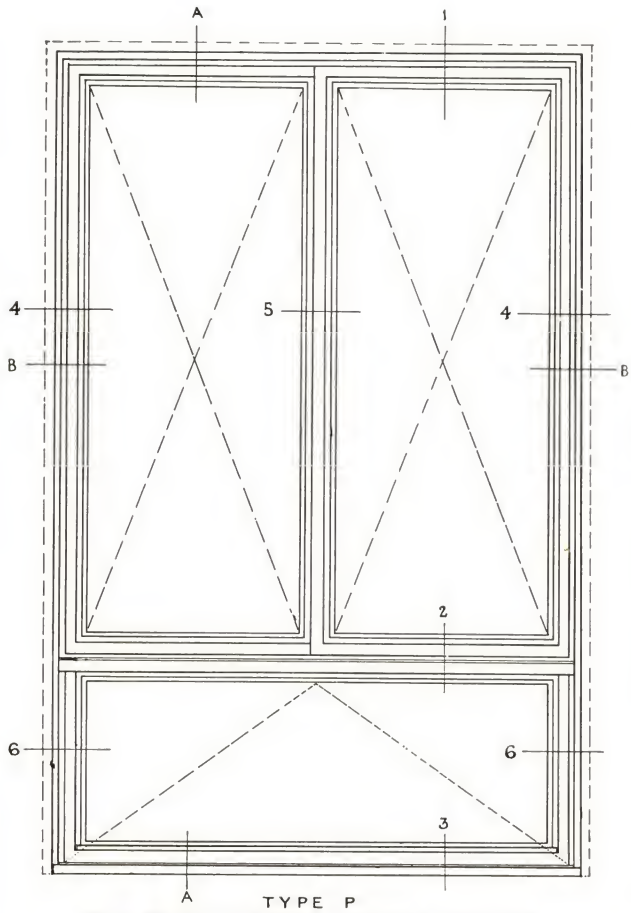
TYPE A
3 POINT CONTACT OPEN SECTION
CASEMENT WINDOW WITH MULLIONS



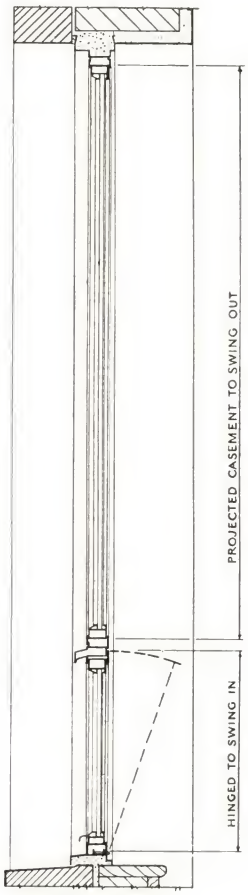
SECTION SECTION



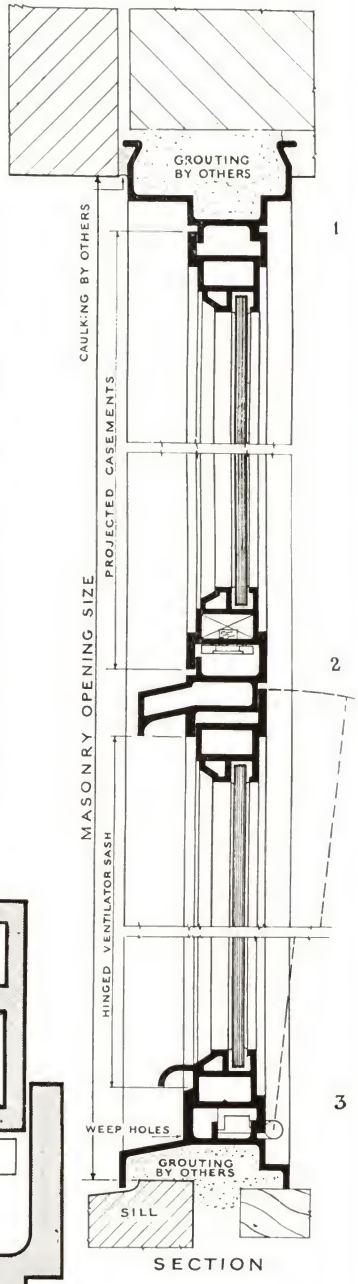
DETAILS OF TYPE A1
"POLACHEK"
CASEMENT WINDOW WITH MULLIONS



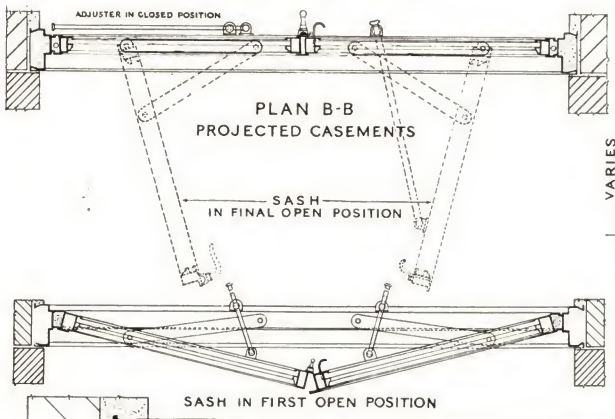
TYPE P
TWO POINT CONTACT TUBULAR SECTION
PROJECTED WINDOW



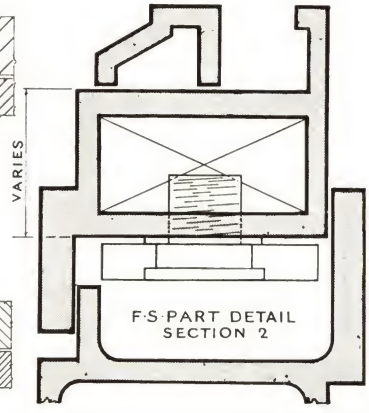
SECTION A-A

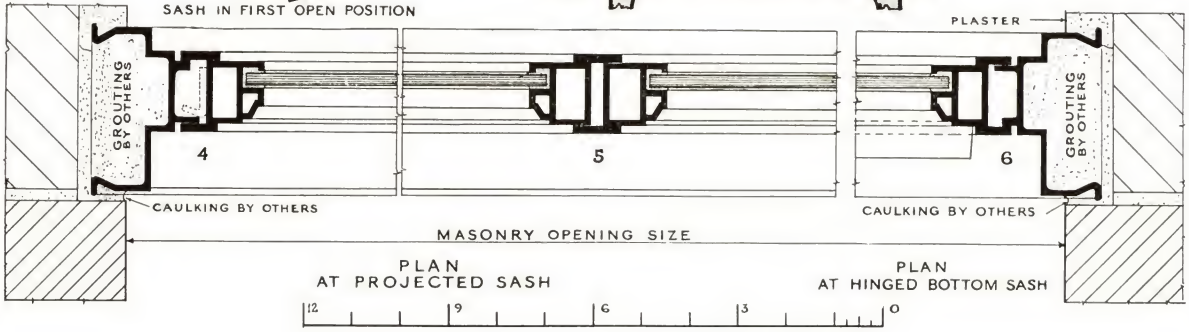


SECTION



SASH IN FIRST OPEN POSITION

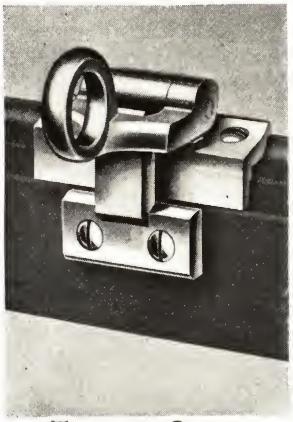




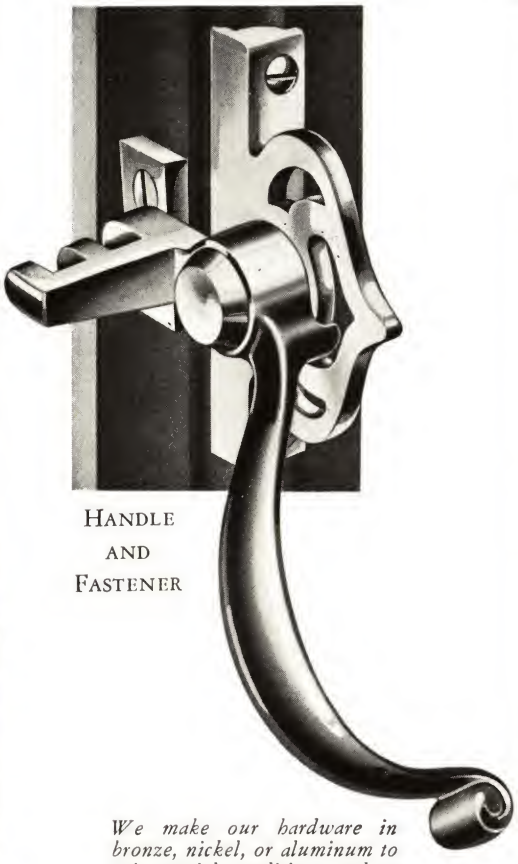
DETAILS OF TYPE P
COMBINATION PROJECTED CASEMENT AND BOTTOM VENTILATOR



TRANSOM CATCH
In Swinging

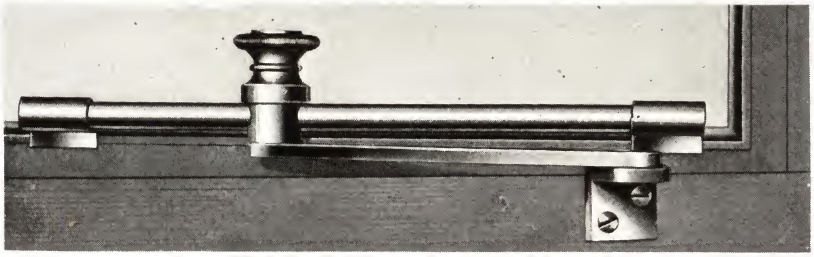


TRANSOM CATCH
Out Swinging

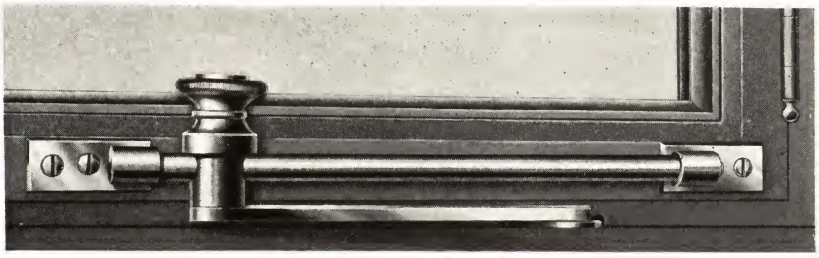


HANDLE
AND
FASTENER

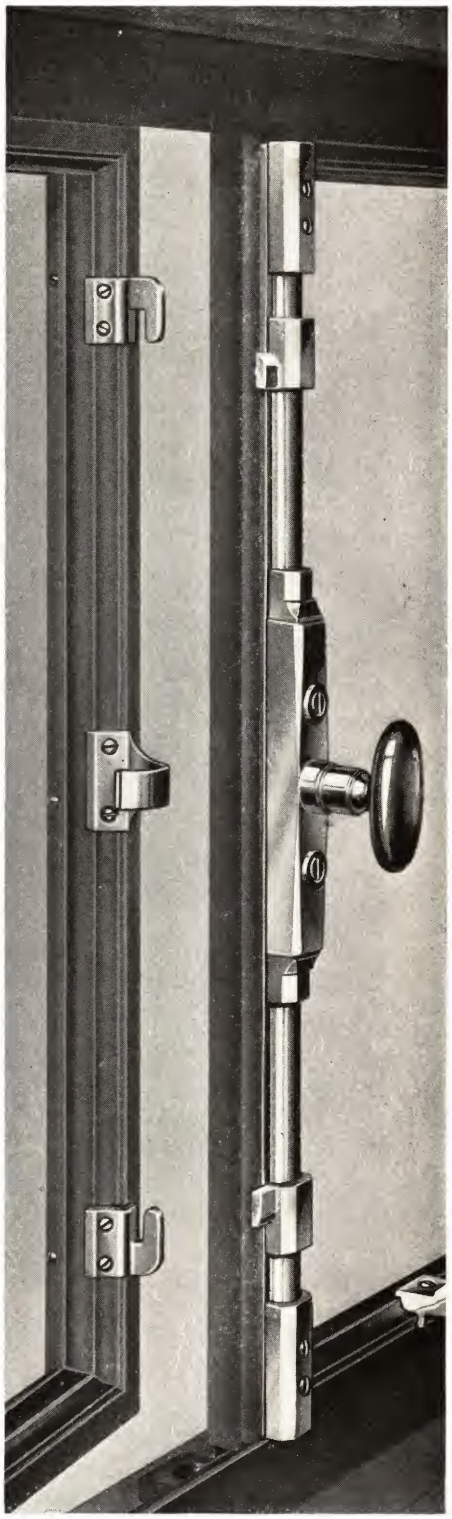
We make our hardware in bronze, nickel, or aluminum to suit special conditions and to match the window material



SASH ADJUSTOR—*Out Swinging*



SASH ADJUSTOR—*In Swinging*

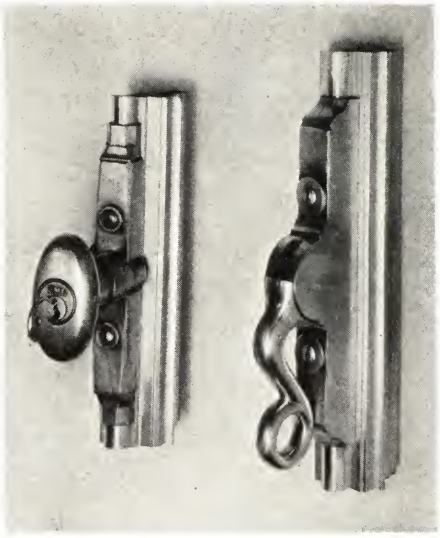


CREMORNE BOLT
top, bottom and center lock

GENERAL BRONZE SPECIAL HARDWARE
FOR CASEMENT WINDOWS AND TRANSOM SASH

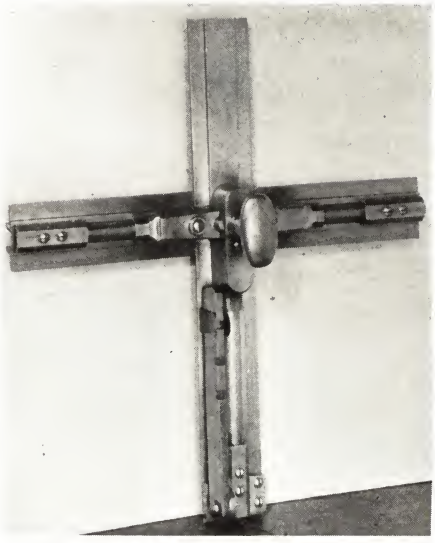


TWO-POINT CASEMENT FASTENER

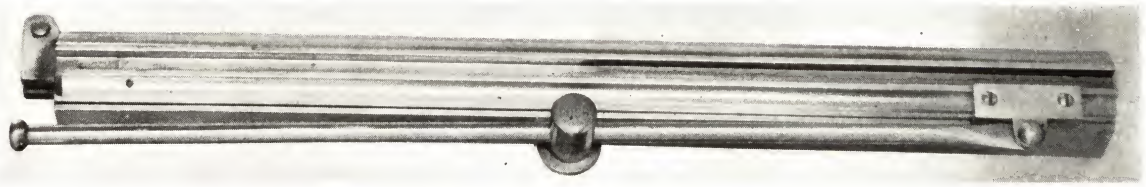


CREMORNE BOLT *with Cylinder Lock*

We make our hardware in bronze, nickel, or aluminum to suit special conditions and to match the window material



THREE-WAY CREMORNE BOLT
with Adjustable Sash Holder



SASH ADJUSTER *for Projected Type Window*

GENERAL BRONZE SPECIAL HARDWARE
FOR CASEMENT WINDOWS AND TRANSOM SASH

DESCRIPTION OF THE "POLACHEK" PATENTED DOUBLE HUNG AND CASEMENT WINDOWS

THE "POLACHEK" PATENTED DOUBLE HUNG WINDOW, owned and manufactured exclusively by General Bronze Corporation, is air-tight and weatherproof without binding or rattling in any position; non-rusting, permanent and quiet in operation. Salient patented features are a series of accurately-matched integral wedge-shaped tongues and grooves, effecting positive multiple contacts throughout the perimeter of both sashes when closed, and concealed devices within the sash construction which effectively prevent sash rattling while in any position. Patented in the U.S. on Dec. 1, 1924; and improved on July 7, 1925; July 19, 1927, and Nov. 29, 1927.

All parts of the window are made by special dies of Extruded Metal—a trade name applied to well-known, standardized alloys in Bronze, Aluminum, Benedict Nickel Metals. Metal formed by the extrusion process contributes qualities of particular advantage to window construction —uniformity in profile, strength, rigidity and surface texture. These, combined with intelligent design, precise machining and careful assembling of the members, insure a permanently satisfactory and distinctive installation.

The design of the window is simple, dignified and architecturally correct. Frame and Sash are so designed as to combine sufficient strength with the maximum obtainable of daylight opening. Sash provided for glazing from inside. Construction is rigid and permanent—it being impossible for the corners of sash or frame to open. Mitres, copes, tenons, and all other intersections are precision-gauged and machined; members are carefully fitted and assembled, and each unit thoroughly inspected before shipment. Workmanship is assured thru employment of artisans trained in handling fine ornamental bronze work.

The "Polachek" Double Hung Window is produced in two types:

FIRST TYPE as illustrated on page 6 with no trim, plaster adjoining jamb of the window as shown by the letter "A". In this type, a part of the jamb is removable for access to the weight box, as indicated.

SECOND TYPE provides a metal trim on the inside which gives the window a more pleasing appearance. This trim is removable for easier access to the weight pocket as indicated by letter "B". This type can be furnished with a moulded trim, as indicated by letter "C" or with a trim returning to plaster, as indicated by letter "D", to meet special conditions.

Moulded or plain extruded metal stools, if required, will be provided for any of the above types.

We have designed, for each of the above types, three sets of die sections for horizontal sash rails for varying widths of windows.

STANDARD EQUIPMENT: The frames are fitted with heavy, galvanized iron, asphaltum-coated weight boxes; roller-bearing, overhead-type pulleys in heavy housings bronze faced to match frames; cast-iron weights and Hercules finish or hot galvanized, extra-heavy, steel sash chain, plated to match frames.

Each window is fitted with two sash lifts, one sash lock, one sash pull and four sash bumpers —all heavy, solid bronze, nickel or aluminum to match windows.

STANDARD EXTRA EQUIPMENT: (—) Cleaner's safety hooks and belts, (—) sash pull hooks on wood poles, (—) shade brackets, (—) curtain rod brackets and rods, and (—) drapery hooks.

SPECIAL EXTRA EQUIPMENT: Fly Screens, Wind Shields, Awning Brackets, Venetian Blind Supports, Radiator Brackets and Hoods or Enclosures, with or without grilles.

Special Steel Double Hung Windows are also manufactured by the Corporation. Details upon request.

The "POLACHEK" PATENTED CASEMENT WINDOW is another exclusive product of General Bronze Corporation and embodies the same standards of Good Construction, Excellent Workmanship and Permanent Service. It is so designed and fabricated as to produce continuous three-point contact throughout the sash perimeter, when closed. Patented in the U. S. March 9, 1929.

Frame, sash and trim throughout are of extruded metal from special dies.

The Corporation also makes a casement window, the stiles and rails of the sash being tubular-shaped (closed section) of drawn metal, which is also a three-point contact type, as illustrated on page 9. The tubular-shaped members add strength and rigidity to the sash and a more finished appearance when the sash is open and are specially adapted to large casements and casements extending to the floor that serve as doors.

THE CORPORATION'S SPECIAL PROJECTED TYPE CASEMENT WINDOW WITH BOTTOM VENTILATOR, as illustrated on page 12, offers to Architects and discriminating Owners what may well be termed the last word in controlled window ventilation. The advantages of the bottom ventilator sash, opening in, are too obvious and well understood to require discussion. The upper sliding pivoted sash, opening out, have a wide range of adjustment. The adjustor bar on each sash has four automatic positive locked positions, from none of which can any force applied to the sash release it; so that all danger of damage from gusty wind is eliminated. Yet a slight pressure on the push button instantly frees the bar to permit the sash to be swung to any new position desired.

At the first opened position, as illustrated at the bottom of page 12, it will be observed that the flanges on the meeting stiles of the two sash are still in contact, and that the hinged stiles have not yet been freed from contact with the jambs of the frame. This position creates a flue in which stale air rushes out the top and fresh air comes in at the bottom, insuring constant ventilation with no direct breeze or draught blowing into the room. The three further opened positions successively increase the open air exposure, the final one affording almost 100% clear opening.

When in this fully opened position, as may be noted by referring to the drawings, both sides of the glass may be easily washed from inside the room.

By closing one of these two sash and opening the other, any breeze traveling approximately in the same plane as is the wall, will be trapped and may be deflected into the room at any one of four angles.

A noteworthy feature of this window is the remarkable smoothness with which the sash operate, a smoothness accomplished by a unique arrangement of built in sliding pivot blocks and pivots of a special tempered self-lubricating alloy. Fully housed within the construction, it is impossible for this equipment to become untracked or jammed.

This window can be obtained without ventilator sash, with ventilator sash at the top, or at both top and bottom, as may be desired.

The superior weatherproof qualities of these windows are recognized and attested to by many Architects, Owners and Builders who have used them, and are apparent to the discerning eye from a careful study of the sections herein shown.

STANDARD EQUIPMENT: General Bronze Special Hardware, as illustrated on pages 13 and 14, is standard for all casements. Attractive, sturdy and efficient, it harmonizes perfectly with this most attractive type of window. Note particularly the absence of extreme projections and the general compactness of operating and engaging parts, not obtainable in other makes.

STANDARD AND SPECIAL EXTRA EQUIPMENT for casement windows is furnished the same as noted above for Double Hung Windows.

Complete architectural specifications and details also samples of "Polachek" Double Hung and Casement Windows will be supplied on request. We solicit the opportunity to quote on your requirements.

Address either the Eastern General Sales Office, 480 Hancock Street, Long Island City, N. Y., the Western General Sales Office, 27th Street and 27th Avenue, So., Minneapolis, Minn., or any office of the Corporation's Sales Representatives, located in principal cities.

A PARTIAL LIST OF INSTALLATIONS OF BRONZE AND ALUMINUM "POLACHEK" DOUBLE HUNG AND CASEMENT WINDOWS

Building	*Location*	*Architects*
N. Y. Life Insurance Co.	New York, N. Y.	Cass Gilbert
Prudential Life Insurance Bldg.	Newark, N. J.	Cass Gilbert
West Virginia State Capital	Charlestown, West Va.	Cass Gilbert
Aeolian Building	New York, N. Y.	Warren & Wetmore
N. Y. Central R.R. Office Bldg.	New York, N. Y.	Warren & Wetmore
Pennsylvania Railroad Building	Philadelphia, Pa.	Graham, Anderson, Probst & White
Medical Arts Building	Cleveland, Ohio	Graham, Anderson, Probst & White
Koppers Building	Pittsburgh, Pa.	Graham, Anderson, Probst & White
Foreman National Bank	Chicago, Ill.	Graham, Anderson, Probst & White
Chase National Bank	New York, N. Y.	Graham, Anderson, Probst & White
Mitsui Main Building	Tokyo, Japan	Trowbridge & Livingston
Central Union Trust Co.	66 Broadway, N. Y.	Cross & Cross
First National Bank of Boston	Buenos Ayres Branch	York & Sawyer
Northwestern Mutual Life Ins. Co.	Milwaukee, Wis.	Holabird & Root
Mutual Benefit Life Ins. Co.	Newark, N. J.	John H. & Wilson C. Ely
Municipal Building	East Orange, N. J.	John H. & Wilson C. Ely
Nebraska State Capital Building	Lincoln, Neb.	Bertram Goodhue Associates
County Office Building	Pittsburgh, Pa.	Stanley L. Roush
New York County Court House	New York, N. Y.	Guy Lowell
N. Y. State Office Building	Albany, N. Y.	W. E. Haugaard
N. Y. State Office Building	New York, N. Y.	W. E. Haugaard
City Hall Annex	Philadelphia, Pa.	Phillip H. Johnson
Sterling Memorial Library	New Haven, Conn.	James Gamble Rogers
Clark Library	Los Angeles, Calif.	Robt. D. Farquhar
Wayne County & Home Bank	Detroit, Mich.	Albert Kahn
Title Guaranty & Trust Co.	New York, N. Y.	John Mead Howells
Chemical National Bank	New York, N. Y.	Walker & Gillette
Bankers Trust Company	New York, N. Y.	Charles E. Birge
East New York Savings Bank	Brooklyn, N. Y.	Holmes & Winslow
Hoboken Bank for Savings	Hoboken, N. J.	Ludlow & Peabody
Bronx Savings Bank	New York, N. Y.	Morgan, French & Co., Inc.
First National Bank & Trust Co.	Ridgewood, N. J.	Morgan, French & Co., Inc.
City National Bank & Trust Co.	Danbury, Conn.	Morgan, French & Co., Inc.
Farmers Bank	Wilmington, Del.	Edward Canby May
Federal American National Bank	Washington, D. C.	Alfred C. Bossom
Farmers National Bank	Beaver Falls, Pa.	Uffinger, Foster & Bookwalter
Ozone Park National Bank	Woodhaven, N. Y.	Uffinger, Foster & Bookwalter
Allentown National Bank	Allentown, Pa.	Ruhe & Lange
Newport Savings Bank	Newport, R. I.	Thomas M. James
Apartment 740 Park Avenue	New York, N. Y.	Rosario Candela
Fred F. French Co. Building	New York, N. Y.	Fred F. French Co.
Packard Building	Philadelphia, Pa.	Ritter & Shay
Grant Building	Pittsburgh, Pa.	Henry Hornborstel
Phillips Office Building	Butler, Pa.	Janssen & Cocken
Villa Maria College	Chester City, Pa.	Paul Monoghan
Cypress Hills Mausoleum	Brooklyn, N. Y.	Gregory B. Webb
Fairview Community Mausoleum	Fairview, N. J.	Webb & Sohn
Greenmount Community Mausoleum	Baltimore, Md.	Buckler & Fenhagen
Goelet Building	New York, N. Y.	E. H. Faile & Co.
Hersh Building	Elizabeth, N. J.	Meyers & Shanley

ART, ARCHITECTURAL, SCULPTURAL, DECORATIVE AND MISCELLANEOUS
METAL WORK OF EVERY DESCRIPTION

MADE BY THE

ORNAMENTAL BRONZE AND IRON TRADES

THESE products are specially manufactured to meet the most exacting demands of Architects' Plans and Specifications, Sculptors' Models and Artists' Designs. The Engineering methods of Bronze Construction and Bronze Working, which we employ in manufacture, preserve every art value of design while enhancing them with distinctive qualities of metalcraft.

We also develop standardized ARCHITECTURAL and BUILDING SPECIALTIES in METAL. These retain the same CLASS and QUALITY that distinguish our Special Work.

Our DESIGNING, DRAUGHTING, ENGINEERING, EXPERIMENTAL and RESEARCH Departments are open to the Profession in Developing Plans and Details as well as Assisting in the co-ordination of other Trades in connection with ORNAMENTAL METAL WORK—Contracted or Prospective.

GENERAL BRONZE CORPORATION

Distinctive Productions in All Metals

EXECUTIVE OFFICES

480 HANCOCK STREET
LONG ISLAND CITY, N. Y.

WESTERN SALES OFFICE
27th Avenue & 27th Street, So.
Minneapolis, Minn.

ART SHOW ROOMS
56TH STREET GALLERIES
6 East 56th Street
New York

FACTORIES

John Polachek Bronze & Iron Plant
Long Island City, N. Y.

Tiffany Bronze & Iron Plant
Corona, N. Y.

Renaissance Bronze & Iron Plant
Long Island City, N. Y.

Roman Bronze Works Statuary Foundry
Corona, N. Y.

Flour City Ornamental Iron Plant
Minneapolis, Minn.

Wisconsin Ornamental Bronze Plant
Milwaukee, Wis.

Guaranty Iron & Steel Plant
Chicago, Ill.

Dominion Bronze & Iron Plant
Winnipeg, Manitoba, Can.

Sales Representatives in Principal Cities

INTERNATIONAL CASEMENT Co INC

(Member of the Producers Council)

· MANUFACTURERS · OF · CASEMENT · WINDOWS ·
· IN · STEEL · BRONZE · AND · ALUMINUM ·
· J A M E S T O W N · N E W · Y O R K ·

THE FOLLOWING PAGES ARE OFFERED IN GENERAL DESCRIPTION OF OUR PRODUCTS. MORE COMPREHENSIVE DETAILS WITH COMPLETE SPECIFICATIONS ARE AVAILABLE IN THE CATALOGUES LISTED ON PAGE 14.

"There is hardly anything in the world that some man cannot make a little worse and sell a little cheaper and the people who consider price only are this man's lawful prey." —*John Ruskin*

SALES OFFICES

NEW YORK, N.Y., 101 Park Ave.

ST. LOUIS, MO.
417 Chemical Building

ATLANTA, GA.,
808 Forsyth Bldg.

SEATTLE, WASH.,
402 Terminal Sales Bldg.

CHICAGO ILL.,
520 N. Michigan Ave.

BOSTON, MASS.,
201 Devonshire Street

LOS ANGELES, CAL.,
308 Transportation Bldg.

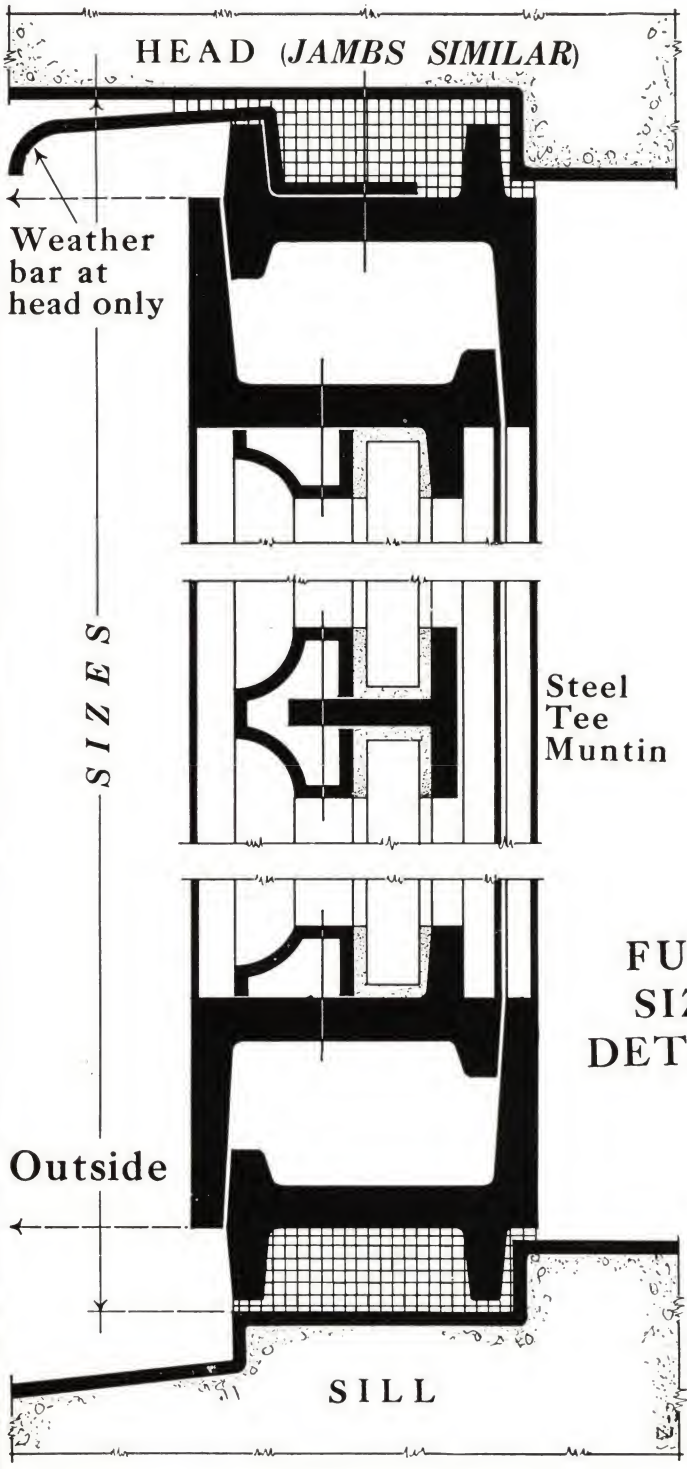
WASHINGTON, D. C.,
1005 Hill Bldg.

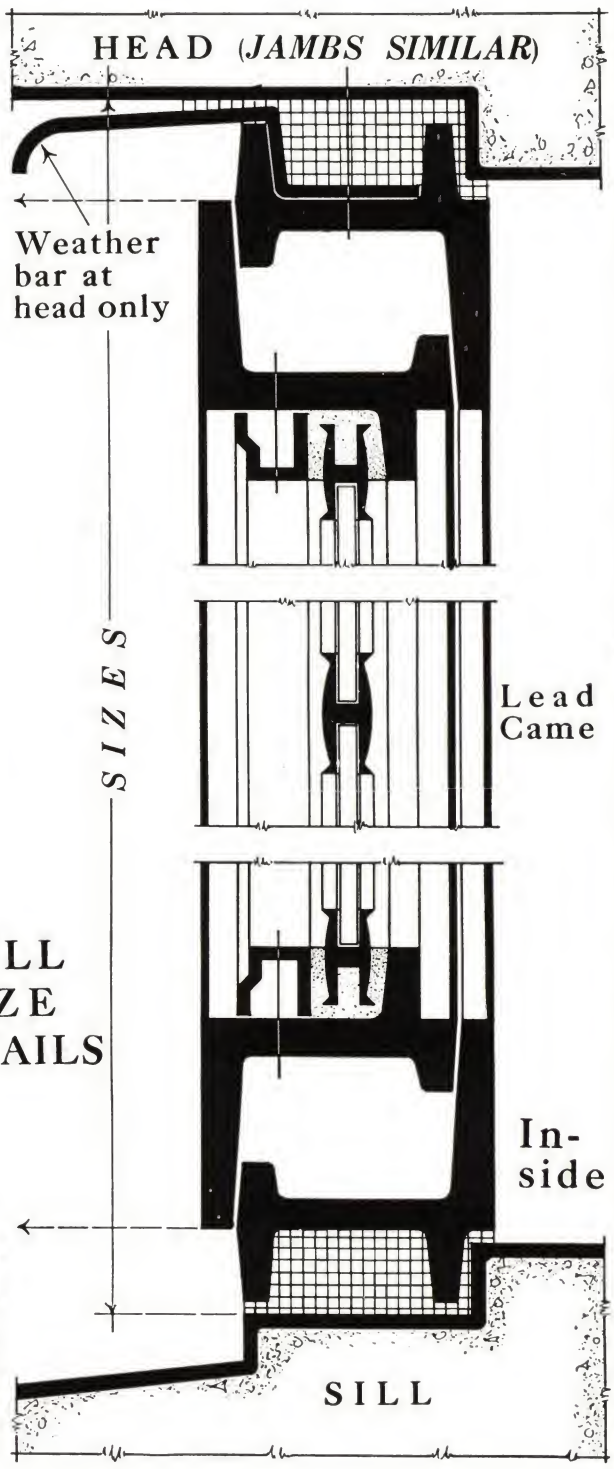
INDIANAPOLIS, IND.,
825 Architects and Builders Bldg.

CLEVELAND, O.,
509 Empire Bldg.

Agents in all principal cities

CASEMENTS OPENING OUTWARDS





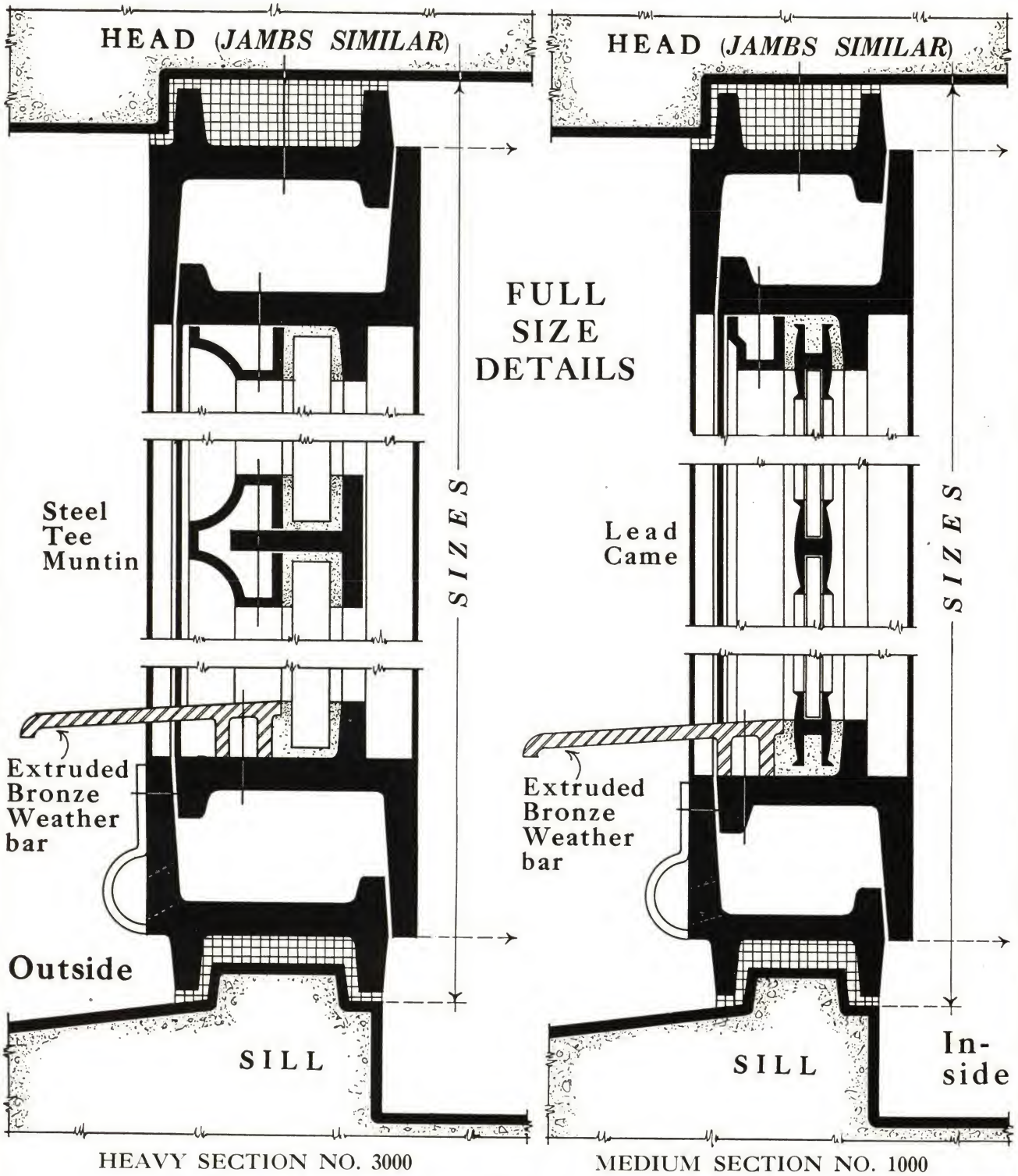
HEAVY SECTION NO. 3000
Maximum size 3′ 0″ x 8′ 0″.
Weight of combined sections 4.61 lbs. per lineal foot.

MEDIUM SECTION NO. 1000
Maximum size 2′ 6″ x 6′ 0″
Weight of combined sections 3.55 lbs. per lineal foot.

SIDE HUNG CASEMENTS—TOP HUNG CASEMENTS SIMILAR

Our sections No. 3000 and No. 1000 may be glazed either from outside or from inside. Appearance usually governs choice, but we recommend outside glazing.

CASEMENTS OPENING INWARDS



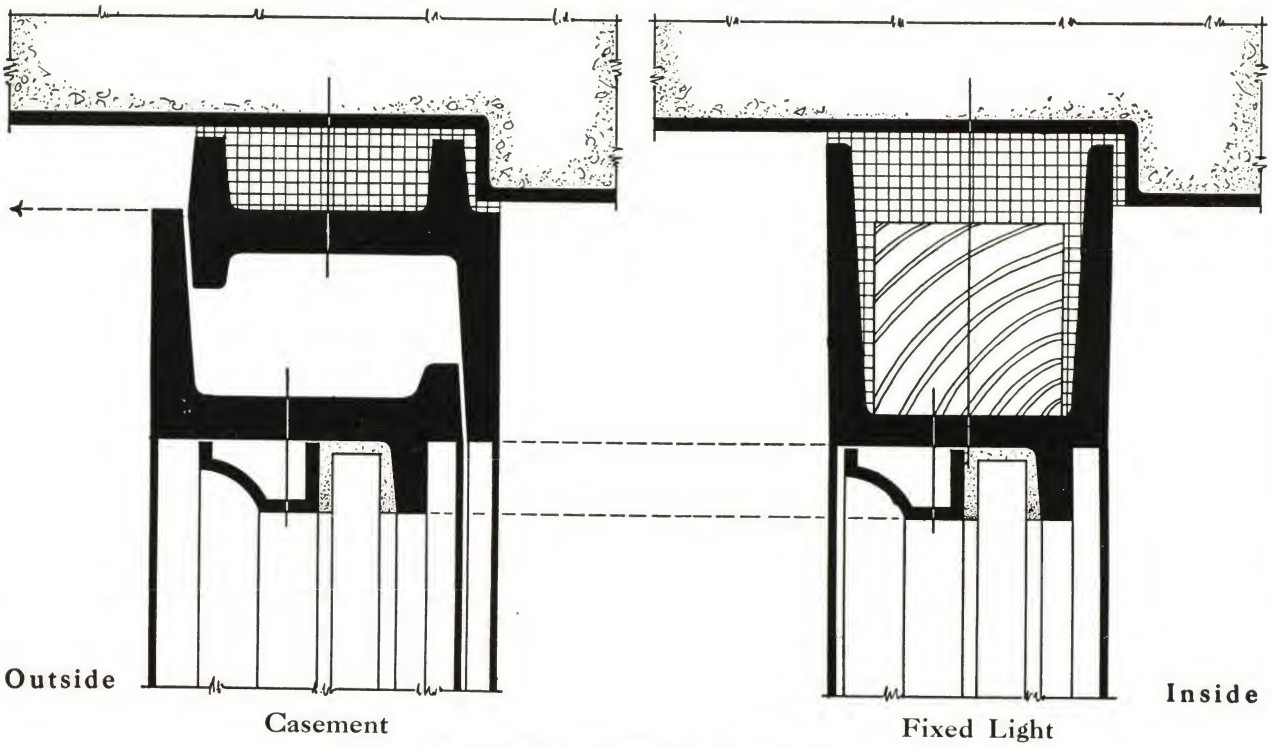
HEAVY SECTION NO. 3000 MEDIUM SECTION NO. 1000

For maximum sizes and weights of sections, see preceding page

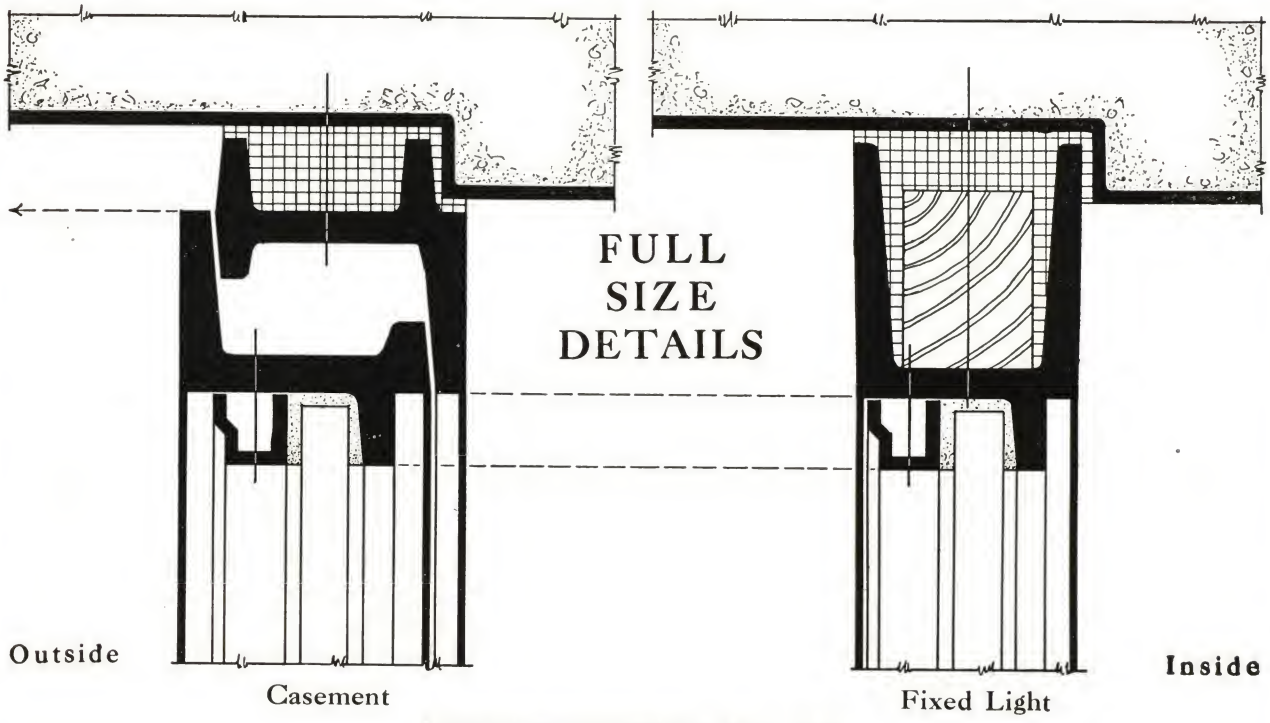
SIDE HUNG CASEMENTS—BOTTOM HUNG CASEMENTS SIMILAR

Our sections No. 3000 and No. 1000 may be divided into panes by tee bar muntins, or they may be prepared to receive leaded glass or single sheets of plate glass. For casements with large sheets of glass, and for all best work, we recommend glazing beads.

FIXED LIGHTS



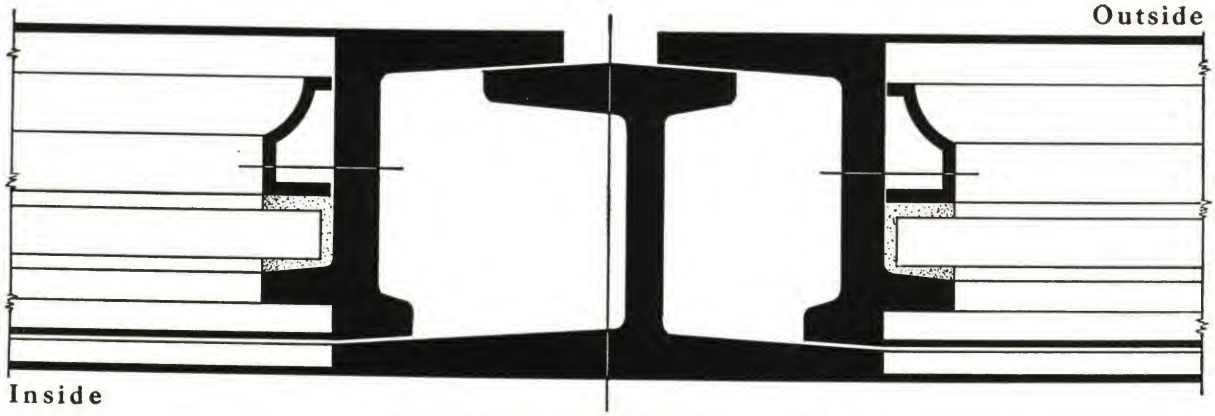
HEAVY SECTION NO. 3000



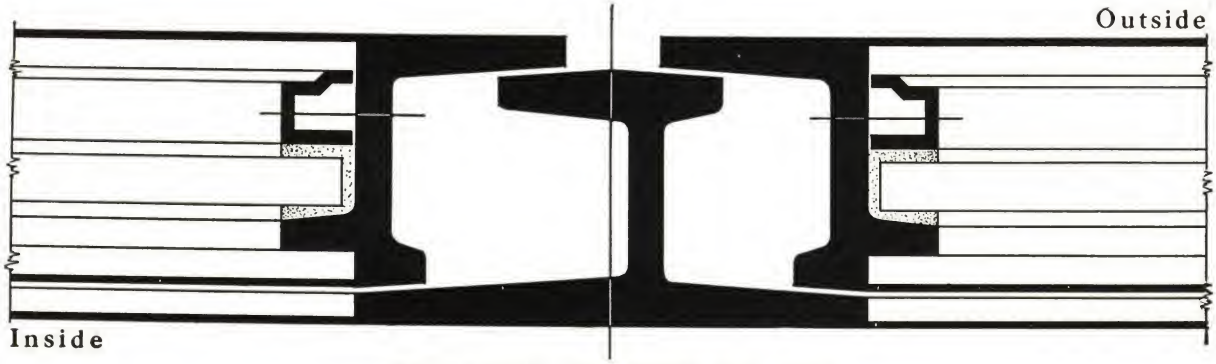
MEDIUM SECTION NO. 1000

Fixed lights are of solid rolled channel sections with sight lines and glass plane designed to match and line up with the corresponding features of the casements.

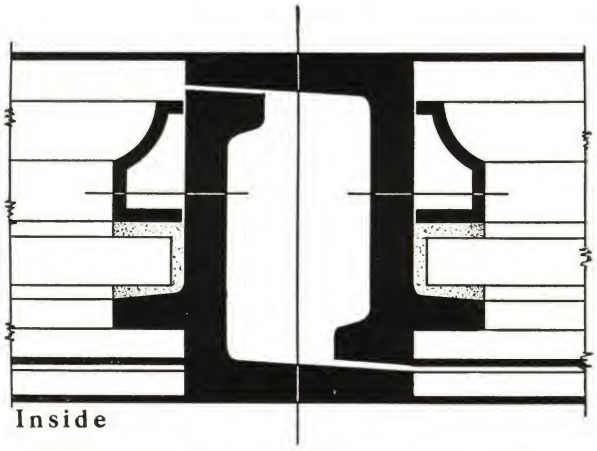
MULLIONS AND MEETING BARS



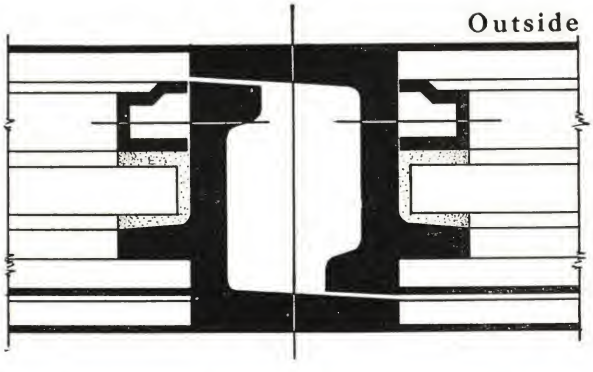
MULLION SECTION NO. 3000



MULLION SECTION NO. 1000



MEETING BAR SECTION NO. 3000



MEETING BAR SECTION NO. 1000

FULL SIZE DETAILS

These mullions and meeting bars are shown for outward opening double casements. They will be reversed for inward opening casements. Glazing is shown from outside, but inside glazing can be arranged for by reversing the sections.

SPECIFICATIONS

Form of Specification for Custom Made Casements

All windows shall be the INTERNATIONAL CASEMENT CO. INC. steel casement windows, manufactured in Jamestown, New York, and made from solid rolled steel sections of suitable design and weight for the size of the openings. This contractor shall not commence fabrication until shop drawings bear the approval stamp of the architects. All bars shall be hydraulically straightened and free from hammer marks or distortions of any kind. All corners shall be accurately machined, electrically welded and cleaned free from flux. Frames and casements shall be solid welded units and shall provide continuous double weathering contact without the aid of loose or applied linings. Horizontally and vertically pivoted casements shall be hung on patent bronze cup pivots. The former shall be fitted with solid bronze spring catch, cord eye and pulley and the latter with solid bronze fasteners and double bar adjusters; when more than 5 ft. high, double grip bolts shall be supplied. Top hung, bottom hung and side hung casements shall be hung on drop forged steel pivots bronze bushed. Top hung casements shall be fitted with solid bronze cam opener capable of convenient pole operation. Bottom hung casements shall be fitted with solid bronze spring catches and concealed friction side arms. Side hung casements both outward and inward opening over 5 ft. high shall be fitted with solid bronze fasteners having double grip bolts, double bar adjusters, and intermediate hinges: under 5 ft. the double grip bolts and intermediate hinges shall be omitted. All hardware shall be individually fitted by skilled mechanics at the factory. Fixed sash shall be made from channel sections which provide the same sight line and glass plane as the casements. Moulded steel glazing beads attached with brass screws and having mitered corners shall be neatly fitted to casements and fixed sash. All steel work shall be cleaned free from rust and scale and painted two coats DuPont special rust-resisting paint, each coat baked on separately. The installation of the windows shall form part of this contractor's work. Windows to be properly bedded and pointed inside and out with International mastic cement, the whole guaranteed weathertight. Glass and glazing by glazing contractor; field painting by painting contractor.

Form of Specification for "Biltin" Sub-frames

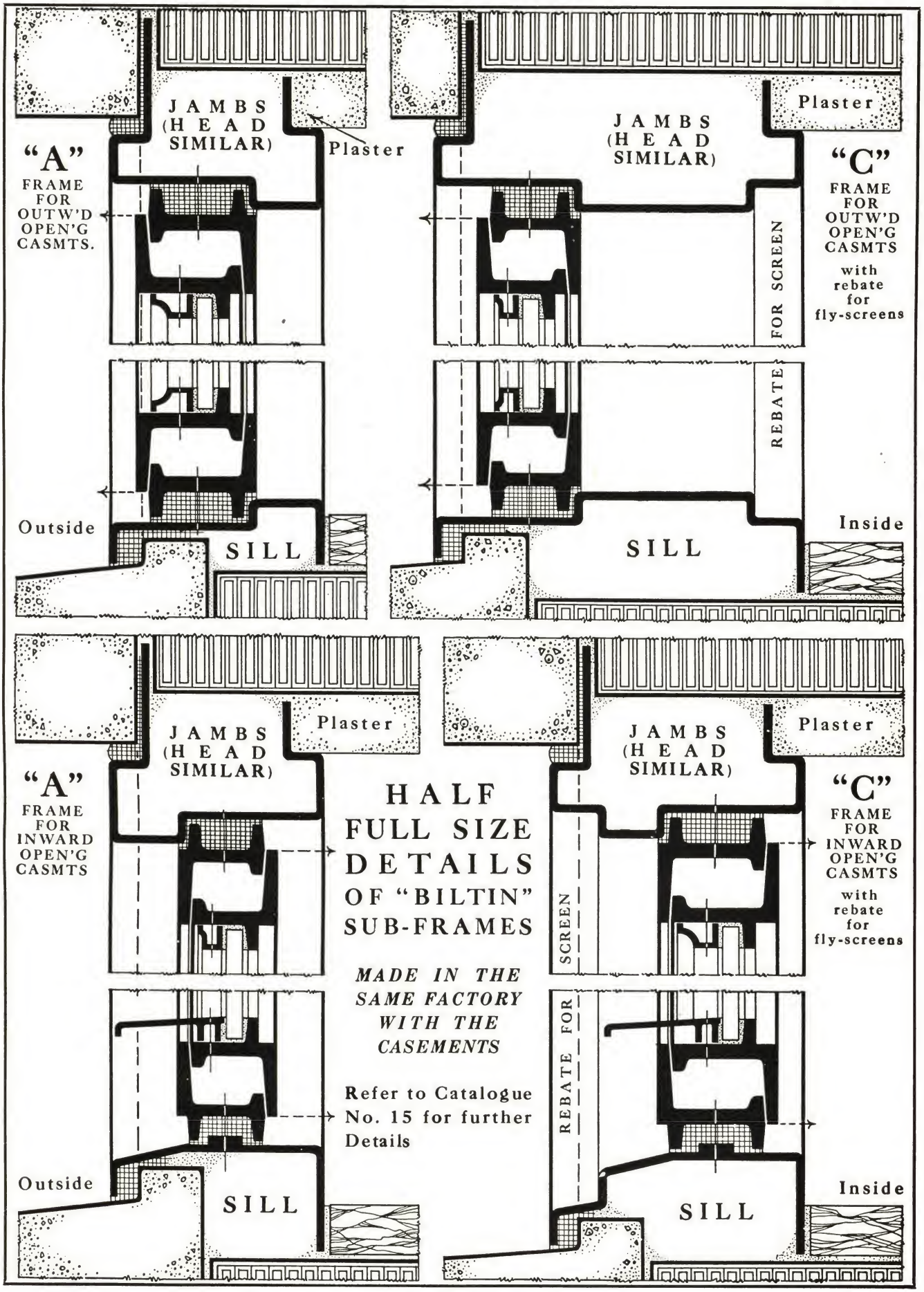
All sub-frames, mullions, transom bars, swinging and stationary sash, to be of steel, bronze or aluminum as manufactured by the INTERNATIONAL CASEMENT CO. INC., Jamestown, N. Y.

This contractor shall furnish and deliver to the building International "Biltin" sub-frames of type and profile shown on drawings, in time to suit the requirements of the building. Sub-frames shall be of No. 12 gauge steel, with corners welded solid to form one complete frame, except where of too great a size for shipment in ordinary box cars, in which event they shall be assembled at the factory with screwed and plated joints, dissembled, packed and shipped "K. D." for assembly by general contractor. All corners shall be properly cleaned off and the sub-frames shall be painted two heavy coats of special rust-resisting paint, each coat separately baked on. They shall be set up plumb and true and built in and pointed by the mason contractor as the walls go up. The wood spreaders or braces which are included to insure the sub-frames hold square and true to shape shall be left in until the casements are installed.

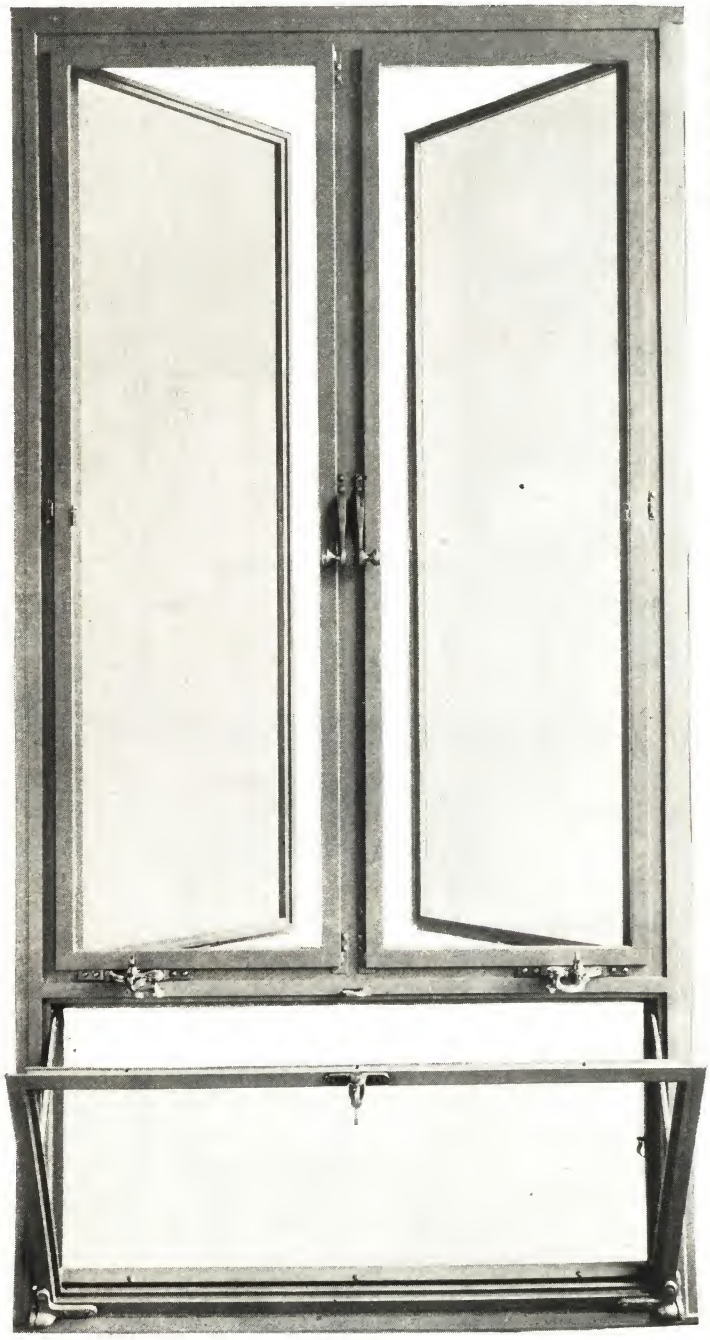
After plastering is completed, this contractor shall remove braces and shall install casements, taking care that the joints between the casements and the sub-frames are properly filled with International Mastic Cement neatly pointed inside and out. All casements shall be properly adjusted and shall operate freely and smoothly before acceptance by the architect.

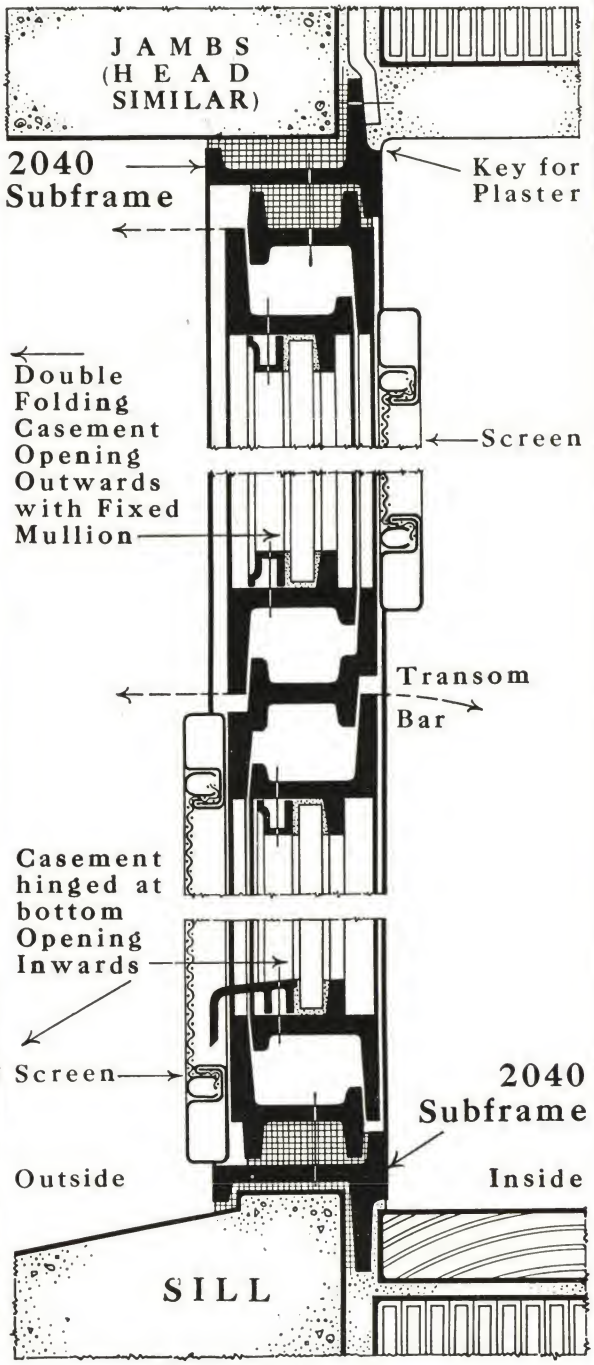
Please refer to our branch offices for specifications covering bronze or aluminum.

Standard Cotswold Casement specifications are given on Page 11.
Screened Casement specifications are given on Page 12.


JAMBS (HEAD SIMILAR)
Plaster
"A"
FRAME FOR OUTW'D OPEN'G CASMTS.
JAMBS (HEAD SIMILAR)
Plaster
"C"
FRAME FOR OUTW'D OPEN'G CASMTS
with rebate for fly-screens
FOR SCREEN
REBATE
Outside
SILL
SILL
Inside
JAMBS (HEAD SIMILAR)
Plaster
"A"
FRAME FOR INWARD OPEN'G CASMTS
HALF FULL SIZE DETAILS OF "BILTIN" SUB-FRAMES
MADE IN THE SAME FACTORY WITH THE CASEMENTS
Refer to Catalogue No. 15 for further Details
JAMBS (HEAD SIMILAR)
Plaster
"C"
FRAME FOR INWARD OPEN'G CASMTS
with rebate for fly-screens
SCREEN
REBATE FOR
Outside
SILL
SILL
Inside

THE "HOPKINS" WINDOW





Half Full Size Section

THE "HOPKINS" WINDOW

Made in custom and standard sizes

The International "Hopkins" Window (illustrated above) is particularly suitable for public buildings, hospitals, courthouses and schools where permanency of construction, control of ventilation and simplicity of operation are desirable. The frames and casements of these windows are solid welded units and continuous double weathering contact is provided without the aid of loose or applied linings. This method is more expensive than the forming of contacts by the riveting or spot welding of separate linings, but it ensures permanent construction and avoids the troubles which follow when linings are forced away by corrosion, leaving the windows useless and sometimes dangerous.

The section used is our Medium Section 1000 having a combined weight of casement and frame of 3.55 lbs. per lineal foot.

Note: *For full specifications, refer to Booklet No. 18 or to any of our offices.*

INTERNATIONAL AUSTRAL WINDOWS

In Steel and Bronze for Office Buildings and Schools



GIRLS' SENIOR HIGH SCHOOL, ATLANTA, GA.
EDWARDS & SAYWARD, Architects

Specifications International Austral Windows

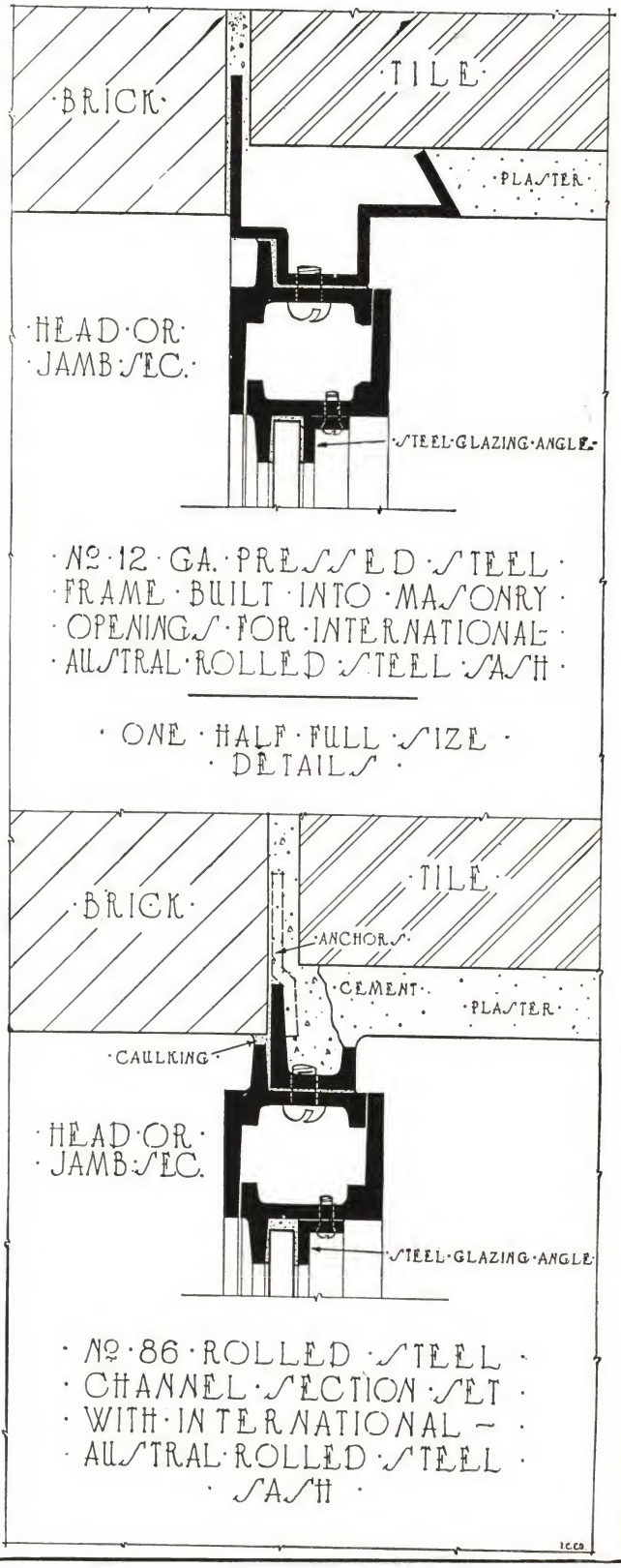
Windows where marked on plans to be copper-bearing steel with Austral balance arms as manufactured by the INTERNATIONAL CASEMENT CO. INC., Jamestown, N. Y. Sub-frames of No. 12 gauge steel, with welded corners, painted two priming coats, each coat separately baked on, to be delivered to building site, but same to be set up, built in and calked by mason contractor.

Sash to be of special shapes, made of copper-bearing steel. All bars hydraulically straightened, corners electrically welded and cleaned free from flux.

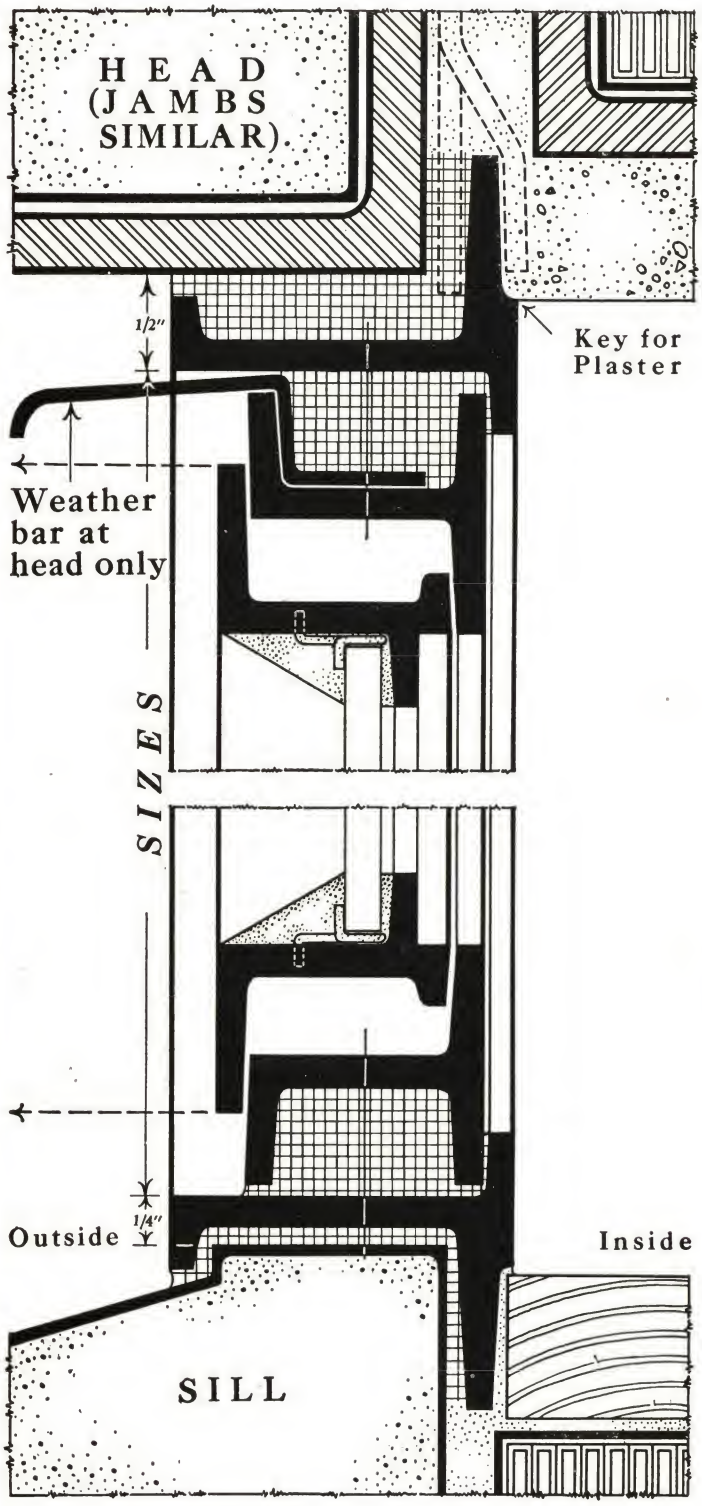
Frames and sash carefully fitted to insure absolute weathertightness. Fit with steel glazing beads (glass stops) set with brass screws. Clean all steel work free from rust and scale and paint two heavy priming coats, each coat separately baked on.

This contractor shall furnish all necessary hardware and fittings as follows: galvanized drop-forged steel window cleaner's bolts, shade brackets for both upper and lower sash with roller guides to hold cords. Polished cast bronze automatic cam catch and pull. The sash shall be erected by this contractor after the plastering is completed. Same to be bedded and pointed in mastic cement and secured to sub-frame by machine screws. All to be finished in a workmanlike manner and guaranteed weathertight.

Note: *For complete specifications and details refer to our Austral Window Catalogue No. 13.*



ROLLED STEEL SUB-FRAMES NO. 2040



FULL SIZE DETAILS

Showing a standard Cotswold Casement installed in a Standard No. 2040 sub-frame.

In 1920 we designed a solid rolled steel No. 2040 sub-frame for use in masonry openings having plastered reveals, where a narrow sight line was desirable and where low cost was an important factor.

Bonded into the masonry openings as the walls are being built, this sub-frame provides a perfectly weathertight joint and permits the plastering to be completed before the casements are installed.

It has enjoyed nation-wide acceptance and is a big improvement over the construction which requires loose angle linings, without being very much more expensive.

We keep No. 2040 sub-frames in stock in standard sizes for use with our Cotswold range of standard casements. They can also be supplied in custom shapes and sizes at a slight extra cost.

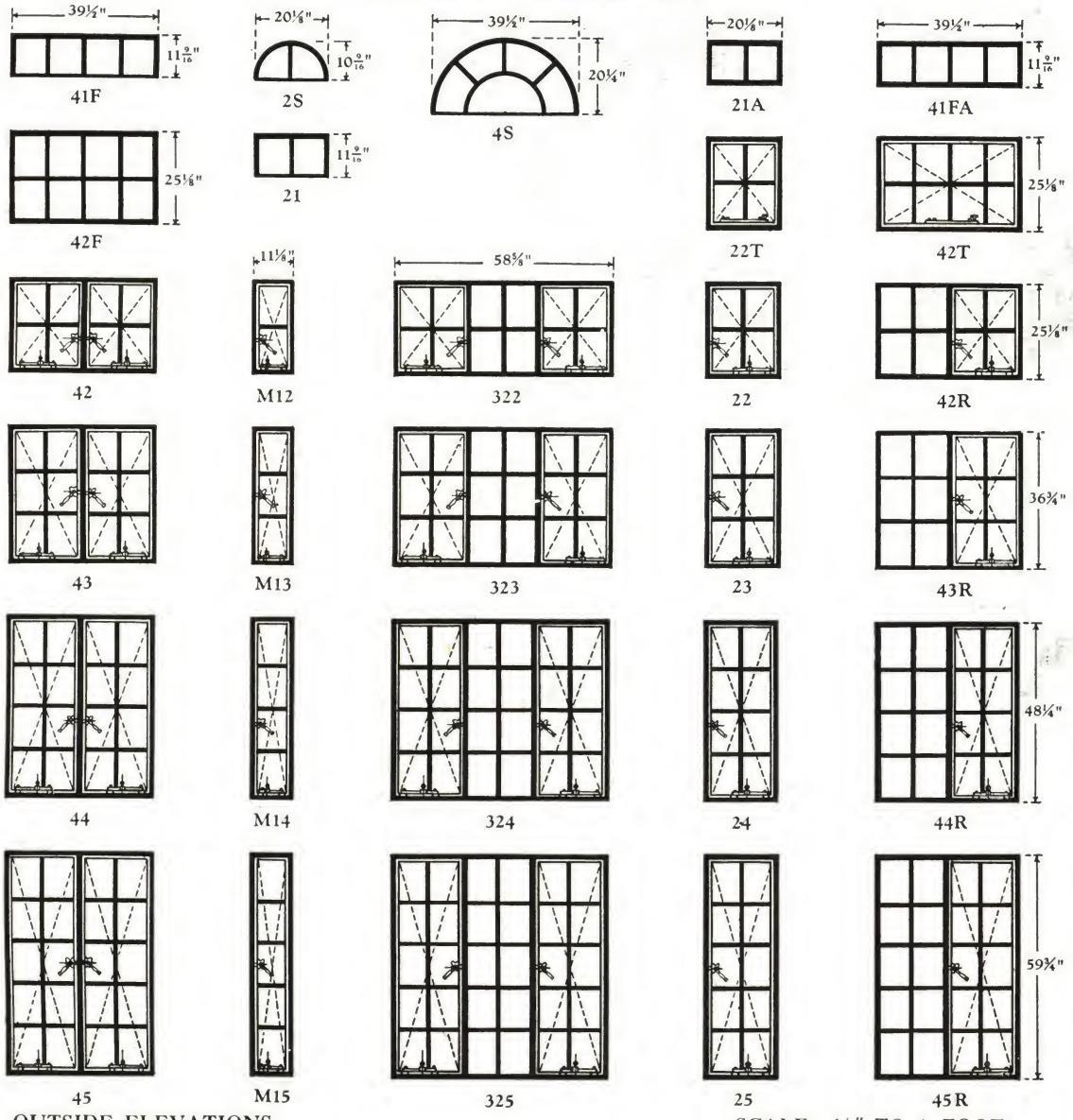
Form of Specification for No. 2040 Rolled Steel Sub-frames

All casement windows and sub-frames shall be of sold rolled steel sections as manufactured by the INTERNATIONAL CASEMENT CO. INC., Jamestown, N. Y.

This contractor shall furnish and deliver to the building International "No. 2040" sub-frames to the shapes and sizes shown on the drawings. When specifying 2040 frames for Standard Cotswold Casements, specify that they are to be in standard types and sizes as shown by reference numbers on elevations in accordance with the standards established by International. They shall be painted two heavy coats of special rust resisting paint, each coat separately baked on, and they shall be delivered to the site in time to meet the requirements of the building. They shall be set up plumb and true and built in and pointed by the mason contractor as the walls go up. The wood spreaders or braces which are included to insure the sub-frames hold square and true to shape shall be left in until the casements are installed. After plastering is completed, this contractor shall remove braces and shall install casements, taking care that the joints between casements and sub-frames are properly filled with International Mastic Cement neatly pointed inside and out. All casements shall be properly adjusted and shall operate freely and smoothly before acceptance by the architect.

Note: *For more comprehensive details, refer to Catalogue No. 15.*

STANDARD COTSWOLD CASEMENTS AND DOORS



OUTSIDE ELEVATIONS

SCALE: ¼" TO A FOOT

Casement Description

Types 41F, 2S, 4S and 21 are fixed sash and are suitable for composite units only. Types 21A, 41FA and 42F are also fixed sash but are suitable as transom lights in single openings. Types 22T and 42T are casements hinged at top opening outwards fitted with solid bronze peg adjuster. All other casements are hinged at side opening outwards. The single casements are shown as right-hand casements but can be supplied left-hand if desired. Types 42R, 43R, 44R and 45R are right-hand casements. They can be supplied with left-hand casements and will then be of the following corresponding types: 42L, 43L, 44L and 45L. The above are all fitted with tee-bar muntins.

Leaded Glass—All the above types can be supplied for use with leaded glass (muntins being omitted). See pages 10, 11 and 12 of the Cotswold Catalogue No. 14.

Cotswold Casement Specification

(1) Casements of Cotswold type, made from heavy two-point steel section (not Cottage Sections) hinged at side opening outwards painted two coats of rust resisting paint, each coat separately baked on, hung on drop forged steel pivots bronze bushed and fitted with solid bronze hardware of standard design.

(2) Furnish leaded glass of standard sizes and design, first quality D.S.A. glass ⅝-in. lead cames, all horizontal cames steel reinforced.

(3) If steel muntins are required omit paragraph 2 and specify steel muntins to be furnished.

(4) The whole to be set by sash contractor and guaranteed weathertight.

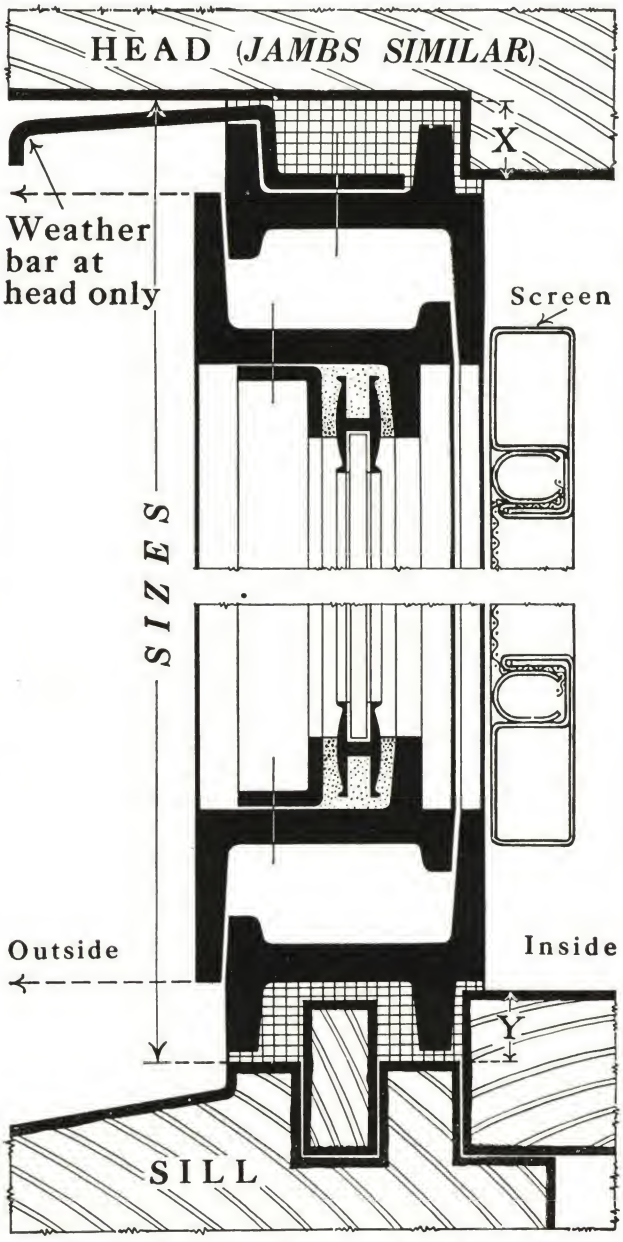
Cotswold Doors

For further information and details of Cotswold Casements and Cotswold Doors, see Catalogue No. 14.

INTERNATIONAL SCREENED CASEMENTS



SCREENED COTSWOLD CASEMENT, TYPE 33x0



FULL SIZE SECTION

Maximum rebate including trim at head and jambs (dimension "X") 5/8 in.; at sill (dimension "Y") 1/2 in.

Specifications for International Screened Casements

All windows shall be International Solid Steel Cotswold Casements with integral screens as manufactured by the INTERNATIONAL CASEMENT CO. INC., Jamestown, N. Y., in the standard types and sizes they have established and as shown by reference numbers on the elevations.

(When specifying custom made casements, state that they are to be made to shapes and sizes shown on the drawings, and to consist of heavy three-point sections or Universal two-point sections, to suit the sizes of the openings).

All casements shall be hung on drop-forged bronze bushed steel pivot hinges of the projecting type, to facilitate cleaning, and shall be fitted with bronze casement fasteners and adjusters so designed and fitted as to permit the proper operation of the casement without any slots or holes through the screen. All steel work shall be painted one coat of special rust-resisting primer and one coat of gray, each coat baked on separately.

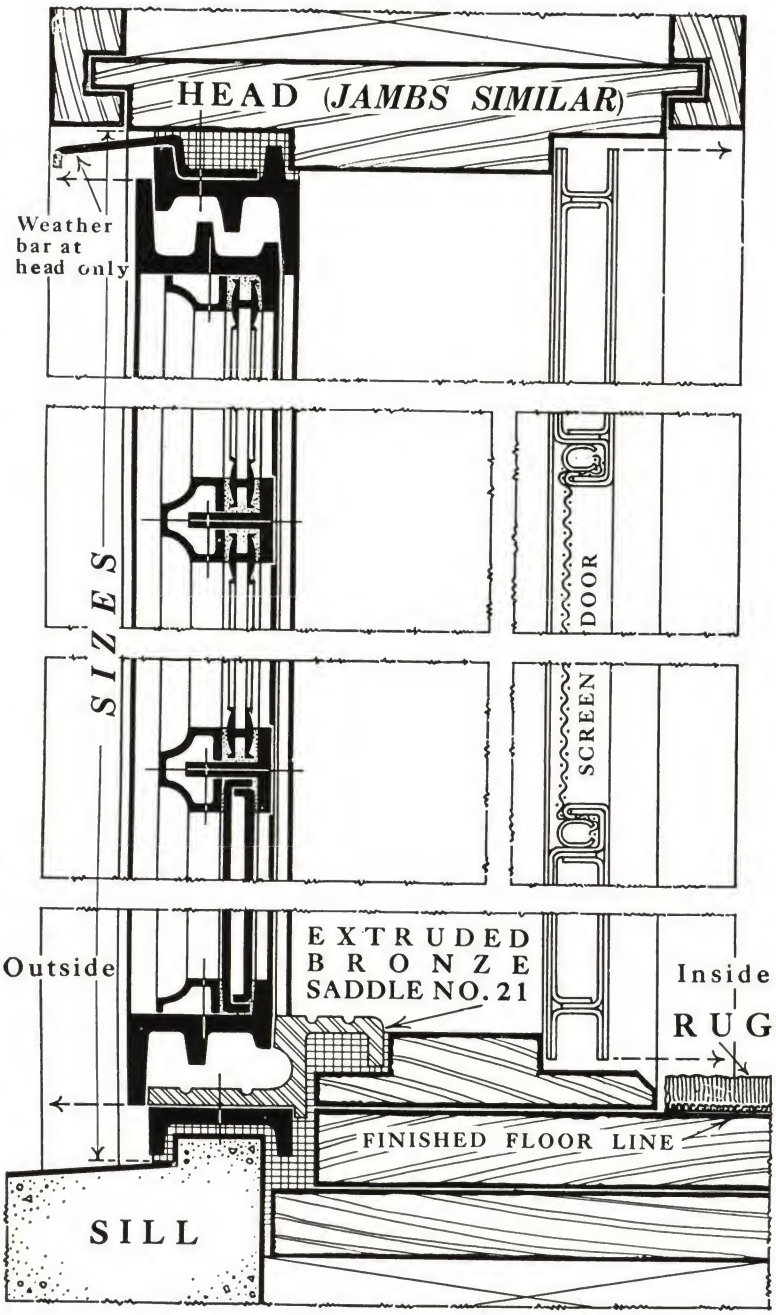
If casements with muntins are to be furnished, specify that the casements shall be divided into panes with rolled steel tee muntins. If leaded glass is to be furnished, refer to page 14 of International Cotswold Catalogue No. 14 for suitable specifications.

The screens shall be of standard sizes, as supplied by the INTERNATIONAL CASEMENT CO. INC., and shall be carefully packed and shipped separately. The screen frames shall be made from copper-bearing open hearth steel, 1x$\frac{7}{16}$ in. and tubular in construction, strongly welded and reinforced at each corner, and galvanized after all cutting and abrasive operations have been completed. The screen cloth shall be standard weight Old English gauge 16-mesh anaconda bronze wire, easily re-wirable.

The setting of the casements shall be done by the casement manufacturer after plastering is completed. They shall be bedded and pointed inside and out in mastic cement, the whole finished in a workmanlike manner and guaranteed weathertight.

Note: *For further information and details write for descriptive leaflet.*

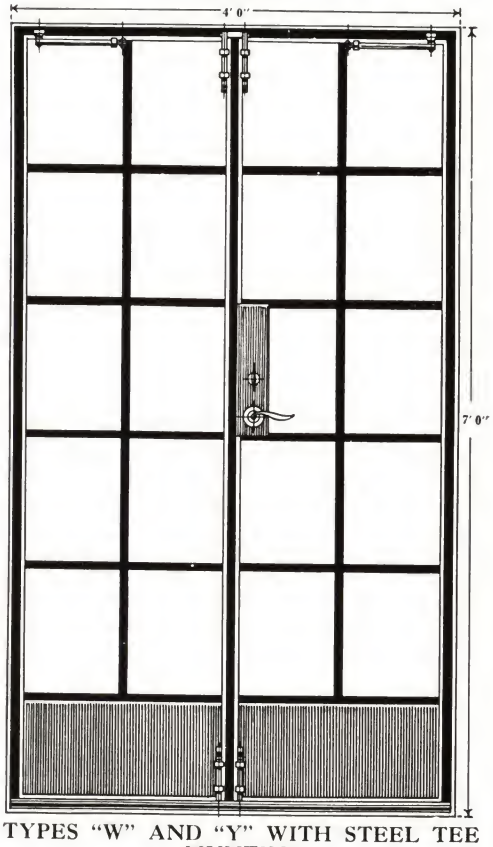
CASEMENT DOORS IN STANDARD SIZES



HALF FULL SIZE SECTION



TYPES "X" AND "Z" WITH LEADED GLASS



TYPES "W" AND "Y" WITH STEEL TEE MUNTINS

Although these doors are made to open outwards or inwards, we do not recommend inswinging doors because of their unreliable weather-tight qualities under severe conditions. Outward opening doors, however, can be relied upon to give complete protection against all weathers even in the most exposed positions. For more complete details, specifications and photographs, please refer to our Catalogue No. 17.

In addition to the four doors shown on this page, we make Cotswold doors types "L" and "M," full descriptions of which appear in our No. 14 Catalogue.

INTERNATIONAL CASEMENTS



RESIDENCE AT MOSCOW, PA. *Davis & Lewis—Archts.*

LIST OF CATALOGUES

No. 7. International Casement Catalogue	(224 pages)
No. 13. International Austral Window Catalogue	(28 ")
No. 14. International Cotswold Casement Catalogue	(44 ")
No. 15. International Casements with "Biltin" Subframes	(20 ")
No. 16. International Screened Casements	(4 page leaflet)
No. 17. International Casement Doors in Custom and Standard Sizes	(16 pages)
No. 18. International "Hopkins" Windows	(12 ")

· INTERNATIONAL CASEMENT CO., INC. ·
· JAMESTOWN · NEW · YORK ·

JACKSON WINDOWS

OF BRONZE or ALUMINUM

DOUBLE HUNG WINDOWS
STANDARD & UNDERWRITERS

TYPE E-1 CASEMENTS
WIDE FRAME

TYPE E-2 CASEMENTS
NARROW FRAME

EASY CLEAN CASEMENTS
RESIDENCE & GENERAL USE

CLEAR VISION CASEMENTS
UNOBSTRUCTED OPENINGS



CATALOGUE Nº 24

WM. H. JACKSON COMPANY
335 CARROLL STREET,
BROOKLYN, N.Y.

"Artisans in all metals"

THE WM. H. JACKSON COMPANY has had over a hundred years of experience in metal work. During this very long period it has been among the pioneers in developing various products which form an important part of American Architecture. As a leader in the development of Extruded Bronze and Aluminum windows, the WM. H. JACKSON COMPANY has perfected various types which meet every requirement. Architects and Engineers throughout the country are using these windows in the finest types of buildings as they are accorded the distinction of being among the best windows manufactured.

Jackson's windows are made to a precision unattainable in other metals. They are air tight and water tight without the use of weatherstrips and operate at an efficiency never before attained. These windows are made so they can be installed after the masonry opening has been completed. All of Jackson's windows are made of Bronze or Aluminum. These enduring metals give them an unlimited term of service. The qualities of permanence and economy in upkeep make Jackson windows ultimately less expensive than windows of other materials. In addition, the heating cost of a building is reduced due to their weather tightness.

Full size drawings of all types of windows will be sent to Architects and Engineers on request. Our Service Department is at your disposal and will assist in working out any unusual window problems.

OTHER PRODUCTS

For Ornamental Metal Work, Mantels, Fireplace Fixtures, Tile and Swimming Pools, see Manufacturers' Index.

WM. H. JACKSON COMPANY

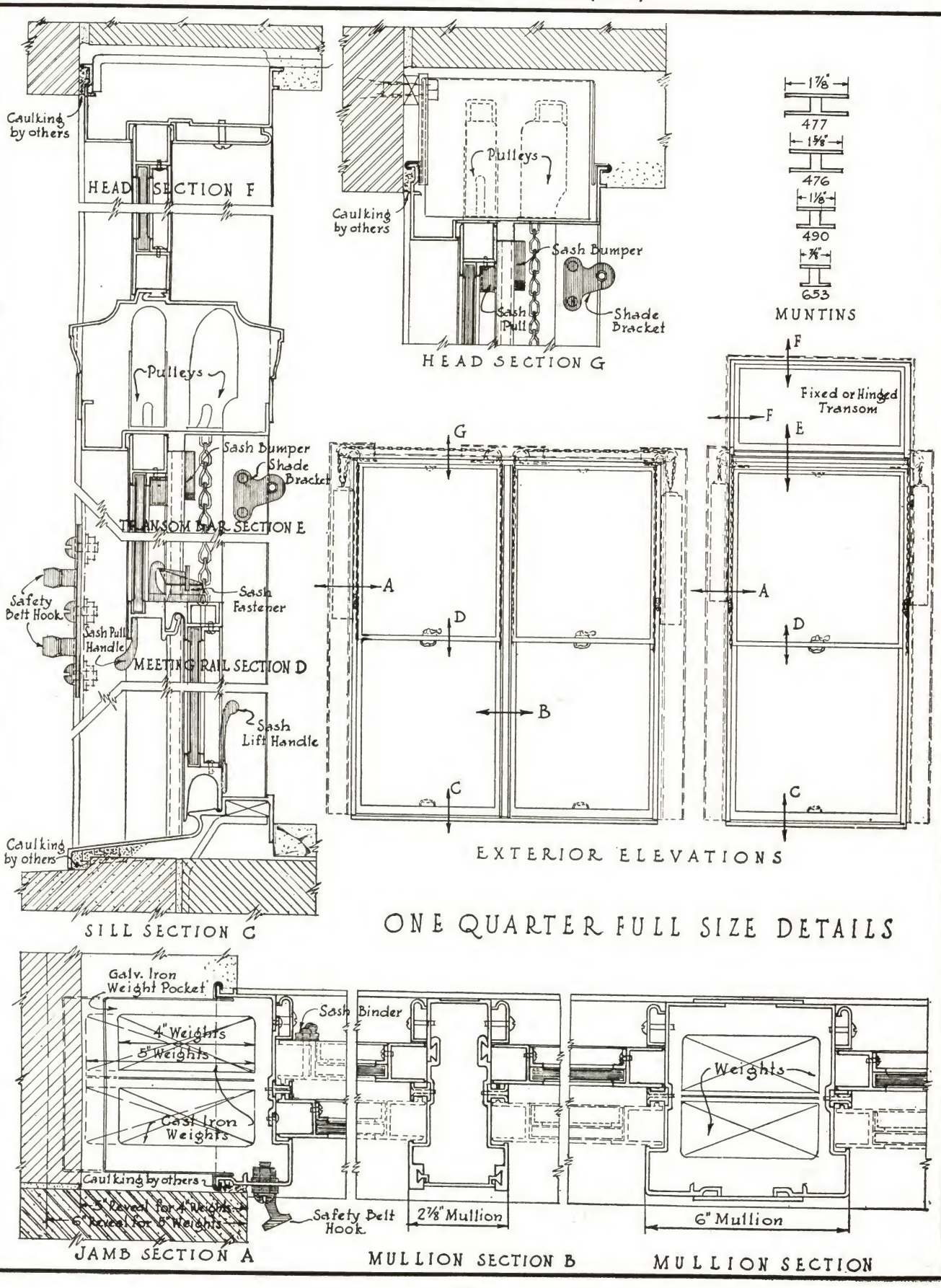
2 West 47th Street
NEW YORK, N. Y.

335 Carroll Street
BROOKLYN, N. Y.

318 North Michigan Avenue
CHICAGO, ILL.

DOUBLE HUNG WINDOWS—TYPE H-2

(See Following page for Description)



Double Hung Windows

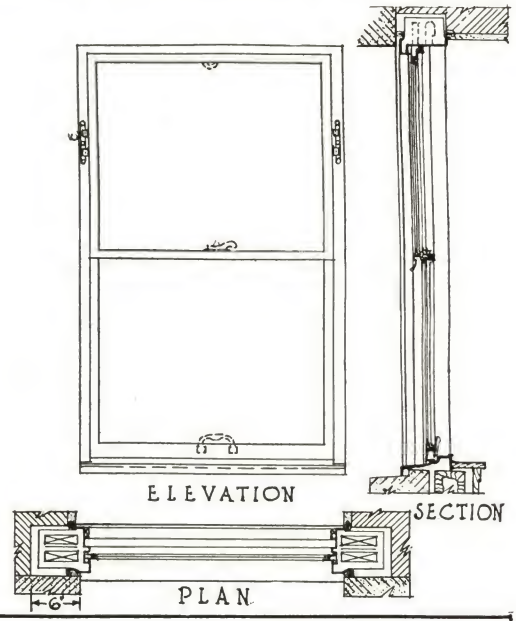
Standard Type H-2

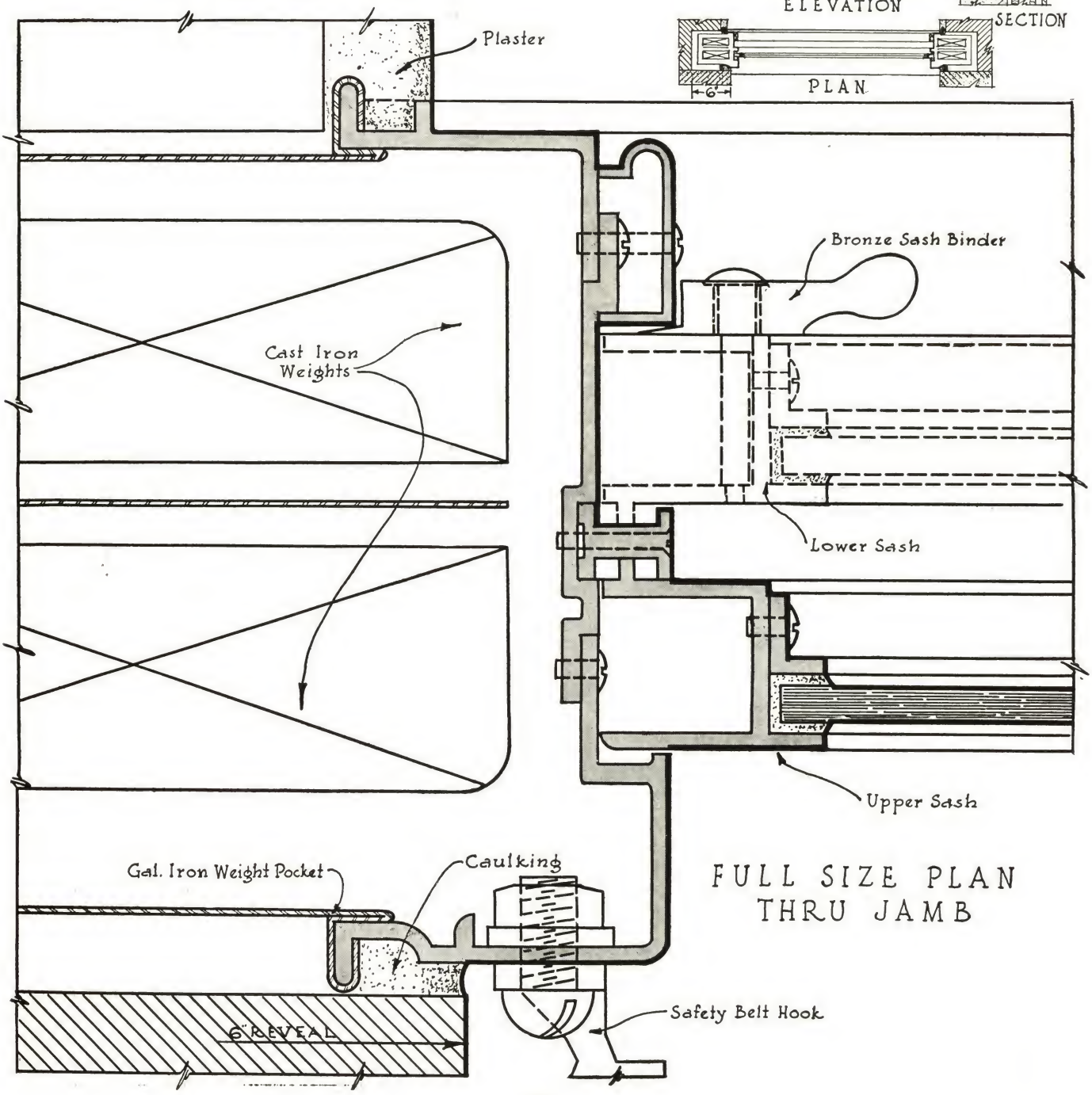
(U. S. Pat. No. 1459668, June 19, 1923—Other Patents Pending)

The Double Hung Windows made by the Jackson Company in Bronze or Aluminum are unexcelled in quality and operate with the greatest of ease. These windows are provided with hardware that insures them against rattling in the strongest winds either when they are opened or closed.

Fire Underwriters' Labels are issued on Jackson Type H-1 Bronze Double Hung windows which are similar in detail to Type H-2. (Write for details.) This is the only extruded bronze window approved by the National Board of Fire Underwriters.

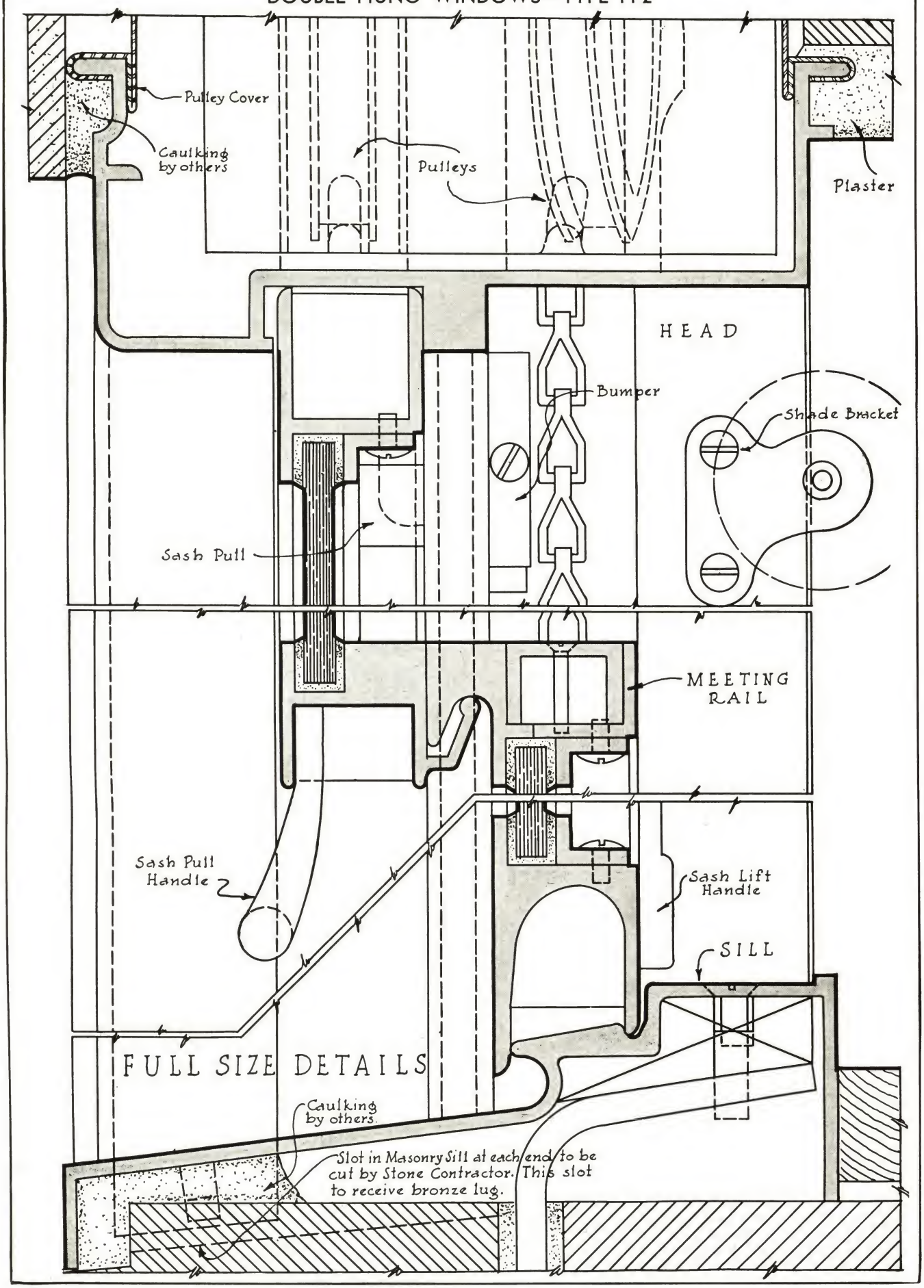
See Specification page 12.





FULL SIZE PLAN THRU JAMB

DOUBLE HUNG WINDOWS—TYPE H-2



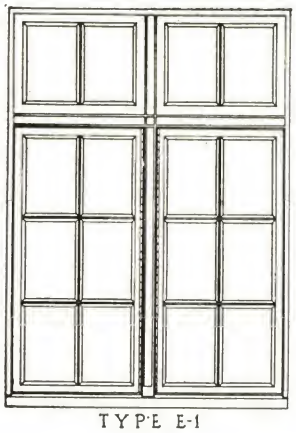
Standard Casement Windows

Types E-1 and E-2

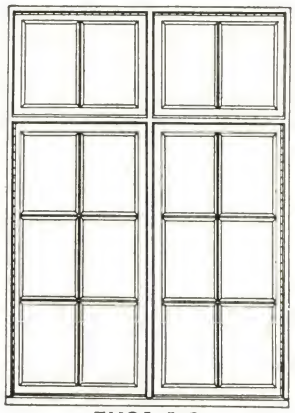
(U. S. Pat. No. 1568865, Jan. 5, 1926–Other Patents Pending)

Where the architectural treatment demands the use of Casement windows, Types E-1 and E-2 made in Bronze or Aluminum are ideally suitable. They are used extensively in buildings for Banks, Insurance Companies and monumental structures of a character where the highest grade materials are required.

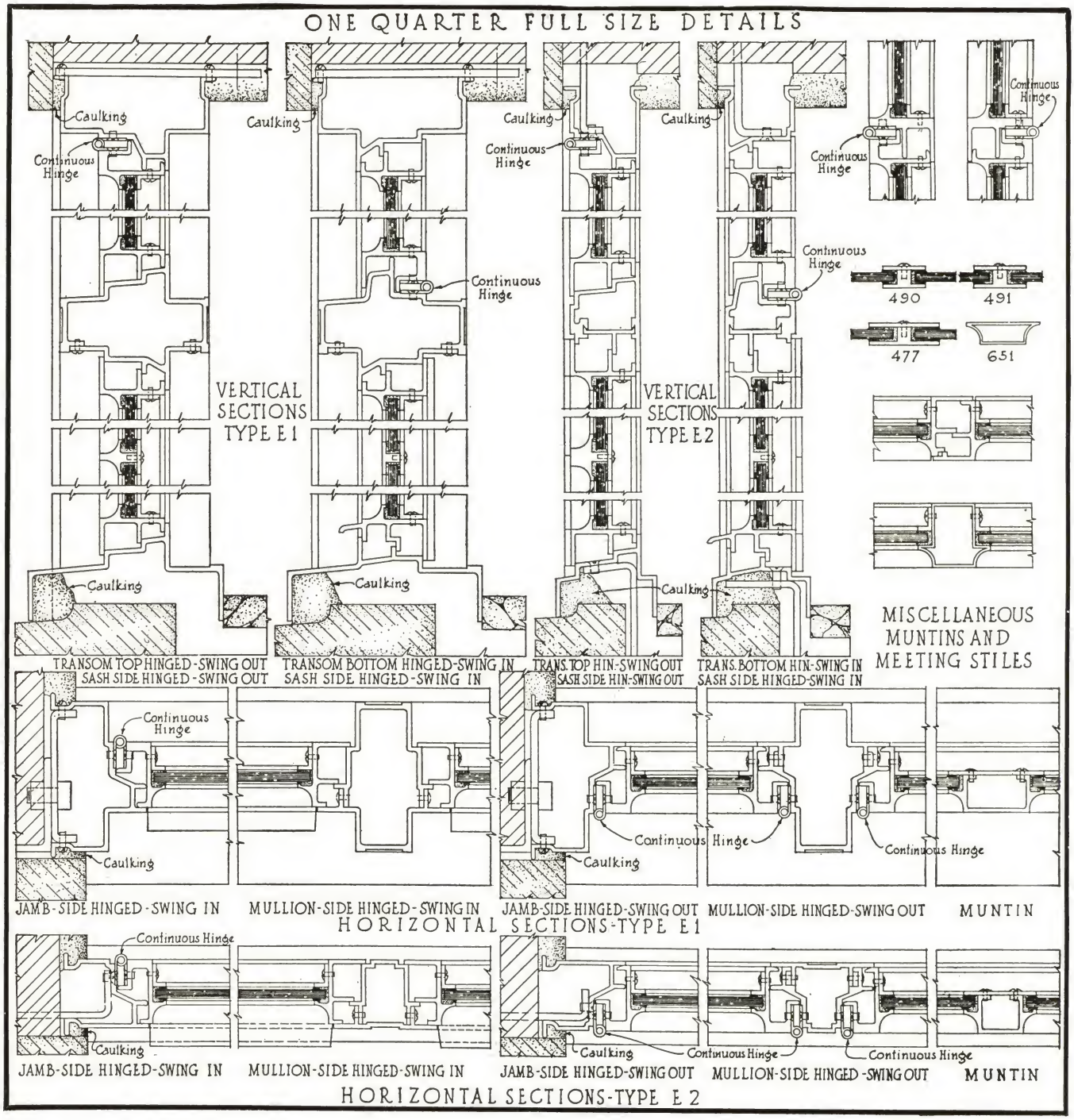
See Specification page 12.



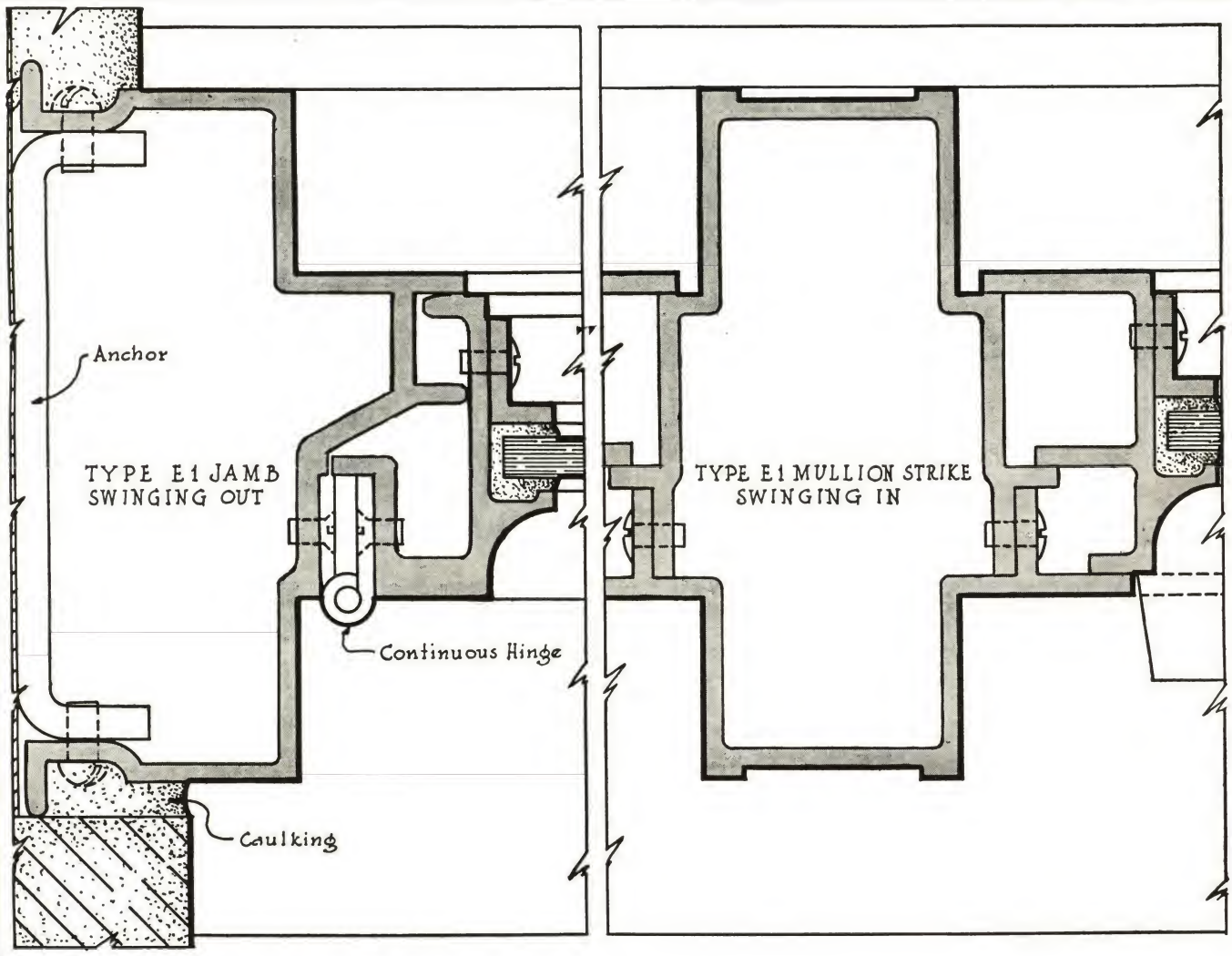
TYPE E-1



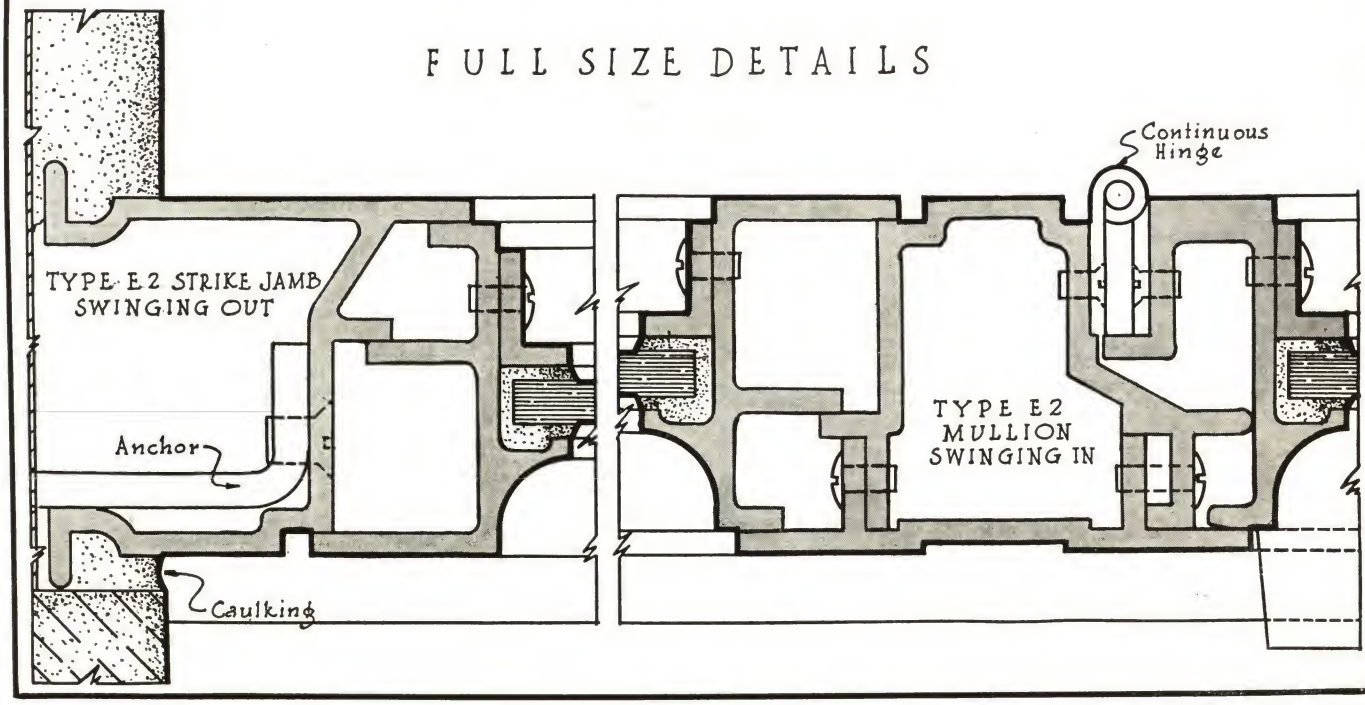
TYPE E-2



STANDARD CASEMENT WINDOWS—TYPES E-1 & E-2



FULL SIZE DETAILS



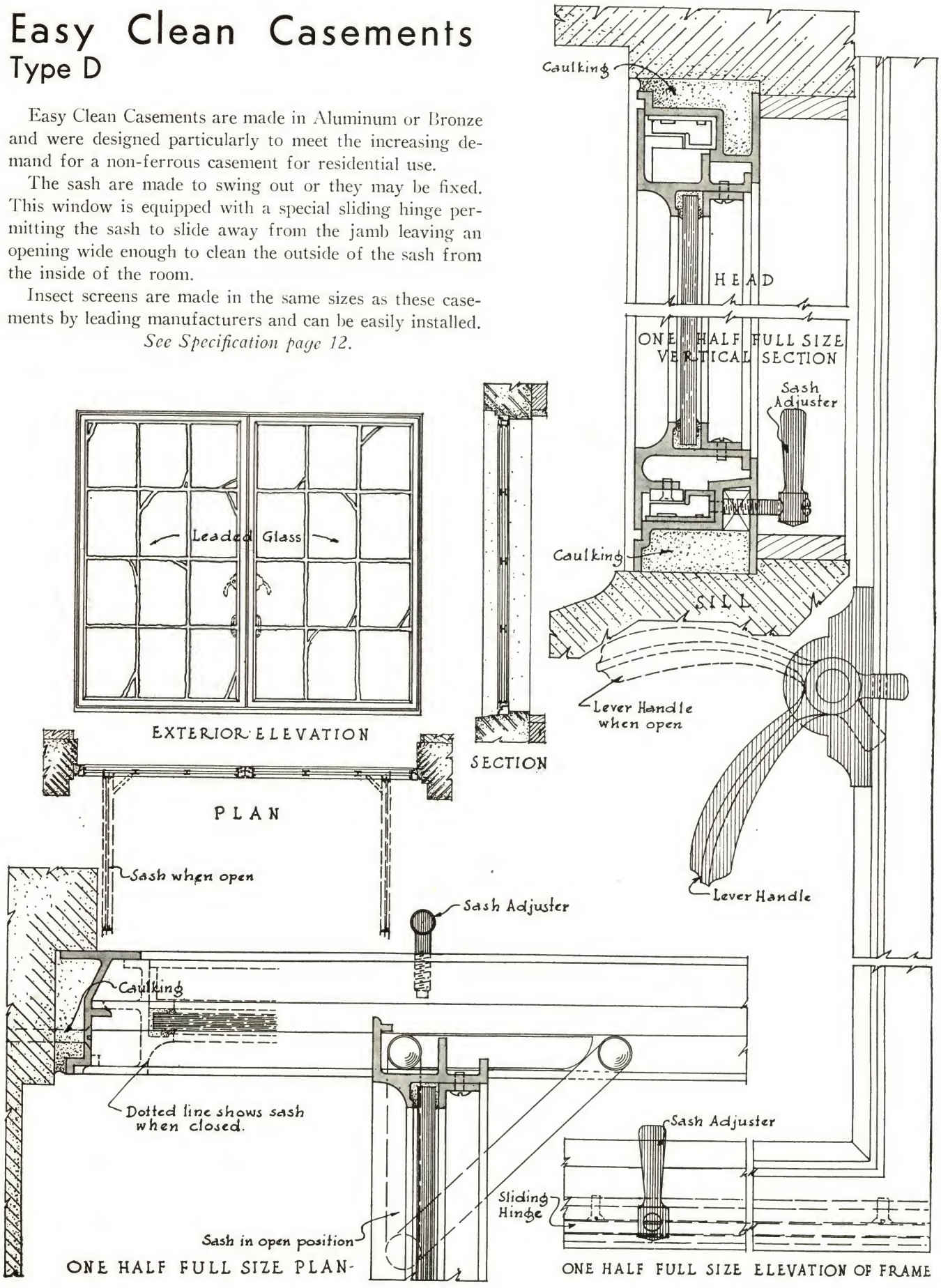
Easy Clean Casements
Type D

Easy Clean Casements are made in Aluminum or Bronze and were designed particularly to meet the increasing demand for a non-ferrous casement for residential use.

The sash are made to swing out or they may be fixed. This window is equipped with a special sliding hinge permitting the sash to slide away from the jamb leaving an opening wide enough to clean the outside of the sash from the inside of the room.

Insect screens are made in the same sizes as these casements by leading manufacturers and can be easily installed.

See Specification page 12.



Easy Clean Casements

Type D





A. J. Eken Residence
Madison, N. J.

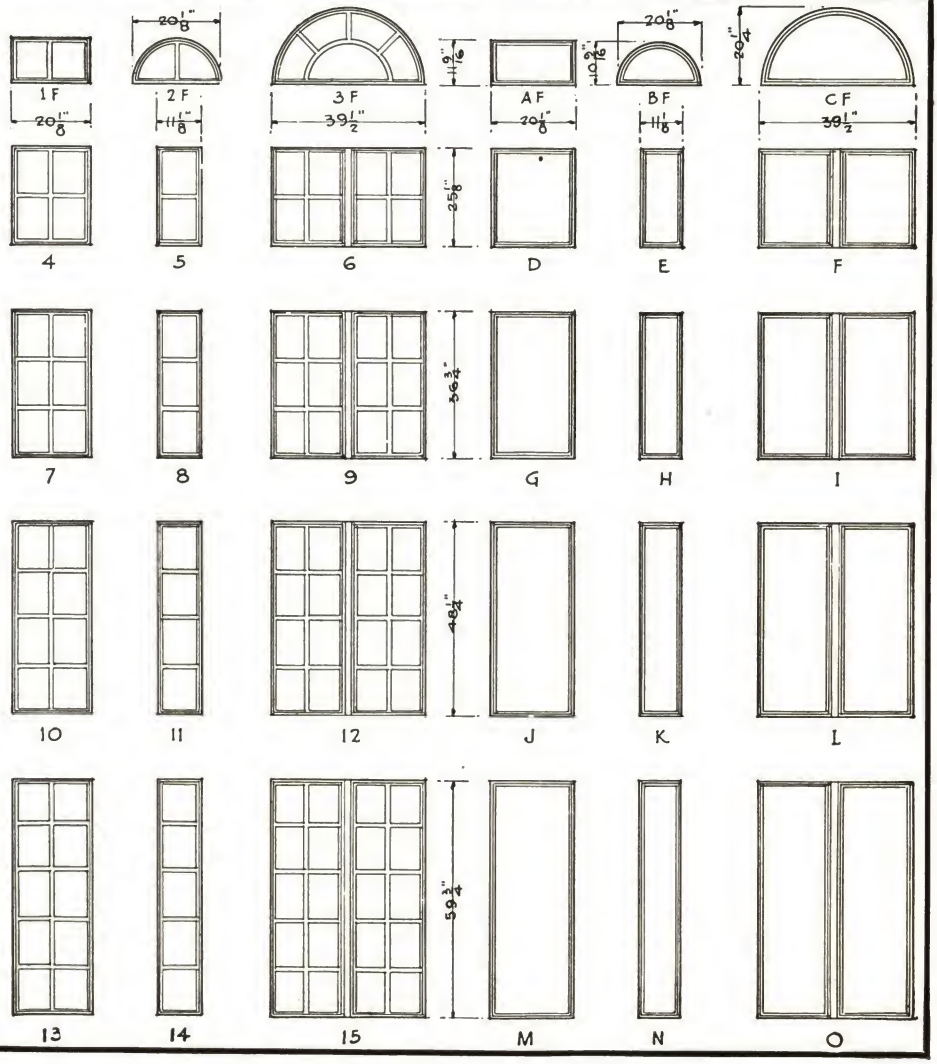
STANDARD TYPES AND SIZES

Mullions and transom bars of the same material as the sash can be furnished so that any of these units can be bolted together to make composite windows. To denote fixed sash add "F" after number or letter. To denote swing of casements add "R" or "L" after number or letter.

Right or Left swing determined thus—

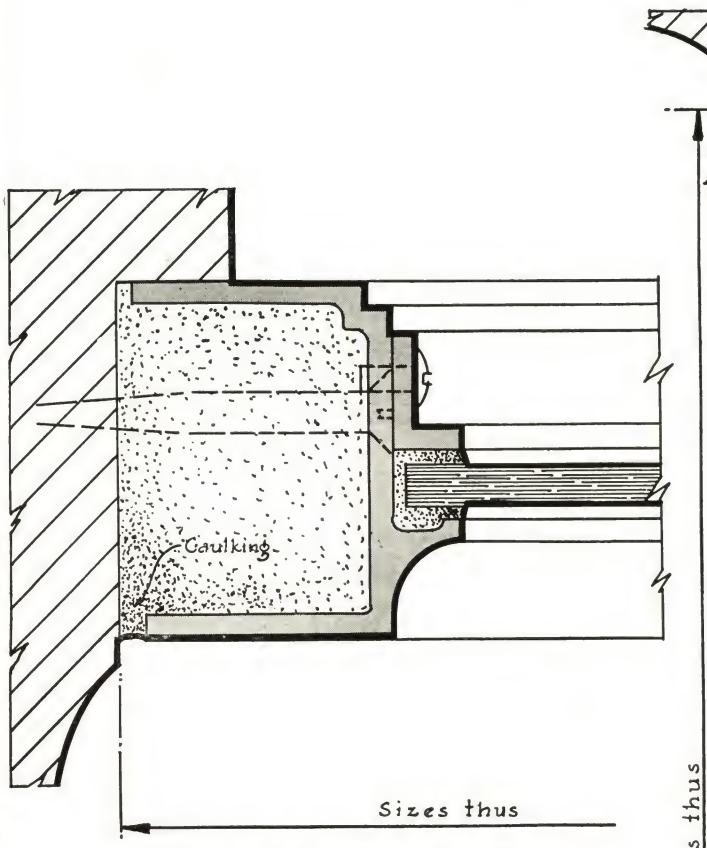


The sizes indicated are the dimensions required to receive frames. The frames are made smaller for necessary clearance.

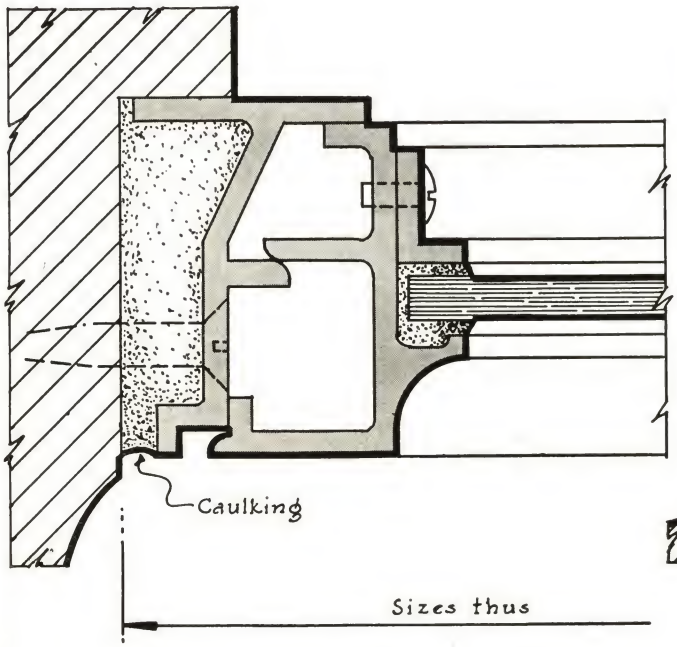


EASY CLEAN CASEMENTS—TYPE D

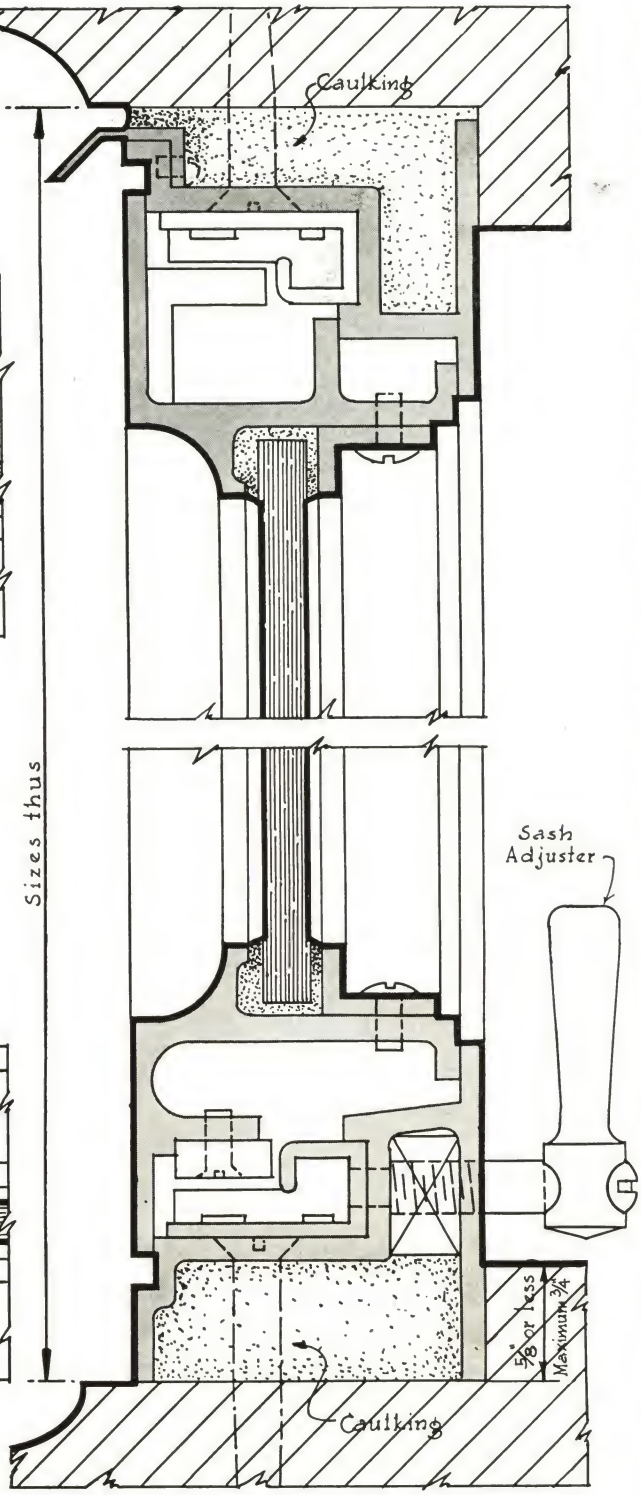
FULL SIZE DETAILS



PLAN THRU FIXED SASH

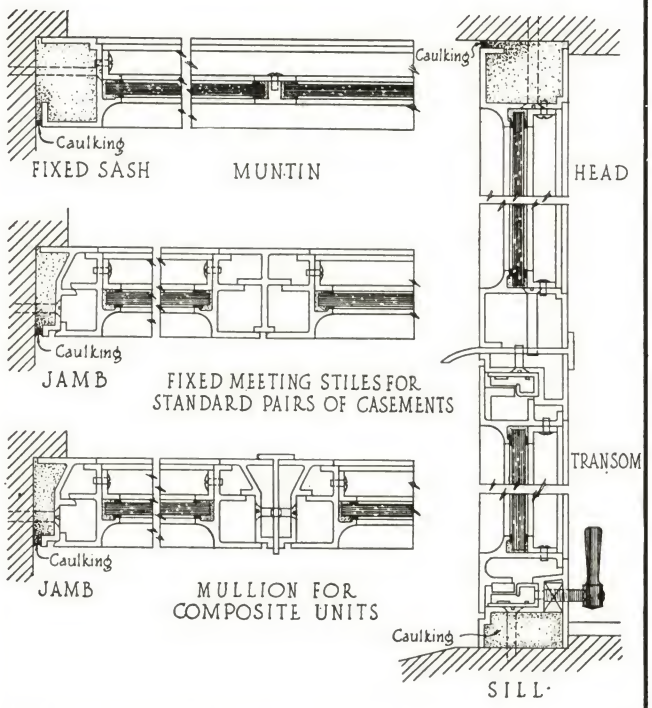


PLAN THRU CASEMENT SASH

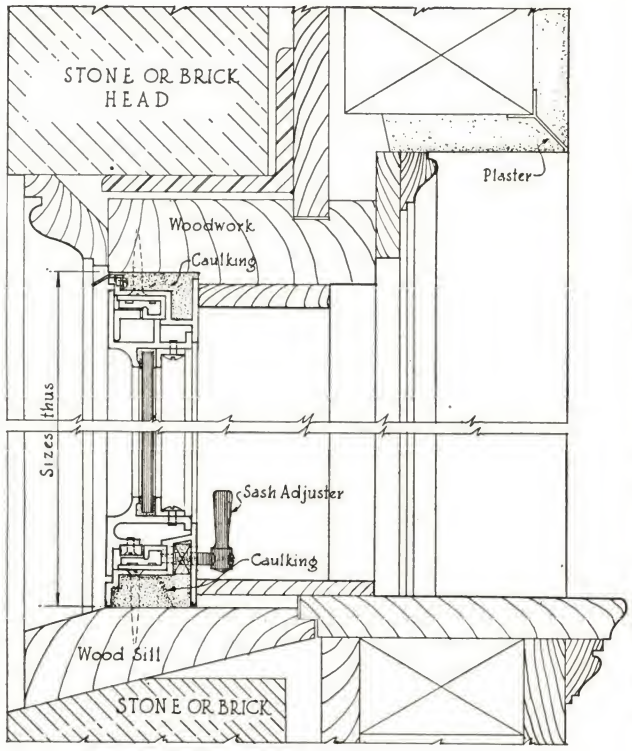


SECTIONS THRU HEAD & SILL CASEMENT SASH

EASY CLEAN CASEMENTS—TYPE D— (One-quarter Full Size Details)

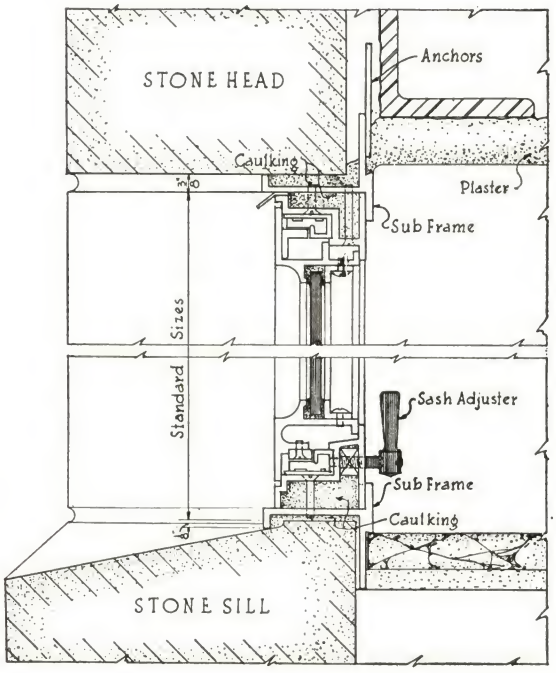


STANDARD MULLIONS AND TRANSOM BARS

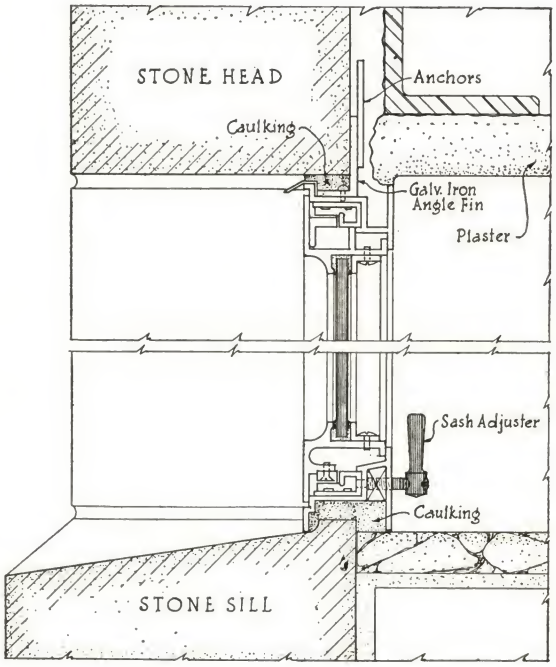


SUGGESTION FOR STONE OR BRICK VENEER CONSTRUCTION

STANDARD BUILT-IN SUB-FRAME



SUGGESTION FOR SETTING DIRECT TO MASONRY WITH CONTINUOUS ANGLE FIN



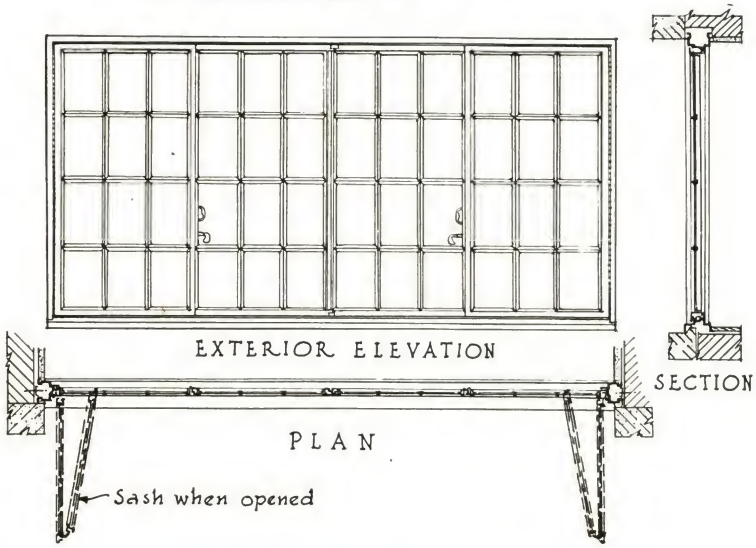
Clear Vision Casements

Type E-3

The sash of these windows when folded against the jambs give practically 100% ventilation and an unobstructed view as no mullions are required. They are particularly well adapted for Sun Porches, Dining Rooms and wherever the full enjoyment of the landscape is to be appreciated.

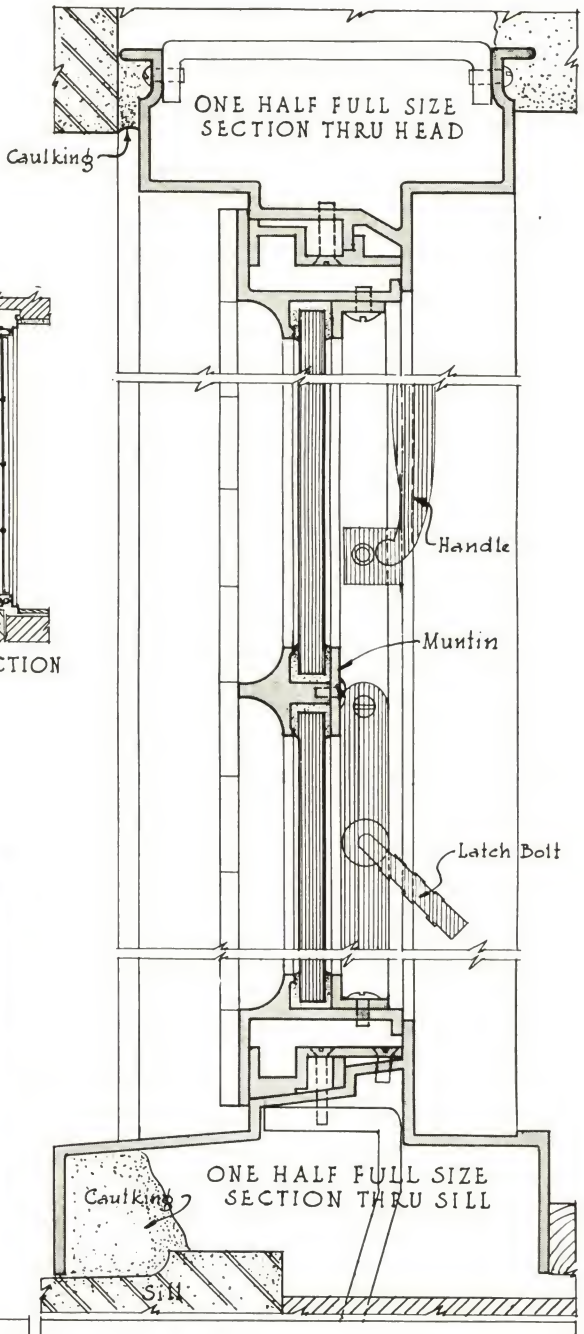
These windows can be furnished in either Bronze or Aluminum.

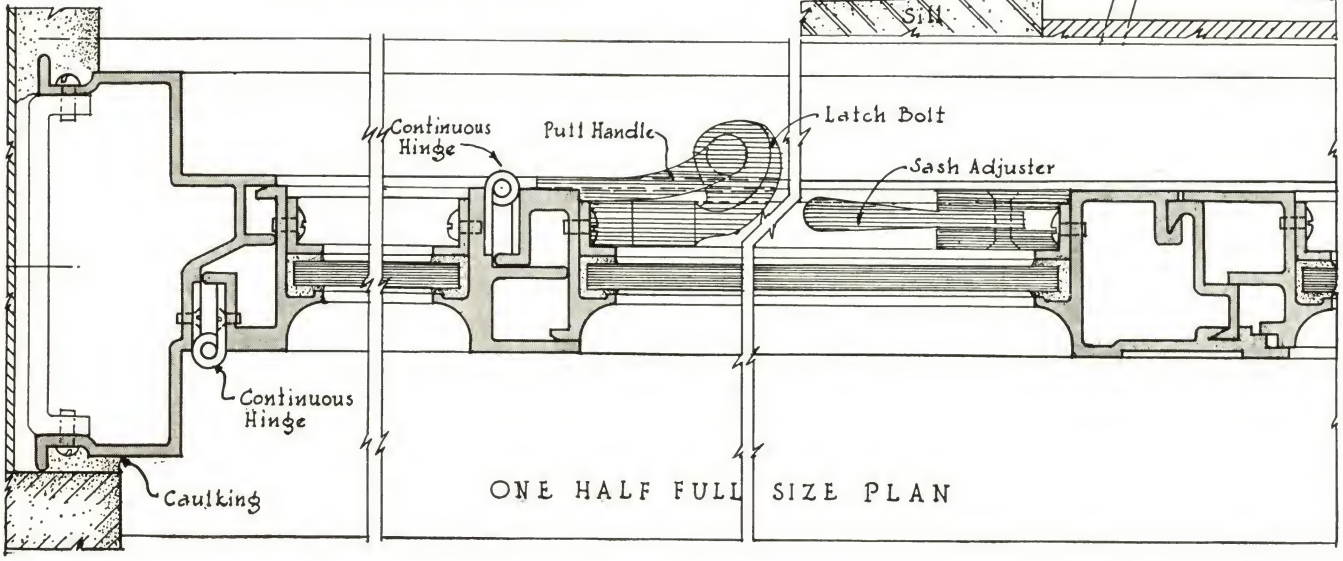
See Specification page 12.





WINDOW WITH ALL SASH OPEN SHOWING UNOBSTRUCTED VIEW





Specifications for Bronze or Aluminum Windows

(For Aluminum Windows substitute the word *Aluminum* for *Bronze*)

SHORT SPECIFICATION FOR ALL TYPES

All windows designated on drawings are to be manufactured by the WM. H. JACKSON COMPANY of types shown. They are to be made of extruded bronze not less than ⅛ in. thick. The operating sash shall work freely and all hardware is to be made of bronze. The windows are to be made air and water tight without the use of weatherstrips. After erection all dirt and stains are to be removed and windows left in a natural color.

Caulking, glass and glazing will be by others.

See note for Glazing below.

DETAILED SPECIFICATIONS

Double-Hung Type H-2

All Double-Hung windows designated on drawings are to be Type H-2 manufactured by the WM. H. JACKSON COMPANY.

The material shall be extruded bronze not less than ⅛ in. thick.

The weight pockets are to be of galvanized iron (22-gauge U. S. standard) and of ample sizes to enclose the sash weights. They are to be accurately fitted and securely fastened to the jambs.

Provide and install overhead pulleys with bronze fronts and cast iron or steel ball bearing wheels of sufficient diameter to insure the weight centering in the weight pockets.

Each sash is to be fitted with two sash chain hooks and provided with solid bronze sash chains, sash chains to have approved connecting links for the weights.

Weights for sash shall be of cast iron and adjustments are to be provided where necessary, so that each sash will be accurately balanced when glazed.

Sash shall be so constructed that the glass can be removed or replaced from the inside of the building. Provide necessary glazing angles.

The overhead pulleys, weights, chains, sash stops, etc., shall be so arranged that they can be taken out easily and replaced without removing the trim or the sash.

These windows shall have two continuous metallic contacts with sills, jambs, heads and meeting rails when closed, to insure them being air and water tight, without the use of weatherstrips.

Each window is to be provided with the following bronze hardware: two approved safety window cleaning bolts, one sash lift, one sash pull, one pole socket, one sash fastener, two bumpers, two sash binders and two shade brackets.

All windows are to be firmly anchored to the masonry and are to be thoroughly cleaned after erection, removing all dirt and stains and left in a natural color. Caulking, glass and glazing will be by others.

See note for Glazing below.

Double-Hung Type H-1 Fire Underwriters

These windows are made similar to Type H-2, use same specification adding—these windows are to have the approval of the National Board of Fire Underwriters and are to bear their labels.

Note: Fire Underwriters' windows Type H-1 are made only in bronze.

Casements Types E-1 and E-2

All Casements designated on drawings are to be Type (E-1 or E-2) manufactured by the WM. H. JACKSON COMPANY.

The material shall be extruded bronze, not less than ⅛ in. thick. The frame to be so designed that it forms an integral part of the outer Casement frame. Head, sill and transom bar to be similar in design and width.

The hinge side of the Casement shall be so designed that when closed it shall form a perfect interlocking three-point contact with the outer frame, and shall be hung on continuous bronze hinges. The head, sill and strike jambs shall be so designed as to make a perfect three-point contact with the outer frame when closed.

The Casements are to be side hinged to swing [out] [in], transom sash where called for are to be bottom hinged to swing in [top hinged to swing out]. The sash shall be so constructed that the glass can be removed or replaced from the inside of the building, and fitted with glazing angles.

Sash are to be fitted with solid bronze cremone bolts, friction adjusters and spring catches for pole operation on transom sash.

The Casements are to be air and water tight, without the use of weatherstrips.

All windows to be firmly anchored to the masonry and to be cleaned after erection, removing dirt and stains and left in a natural color. Caulking, glass and glazing will be by others.

See note for Glazing below.

Easy Clean—Type D

All windows designated on drawings are to be manufactured by the WM. H. JACKSON COMPANY their Type D. (see page 10 for various conditions and describe fully.) Frames and sash are to be made of extruded bronze not less than ⅛ in. thick. Sash indicated are to swing out and are to be provided with special sliding hinges permitting the sash to slide away from the jamb leaving an opening to clean the outside of the sash from the inside of the room. They are also to be provided with bronze casement fasteners and concealed adjusters. All operating sash shall have three points of contact and are to be made air and water tight without the use of weatherstrips. The fixed sash are to be of channel shaped section of the same profile as the operating sash.

Clear Vision—Type E-3

Copy Specifications for Types E-1 and E-2 omitting the fourth and fifth paragraphs and substituting the following:

The sash are to be connected with continuous hinges and are to be joined together in pairs or quadruples. All sash, except the one directly connected with the jamb, are to be provided with guides allowing the sash to slide and fold together against the hinge jamb in accordion fashion. They are to be fitted with pull handles, spring catches and adjusters suitable to properly lock and control the operation (as detailed on page 11).

GLAZING

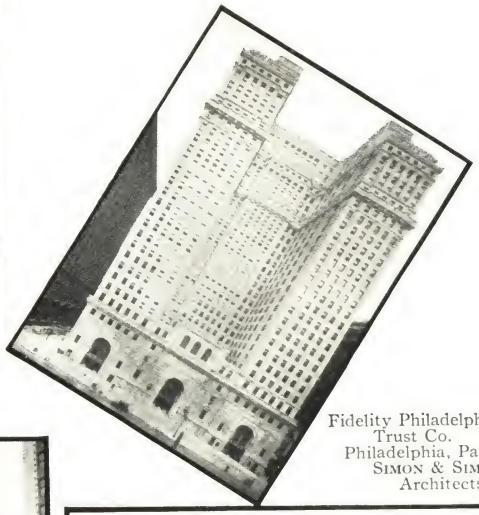
We recommend glazing with Vulcatex Glazing Compound No. 202 as made to specification of WM. H. JACKSON COMPANY and as manufactured by A. C. Horn Company, L. I. City, N. Y.



Stone & Webster Building
New York, N. Y.
Cross & Cross, Architects



Fisher Building
Detroit, Mich.
Albert Kahn, Inc., Architects



Fidelity Philadelphia
Trust Co.
Philadelphia, Pa.
Simon & Simon,
Architects



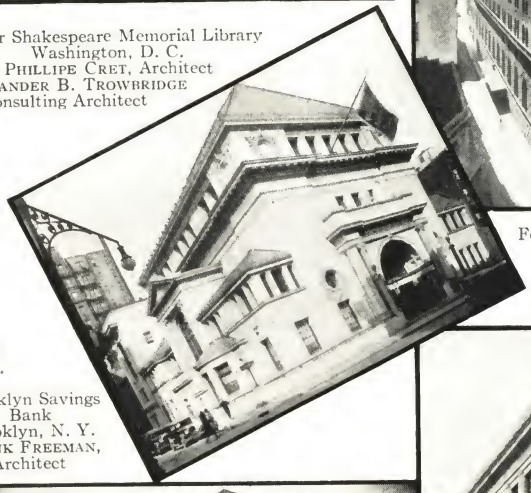
Folger Shakespeare Memorial Library
Washington, D. C.
Paul Phillipe Cret, Architect
Alexander B. Trowbridge
Consulting Architect



Federal Reserve Building
New York, N. Y.
York & Sawyer,
Architects
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New York Times Building
Brooklyn, N. N. Y.
Albert Kahn, Inc., Architects



Brooklyn Savings
Bank
Brooklyn, N. Y.
Frank Freeman,
Architect



Kings County
Savings Bank
Brooklyn, N. Y.
Halsey, McCormack
& Helmer, Architects



Central Savings Bank, New York, N. Y.
York & Sawyer, Architects



First Mechanics National Bank
Trenton, N. J.
York & Sawyer, Architects



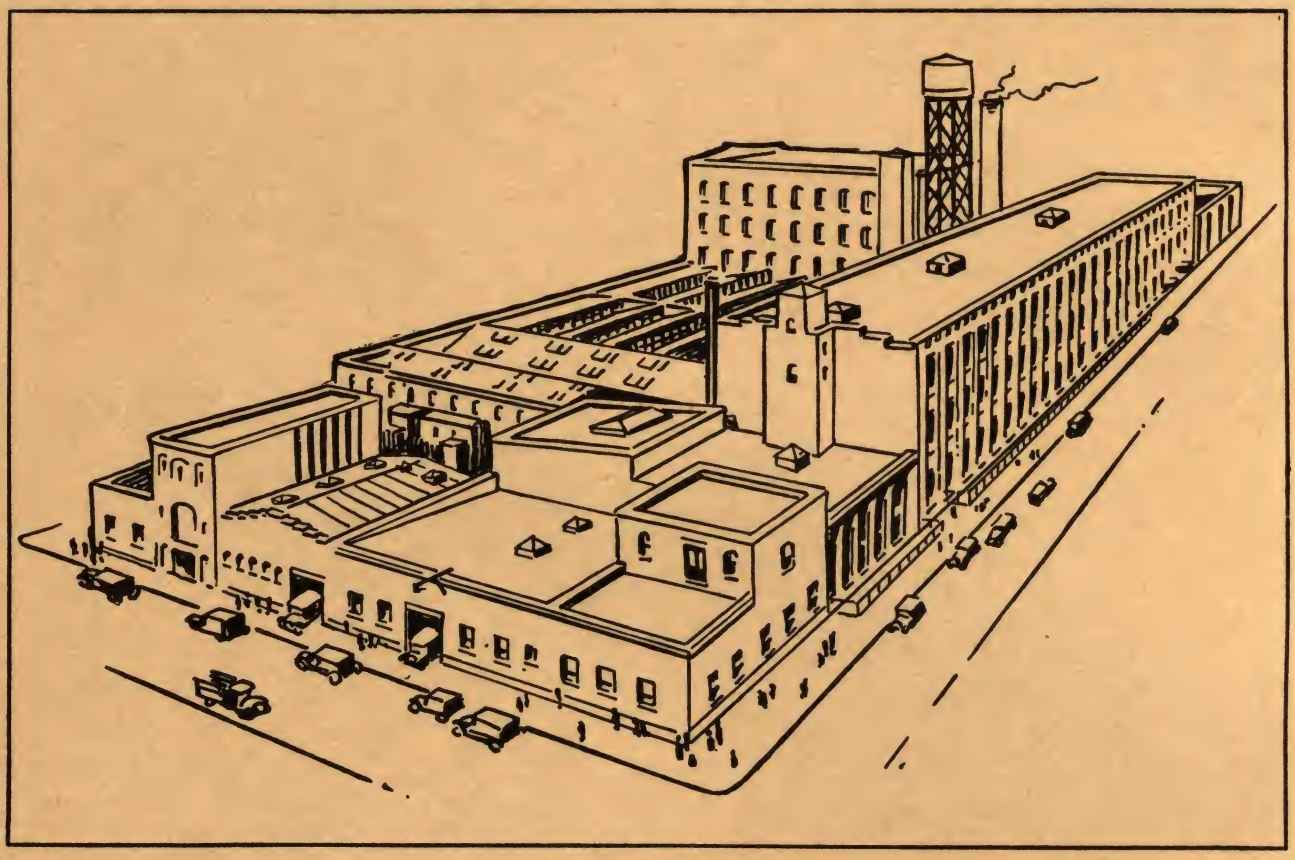
Haddon Hall, Atlantic City, N. J.
Rankin & Kellogg, Architects

A FEW OF THE PROMINENT BUILDINGS EQUIPPED WITH JACKSON WINDOWS

Some Representative Installations of Jackson's Windows

BRONZE AND ALUMINUM

Building	Location	Architect
Metropolitan Life Insurance Building	New York, N. Y.	D. E. Waid and H. W. Corbett
Fisher Building	Detroit, Mich.	Albert Kahn, Inc.
New Center Building	Detroit, Mich.	Albert Kahn, Inc.
Senator Couzens Residence	Bloomfield Hills, Mich.	Albert Kahn, Inc.
New York Times Building	Brooklyn, N. Y.	Albert Kahn, Inc.
Federal Reserve Bank	New York, N. Y.	York & Sawyer
Central Savings Bank	New York, N. Y.	York & Sawyer
Transportation Building	New York, N. Y.	York & Sawyer
First Mechanics National Bank	Trenton, N. J.	York & Sawyer
Dime Savings Bank	Brooklyn, N. Y.	Halsey, McCormack & Helmer
Williamsburgh Savings Bank	Brooklyn, N. Y.	Halsey, McCormack & Helmer
Peoples Bank & Trust Co.	Passaic, N. J.	Halsey, McCormack & Helmer
Penn Mutual Life Insurance Co.	Philadelphia, Pa.	Ernest J. Matthewson
Ohio State Office Building	Columbus, Ohio	Harry Hake
Stone & Webster Building	New York, N. Y.	Cross & Cross
R.C.A. Building	New York, N. Y.	Cross & Cross
Allen Residence	Manhasset, L. I., N. Y.	Cross & Cross
Northwest District Office Building	Philadelphia, Pa.	John T. Windrim
Brooklyn Central Court Building	Brooklyn, N. Y.	Collins & Collins
Folger Shakespeare Memorial Library	Washington, D. C.	Paul Philippe Cret
N. Y. County Lawyers Building	New York, N. Y.	Cass Gilbert
Haddon Hall Hotel	Atlantic City, N. J.	Rankin & Kellogg
Kirby Memorial Health Center	Wilkes-Barre, Pa.	Thomas H. Atherton
Bank of Manhattan Building	40 Wall Street, New York, N. Y.	H. Craig Severance and Yasuo Matsui
Bloomfield Bank & Trust Co.	Bloomfield, N. J.	Uffinger, Foster & Bookwalter
Equitable Trust Company	New York, N. Y.	Trowbridge & Livingston
Graybar Building	New York, N. Y.	Sloane & Robertson
Royal Insurance Company	New York, N. Y.	Starrett & VanVleck
Federal Reserve Bank	Boston, Mass.	R. Clipston Sturgis
Travelers Insurance Co.	Hartford, Conn.	Voorhees, Gmelin & Walker
Grace Street Telephone Co.	Richmond, Va.	Voorhees, Gmelin & Walker
Buckeye State Building & Loan	Columbus, Ohio	Hopkins & Dentz
Mrs. Florence Twombly Residence	New York, N. Y.	Warren & Wetmore
Carter Residence	Honolulu, T. H.	Mayers, Murray & Phillip
C. Brewer & Co. Building	Honolulu, T. H.	Mayers, Murray & Phillip
Lakewood Cemetery Association Building	Minneapolis, Minn.	Ernest Kennedy
Fidelity Philadelphia Trust Co.	Philadelphia, Pa.	Simon & Simon
Legislative Building	Olympia, Wash.	Wilder & White
Insurance Co. of North America	Philadelphia, Pa.	Stewardson & Page
Morgan Library	New York, N. Y.	B. W. Morris
Drexel Building	Philadelphia, Pa.	Day & Klauder
American Insurance Union Building	Cleveland, Ohio	C. Howard Crane
Southern New England Telephone Building	New Haven, Conn.	R. W. Foote
Brooklyn Savings Bank	Brooklyn, N. Y.	Frank Freeman
Butterworth Residence	Moline, Ill.	C. Eckerman
H. F. duPont Residence	Winterthur, Del.	Albert Ely Ives
Lincoln Building	New York, N. Y.	J. E. R. Carpenter
Philadelphia Savings Fund Society, 4 Branches	Philadelphia, Pa.	Mellor, Meigs & Howe
Benjamin Franklin High School	Rochester, N. Y.	Gordon & Kaelber
City Club	Chicago, Ill.	Granger & Bollenbacher



Foundries and Factories

of the

Wm. H. Jackson Company
335 Carroll Street
Brooklyn, N. Y.

New York Warerooms
2 West 47th Street

Chicago Warerooms
318 No. Michigan Avenue

FEDERAL STEEL SASH COMPANY

INCORPORATED

GENERAL OFFICES AND WORKS

WAUKESHA, WIS.

BRANCH OFFICES

BOSTON, MASS., 216 Tremont Street
CHICAGO, ILL., 228 No. LaSalle Street
CINCINNATI, OHIO, 622 Broadway
DALLAS, TEX., Thomas Building
KANSAS CITY, MO., 924 Baltimore Avenue
MILWAUKEE, WIS., 633 No. Water Street

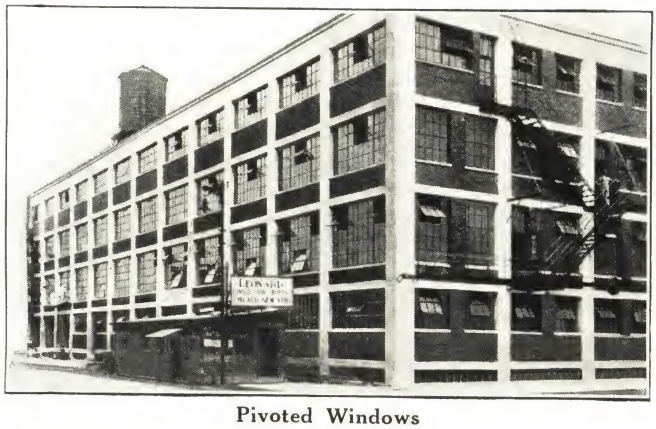
Member Solid Section Steel Window Industry

Products

STEEL WINDOWS: Pivoted, Projecting and Continuous.

STEEL DOORS: Industrial Swing and Slide, Airplane Hangar and Warehouse.

For complete details and specifications write for our catalogue.



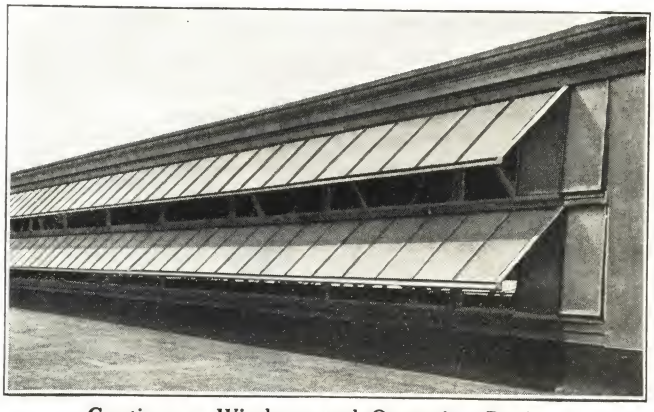
Pivoted Windows



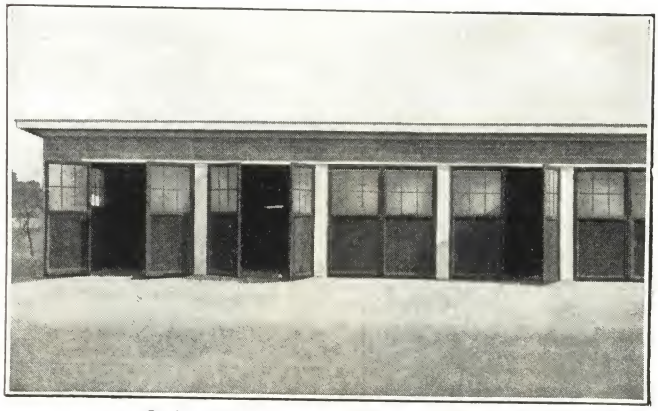
Projected Windows Commercial with Semicircular Heads



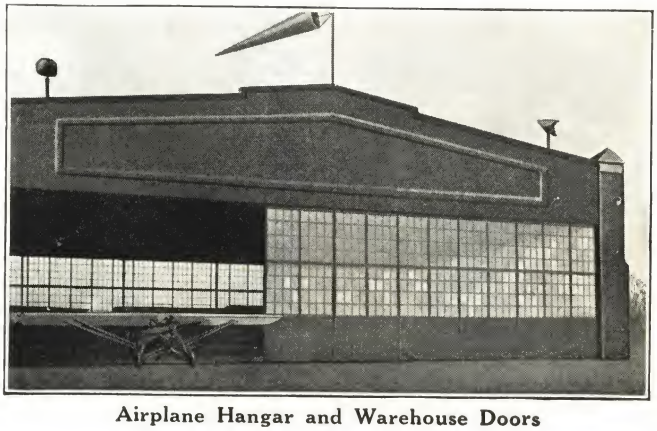
Projected Windows Architectural



Continuous Windows and Operating Devices



Industrial Doors Swing and Slide



Airplane Hangar and Warehouse Doors

OUTSTANDING FEDERAL FEATURES

Electric Arc Welded Construction

When steel windows were first introduced, the designers were faced with the problem of making a joint between the various members, similar to the joints in wood sash, which could be economically produced with the facilities then available. Some form of interlocked, mitered, dovetailed or tongue and slot joint was used, in which it was necessary to cut away a portion of the section of each of the members to be joined. As a result, the actual or effective depth of the mechanically jointed section was less at the joint by the amount of the cutout than the overall depth, and as the strength at the weakest point had to be sufficient to withstand the stresses to which the window would be subjected, the members as designed were of necessity heavier between the joints than was required, with the result that extra weight was added to the member without adding anything to the strength or stiffness of the window. This is the old proposition of the chain and its weak link. *Just as no chain is stronger than its weakest link, no window member is stronger than its weakest point.*



The Weld Produces a Joint as Strong as the Section
Note failure of the section, the weld being intact

In addition to the disadvantage of having to increase the weight of the members without any compensating increase in strength or stiffness, there was a further pronounced disadvantage inherent in interlocked, mitered, dovetailed or tongue and slot joints, namely, that after the window was assembled it would rack out of shape in handling, shipping and erecting. This instability of construction arose from the fact that the only way in which these joints could be held in place was by hammering or pressing the members together.

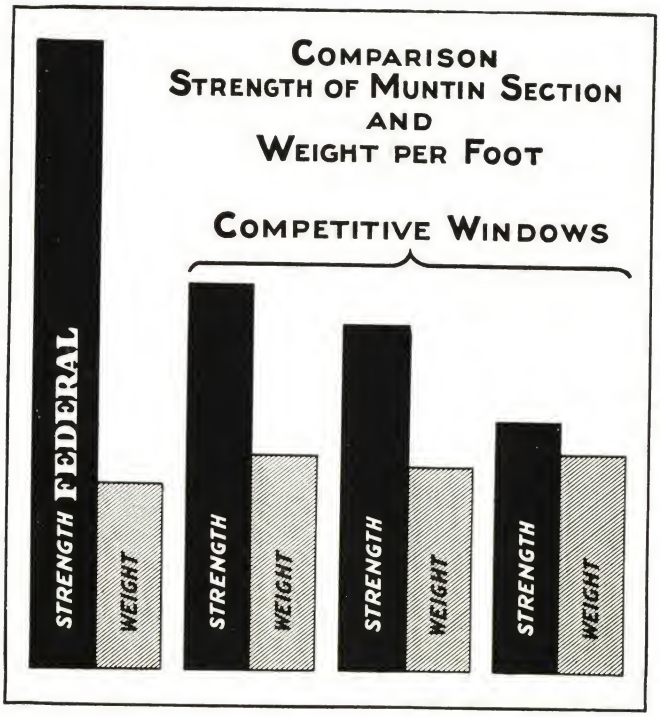
The inability to make a rigid mechanical joint not only increases the difficulty and cost of erection, but what is more important—makes difficult a properly weathered and easily operating ventilator.

It was not until the development of *electric arc welding* as a manufacturing process that a method of making connections was available which would eliminate the excess weight and the instability inherent in mechanically formed joints. The use of the electric arc is today so general in industry and construction as to require no argument to prove its practicability.

Federal engineers, in designing Federal Electric Arc Welded Products, were enabled to take advantage of this most modern method of joining materials and to design *a window with sections and joints in which the gross section of the member is utilized to the full for strength and stiffness, in which all excess weight is eliminated and in which every joint and connection is absolutely rigid and stable,* a window which it is not possible to rack or distort in handling, shipping and erection.

There is in the minds of some the impression that because something is heavy it must be inherently strong. This impression is, of course, to anyone acquainted with engineering principles, absurd, as it is well recognized that *mere weight does not in itself mean strength,* but that it is the proper distribution of the metal in the section and the proper design of the section itself for the purpose for which it is intended that are the essential factors. It is evident that any metal used in excess of that required to produce the given result can add no useful strength and is to all intents and purposes merely excess weight.

In order to visualize the relation between the weight per foot and the strength of the muntin section used in horizontally pivoted windows as determined by the condition at the joint after fabrication, the chart shown herewith has been prepared. *It will be evident from an examination of this chart that the Federal Muntin section, while the lightest section in weight per foot, is also the strongest.* A study of this chart together with an examination of the types of construction used on competitive windows will demonstrate that Federal engineers have been able to utilize material to its full value, and why the claim of superiority of design and construction for Federal products over the design and construction of any competitive window is well founded.



Materials

All sections are open hearth solid steel, hot rolled or cold drawn, of special Federal design.



Distorted Joint, Showing the Remarkable Strength of the Weld



The Muntin Joint
Note the Smooth Exterior Surface

Federal Manufacturing Methods

The raw material is cut to length and the ends formed for the welded connection in one operation. Where members are built up of two or more sections they are *electric spot welded* together while firmly held in jigs to assure accurate dimensions of the built-up members. Preparatory to electric arc welding the joints, the individual members are assembled on welding tables. These tables consist of rigid heavy structural steel frames with accurately machined surfaces. On these frames are bolted the welding pads with their clamps and guides. The individual members are clamped in the guides with their exterior faces against the welding pads and while thus firmly held in position each connection is *electric arc welded.* This method insures absolute squareness and accuracy of dimension and a product which is to all intent and purpose one solid piece. The design of the welding tables, and the method of assembling and welding on the tables, are protected by United States patents Nos. 1648409 and 1648416.

A comparison of methods used in manufacturing Federal Windows with those used in the manufacture of competitive windows will show several points of superiority in the Federal method. *There are no cutouts or notches in any Federal members* to permit of the joining together of two members at the joint, and *there is no distortion, spreading or stretching of the material in Federal construction,* as is the case in a number of other makes of windows. The use of the electric arc for forming connections fills up all spaces between members and leaves *a smooth, unbroken surface at the Federal connection* as compared to the overlapped surface or butted edges common to connections in competitive windows.

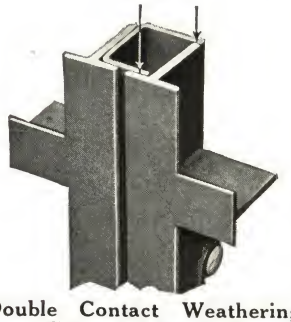
After welding, the products are removed from the welding table and the face of each weld is ground to a smooth surface. All excess material and roughness at the welds on the interior is removed by chipping with an air hammer. This operation not only cleans each weld, but subjects each individual weld to a severe shock test, so that in this operation *every weld made on Federal products is individually tested for strength.*

Ventilators are then fitted and hardware attached, after which the product is again inspected, is painted and is then ready for shipment.

Double Contact Weathering of Window Ventilators

Federal window ventilators are constructed to provide *continuous double contact weathering* around all four sides of the ventilators. All ventilators are accurately fitted at the shop, and since Federal windows are rigid and cannot be distorted in handling, shipment or erection, the window when erected will be in a satisfactory weathering condition. The shop fitting of Federal horizontally pivoted ventilators, combined with the Federal close pivot construction and the lever action of Federal draw-tight ventilator operators, produces a pivoted window which is both rain and wind tight.

Tests which have been made by reputable engineers in a careful and scientific manner to determine the leakage through ventilators on horizontally pivoted steel windows, demonstrate the superiority of Federal construction over that used in competitive windows. Comparing the results of tests on five other windows to the result on Federal, the nearest competitive window had a leakage of 39.5% in excess of Federal, while the maximum leakage was 143.0% of Federal, and the average for the five windows was 105.8% in excess of Federal, or over twice the leakage through the Federal ventilator.



Double Contact Weathering All Four Sides of the Ventilators

No Corrosion of Joints

There are no overlapped surfaces or butt contacts on Federal steel windows, and consequently there are no points at which moisture can enter and set up corrosion. The flush exterior surface of Federal windows, free from all projections and ledges, avoids the collection of dirt and moisture. *There are no open joints.* All surfaces are accessible for painting.

Rust Prevention

As Federal windows are absolutely rigid and there are no open, overlapped or butt joints, and all surfaces are smooth and accessible, it is possible to *hot dip galvanize* Federal windows or to *plate with any protective metal covering* with the assurance that the protective covering will not be injured due to movement between the window members while being handled, shipped or erected.

Federal Close Pivot

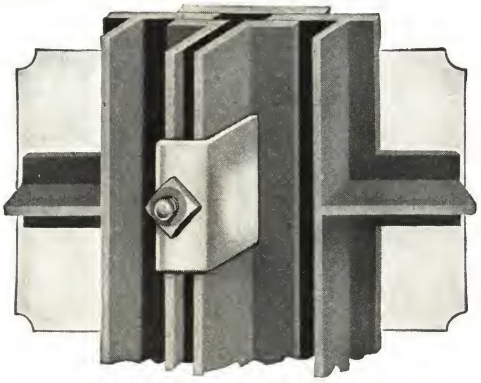
The Federal pivot for horizontally pivoted windows projects but ⅝ in. from the window frame. *It consists of two substantial pressed steel leaves joined with a sturdy bronze pin.* The use of a bronze pin prevents rusting and insures at all times a free acting ventilator. The very small projection of this pivot materially lessens the chance of injury during shipment, handling and erecting.

Federal Draw-Tight Push Bars

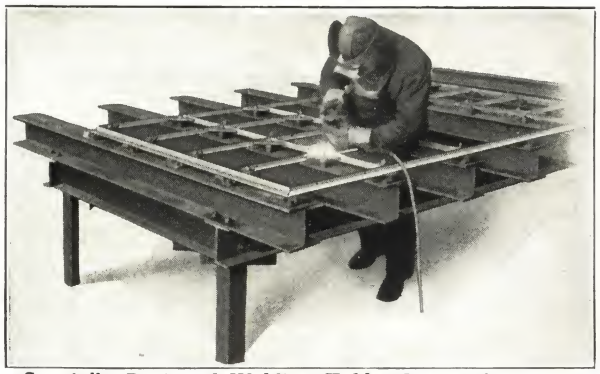
The horizontally pivoted ventilator push bar is attached to the bottom of the ventilator at one side of the center with a *heavy pressed metal hinge,* which gives a universal joint to the bar. When the ventilator is closed the push bar folds back, parallel to the face of the window, against a strike plate which is bolted to the fixed portion of the window at the center. At the side of the ventilator opposite the hinge is a locking clip bolted to the ventilator. The hinge, strike plate and locking clip are so located that when the push bar is in its locking position, the bar presses against the center strike plate, thus drawing the ventilator into tight weathering contact and at the same time locking it against opening.

Federal Commercial and Architectural Projected Window Bronze Friction Guides

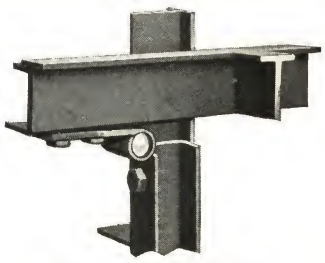
As the smooth operation of projected ventilators depends upon the friction guide, the proper design of this feature is of importance. The Federal bronze friction guide is designed to eliminate the scraping action of the ordinary bronze shoe used on competitive windows. A guide angle is provided on each jamb of the ventilator opening, which serves to hold the ventilator in its proper location at any degree of opening. *A bronze yoke, which has a hardened steel ball,* slides on this guide angle. The friction which holds the ventilator in any desired position is obtained by the pressure of a spring in the friction guide forcing the steel ball against the edge of the guide angle. In this way rubbing or scraping of the friction guide against the sides of the ventilator opening is eliminated and a smooth and positive acting ventilator adjustment is obtained.



Adjustable Mullion



Specially Designed Welding Tables Insure Accurate Dimensions and Absolute Squareness



Pressed Steel Hinge with Brass Pin

THE KAWNEER COMPANY

Rustless Metal Sealair Windows

GENERAL OFFICES
NILES, MICHIGAN

FACTORIES
CHICAGO, ILLINOIS — BERKELEY, CALIFORNIA — NILES, MICHIGAN — CHICAGO HEIGHTS, ILLINOIS

FOR FULL INFORMATION, SEE COMPLETE KAWNEER CATALOGUE IN MANUFACTURERS' INDEX

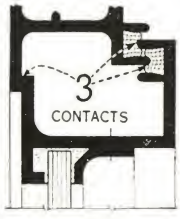


At Left:
In-Swinging Type



Combination Type In-Swinging—Out-Swinging

At Right:
Continuous
3-Point
Contact
Weathering



Half Size

A VERSATILE WINDOW CONSTRUCTION

In-Swinging, Out-Swinging, or a Combination of Both

THE KAWNEER COMPANY, Niles, Michigan, manufactures a versatile window construction in which each sash can be hinged at top, bottom or sides to swing either in or out. Ventilation is easily controlled in this type of window. It affords continuous *three-point contact weathering,* with two contacts resilient and the other positive. This construction is guaranteed *weatherproof, dustproof* and *rattleproof.* The Sealair Window combines modern lines, unblemished by rivets and bolts. Furnished in extruded bronze or aluminum alloy, all joints strongly welded. *The exterior can be washed from inside.*

Sectional details will be found in complete Kawneer catalogue (see Manufacturers' Index).

THE Kawneer COMPANY
Niles, Michigan
RUSTLESS METAL
Store Fronts, Windows, Doors, Architectural Cast Metals

KEWANEE MANUFACTURING COMPANY

Steel Windows and Other Building Products

1600 Burlington Avenue, KEWANEE, ILL.

NATIONALLY DISTRIBUTED THROUGH DEALERS IN BUILDING MATERIAL

Products

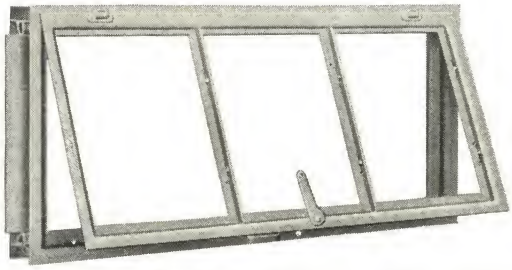
KEWANEE COPPER STEEL BASEMENT WINDOWS; KEWANEE STEEL UTILITY WINDOWS.

Also Fireplace Dampers, Ash Dumps, Clean-out Doors, Package Receivers, Built-in Mail Chutes, Basement Columns, and other Building Products

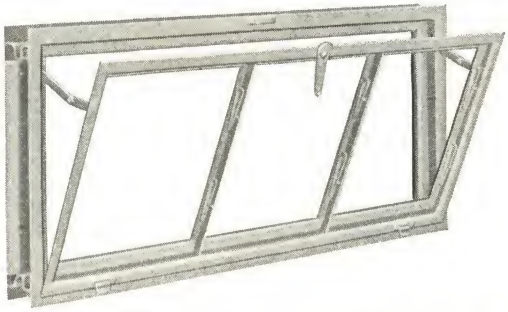
For Kewanee Copper Steel Basement Coal Chutes, see Manufacturers' Index.

Kewanee Basement Window (Patented)

The Kewanee Basement Window fulfills the requirements of the modern home. Box frame all-steel construction precludes warping, shrinking, swelling, slivering, and rotting. Its attractive, sturdy design embodies the spirit of modern architecture, permitting maximum daylight to reach the basement and combining convenience, protection and adaptability.



Kewanee Bottom Ventilating Window—This window operates in the usual way, sash hinging at top and swinging open at bottom. All parts are of heavy rust-resistant copper steel, electric welded at every joint. Action of hook hinges at top and cam action lock at bottom is to draw the die-pressed sash and frame together into a true, double weathering contact all around.



Kewanee Top Ventilating Window—It is the top hung window in inverted position, except for overhanging drip bar being built into hinge side instead of latch side of sash, and the two jointed arms, one on each side of sash, which are added for limiting the opening of sash. By lifting ends of jointed arms out of slots in window frame in which they engage, sash can be swung down into horizontal position and detached from frame.

KEWANEE BASEMENT WINDOWS

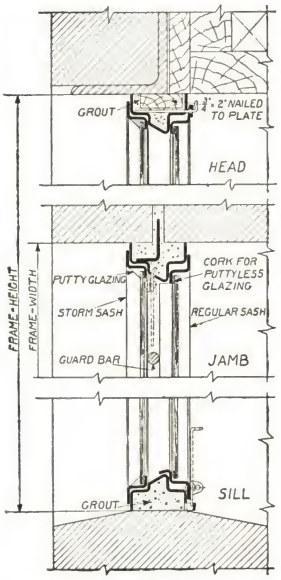
Lights		Wall opening required, in.*		Shipping weight, lb.	Size Nos.			
					Bottom ventilating		Top ventilating	
No.	Size, in.	Width	Height		For putty glazing	For puttyless glazing	For putty glazing	For puttyless glazing
3	10x12	33 5/8	14 7/8	19	312BP	312BL	312TP	312TL
2	14x20	31 1/4	22 7/8	21	220BP	220BL	220TP	220TL
3	10x16	33 5/8	18 7/8	21	316BP	316BL	316TP	316TL
3	10x20	33 5/8	22 7/8	23	320BP	320BL	320TP	320TL
3	12x18	39 5/8	20 7/8	24	318BP	318BL	318TP	318TL
3	11x24	36 5/8	26 7/8	26	324BP	324BL	324TP	324TL

*Over-all dimensions same as "Wall Opening Required," except for anchor fins which project on each side ¾ in. into wall.

Kewanee Screen or Kewanee Storm Sash—Attaches on the inside by means of cam action latches which engage in slots in the window frame. The frame design permits guard bars to be welded in place without interfering with screen or storm sash.

Construction Details—Diagram shows exact shape of different members, and efficient way in which regular sash, storm sash (or screen) and guard bars are accommodated within frame. Note double contact of storm and regular sash.

Box frame stands upright of itself while being set. Anchor fins, one on either side of frame, extend ¾ in. into jamb, and hold frame securely in place. Space within the channel-like section of frame forms a pocket for mortar which seals frame tightly to wall.



Putty or Puttyless Glazing—Double glazing clip is sprung under a lug in side of sash to hold pane of glass in place against bed putty while face putty is being applied. Four or six clips supplied for each pane of glass.



For glazing without use of putty, strips of composition cork are cemented to bearing surfaces of sash and glass is pressed against this cork cushion by means of an adjustable retaining wedge—four or six for each pane—which catches under lug.

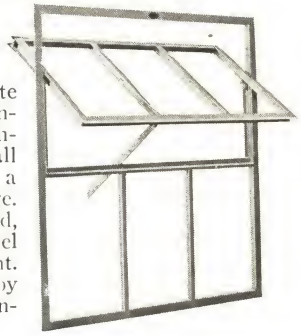


Kewanee Steel Utility Window

Designed to give real service in garages, filling stations, stores, factories, warehouses, barns, etc. Provides economy in installation, maximum daylight and ventilation, convenient operation, and protection against deterioration, fire and theft.

Three lower lights are stationary and three upper lights form horizontally pivoted ventilator which closes all around in a tight, weatherproof *double contact*. Pushbar holds ventilator at any angle, also locks it when closed.

Supplied either with clips (for glazing with putty) or with cork lining and retaining wedges (for glazing without putty).



Will fit perfectly in concrete block, brick, frame or other construction. Projecting flange of window frame embeds ½ in. on all sides into building wall, forming a windproof, weathertight anchorage. Exceptionally strong and rugged, being made of heavy rolled steel sections, arc-welded at each joint. Can be used singly or combined, by means of mullions, for larger openings.

KEWANEE STEEL UTILITY WINDOWS

Lights		Wall opening required, in.		Shipping weight, lb.	Size Nos.	
No.	Size, in.	Width	Height		For putty glazing	For puttyless glazing
6	10x16*	32	35 1/4	33	616P	616L
6	12x20†	40	43 1/4	38	620P	620L

*Except two outside lights in upper half which are 1 in. narrower.
†Except two outside lights in lower half which are 1 in. wider.
Other sizes of horizontally pivoted windows can be furnished promptly to order.

W. C. LEA

Manufacturer of Steel Windows and Doors

653 South Clarence Street
LOS ANGELES, CALIF.

Member Solid Section Steel Window Industry

Products

HEAVY STEEL CASEMENTS of all types and sizes. STEEL SPECIAL SASH; STEEL SPECIAL FRENCH DOORS; STEEL FACTORY SASH; STEEL PROJECTED SASH; STEEL DOUBLE HUNG WINDOWS.

General

The outstanding principles uppermost in the minds of the designers and manufacturers of "Lea" products are beauty, simplicity, strength, practicability and economy.

The accomplishment of these principles has been the contributing factor for their widespread and determined selection.

The ultimate satisfaction "Lea" products are rendering in utility, durability and convenience, elevates them to a high position in the minds of the leading architects and builders. This is especially so of our heavy steel casements, thereby placing them in a commanding position in the steel casement manufacturing industry.

"Lea" Steel Casements are now being used in the largest and finest buildings of the West and bear recognition.

The complete line of types and sizes we are in a position to furnish is not included in this catalogue. The heavy weight and structural strength of our sections enables us to build casements to meet every requirement.

We have furnished and installed many large as well as small installations of special sash and are in a position to fill your special requirements.

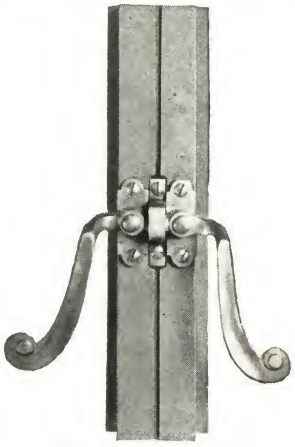
Advisory Service

Our Service Department is prepared to give full information and to offer suggestions regarding problems to meet individual requirements. Architects and builders are invited to avail themselves of our facilities and service. Your inquiries will receive prompt attention.

FASTENERS AND HINGES FOR "LEA" STEEL CASEMENTS



Standard Steel Latch Plate, Solid Bronze Latch Lever, and Wedge Strike



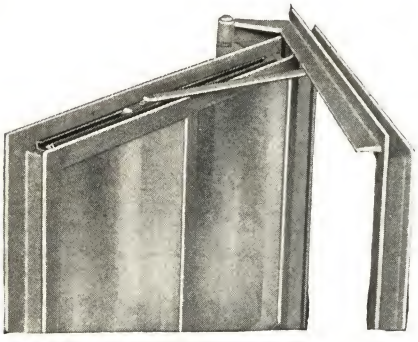
Pair of Casement Fasteners



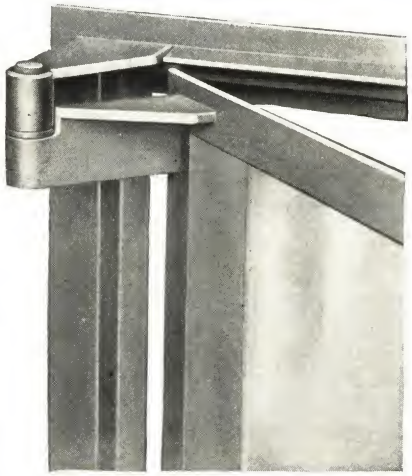
Single Casement Fastener



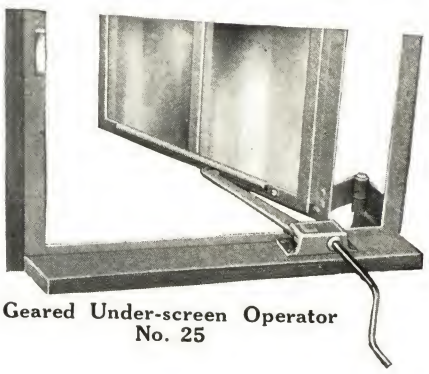
Hinge



Concealed Friction Adjuster



Heavy Steel Angle Extension (Cleaning) Hinge with Bronze Pin



Geared Under-screen Operator No. 25

Specifications for "Lea" Steel Casements

General—Where steel casements are shown they shall be "Lea" Steel Casements as manufactured by W. C. Lea, Los Angeles, California.

Scope of Work—The Steel Casement Contractor shall include in his work the furnishing and installing of all steel casements complete, adjusting of casements after erection and attaching of hardware after glazing and painting have been finished.

Work Not Included in Steel Casement Contract—Window cleaner bolts or belts, the filling of sills with concrete, glass or glazing or putty, metal stools, bronze sills or thresholds, metal trim or plaster mould, grounds, screens, painting (except standard shop coat of gray metallic paint), grouting, calking or pointing, any expense for use of telephone, light, power or equipment of owner or general contractor.

Material—Sections used in the manufacture of these casements shall be copper bearing hot rolled steel sections containing not less than 0.15% nor more than 0.30% copper, and shall be of size and special shapes as shown in the 1932 Edition of Sweet's Architectural Catalogues. Weight of sections shall be not less than 1.67 lb. per ft. for the outside frame, 1.45 lb. per ft. for the swing leaf frame and .89 lb. per ft. for muntin bars.

Construction—All corners of frame and swing leaves shall be mitred, electrically butt-welded and ground smooth. All transom bars and meeting rails shall be riveted to the adjoining section and the inside face of joint shall be electrically welded and ground smooth. Where muntins occur, they shall be riveted to the adjoining section and the inside face of joint shall be electrically welded and ground smooth. Cross joint of muntin bars shall be "Lea" dovetailed and interlocked intersections.

Weathering—Continuous contact weathering shall be provided. Head section (for outswing casements) where swing leaf comes to top of sash and transom bar shall have a continuous drip which shall be an integral part of the section.

Hardware—Unless otherwise specifically mentioned, hardware shall consist of the following: Heavy steel angle extension (cleaning) hinges with bronze pins, standard steel latch plate, solid bronze latch lever and wedge strike and concealed friction adjuster. (Inswing casements shall have hardware as shown in the 1932 Edition of Sweet's Architectural Catalogues.)

Painting—Casements shall receive one dip coat of "Lea" special gray metallic paint before shipping.

Erection—General contractor shall build openings for steel casements according to details and dimensions shown on Steel Casement Contractor's drawing as approved by the architect.

Steel Casement Contractor shall set casements into wall, adjust after erection and before glazing, and attach hardware after glazing and painting have been finished as called for on drawings and covered in these specifications. Mastic shall be applied by Steel Casement Contractor as shown on approved drawings.

Glazing—All casements shall be glazed as shown on approved details. Unless otherwise shown, glass shall be held in place by "Lea" coppered spring steel wire glazing clips and shall be bedded and face puttied with "Lea" metal window putty. Where glazing beads are shown, corners shall be mitred, electrically butt-welded and ground smooth, they shall be fastened to sash with countersunk oval head brass screws.

Hoisting—General contractor shall do all hoisting of materials for Steel Casement Contractor from the street level to the floors on which the material is to be used. Steel Casement Contractor shall do all necessary distributing of the sash on the floors. Such hoisting shall be without cost to Steel Casement Contractor.

Instructions for Setting

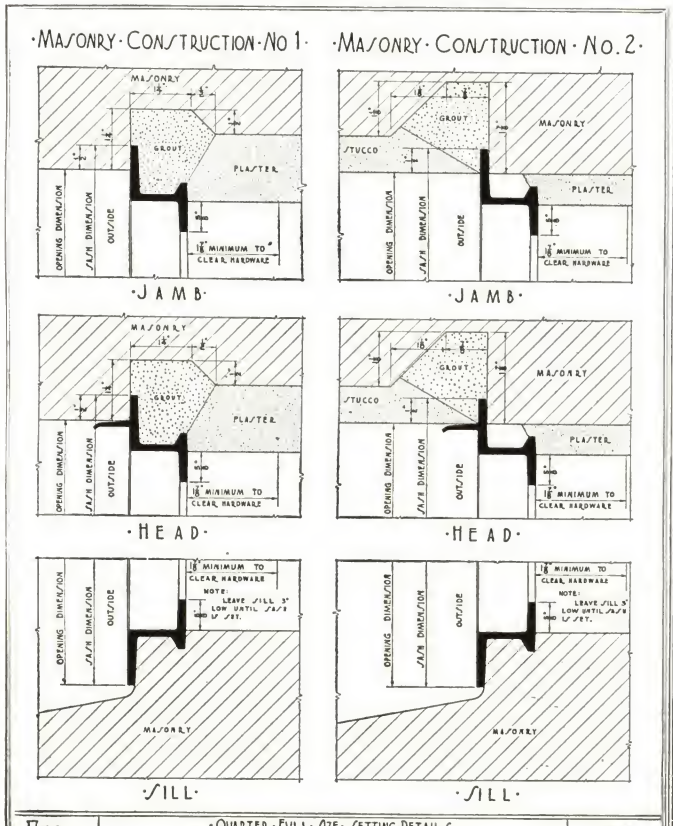
When sash are delivered to job they should be stacked on end so that they will not be sprung by their aggregate weight.

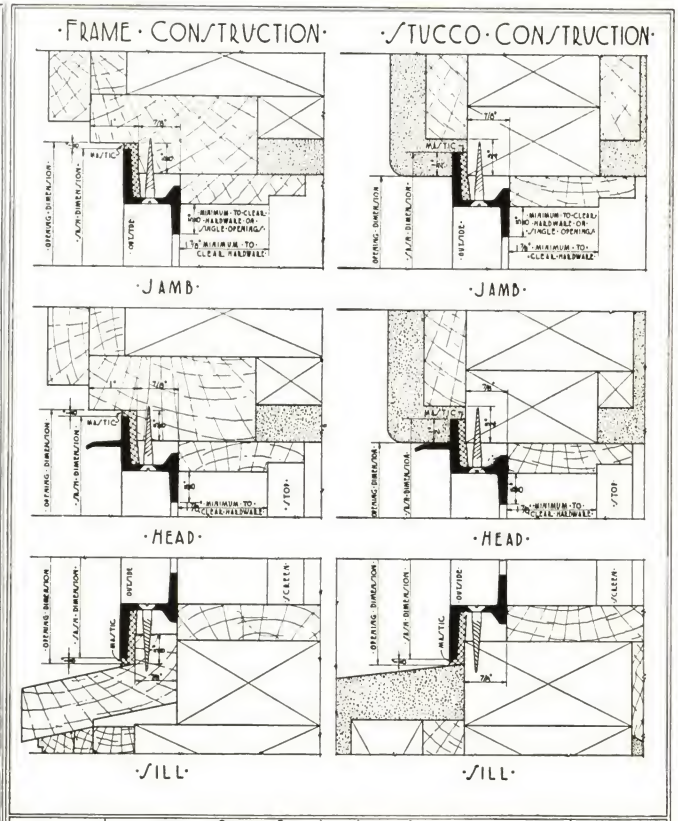
Openings for "Lea" Steel Casements should be built as detailed below. Care should be taken in the construction of these openings that they be plumb and square, and that clearance called for on details is provided. The dimensions given for units shown on W. C. Lea shop drawing are sash dimensions. If openings are properly built the sash will slip easily into place. *Mastic should be substantially applied to casements before they are permanently screwed or grouted into place. This will insure a watertight joint between them and collateral construction.

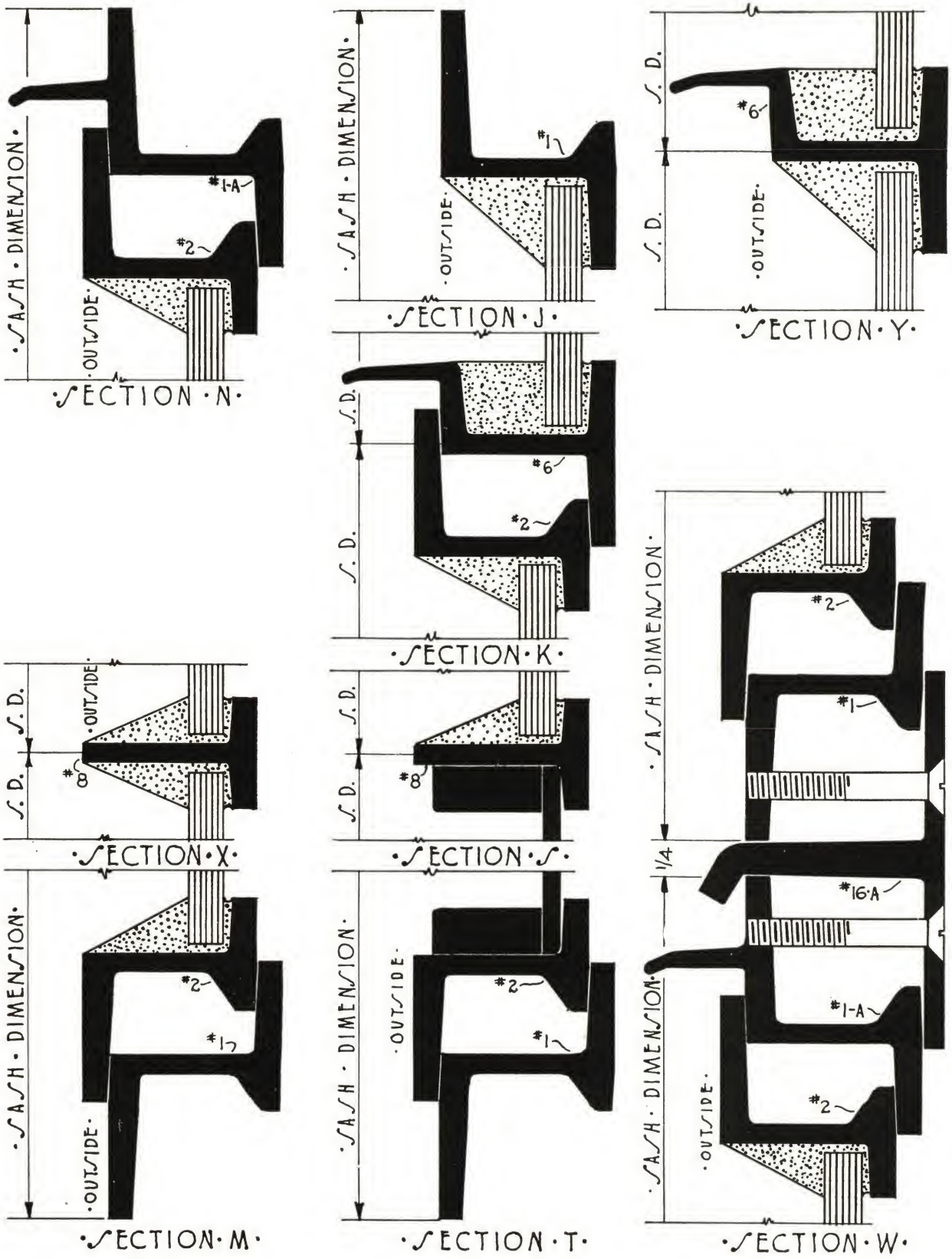
It is necessary for perfect operation of swing leaves that casements be set plumb and square into openings. The frame should not be crowded nor used to carry other construction. The swing leaves should be tested and adjusted if necessary just before windows are glazed. Finish hardware is usually applied after the glazing and finish painting have been completed.

If the building construction is other than that shown here, we shall be pleased to submit other details for your approval.

*Note: Sufficient mastic is furnished without additional cost (1 lb. to 10 lineal ft.); additional mastic may be secured at additional cost.







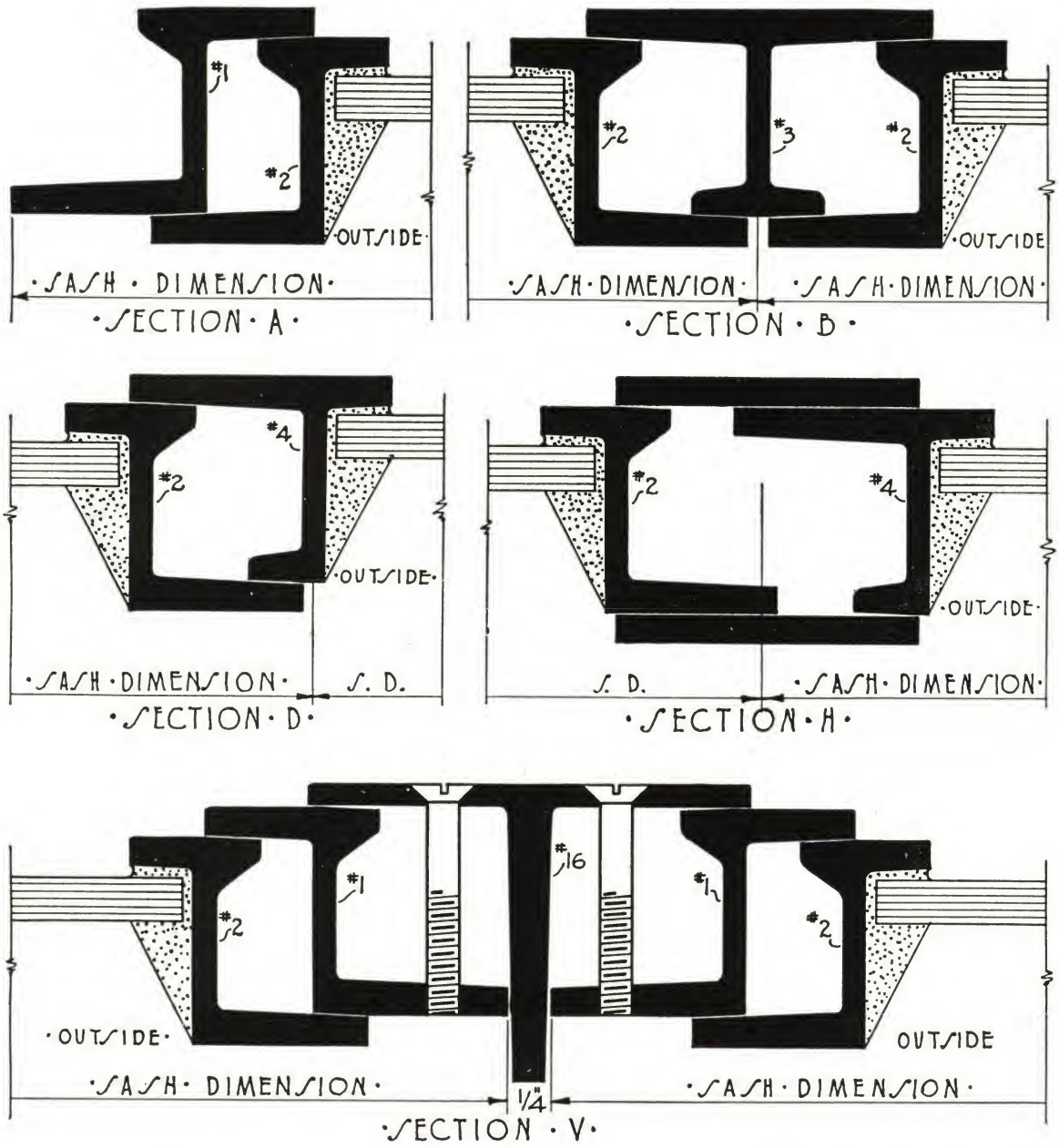
LEA STEEL WINDOWS

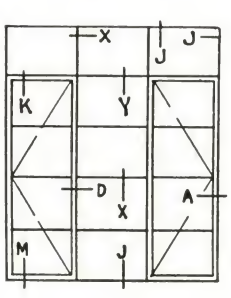
FULL SIZE DETAILS
LEA STEEL CASEMENTS

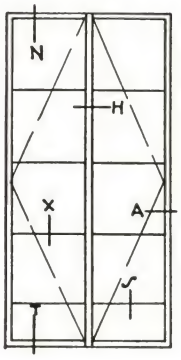
W. C. LEA — LOS ANGELES, CALIF.

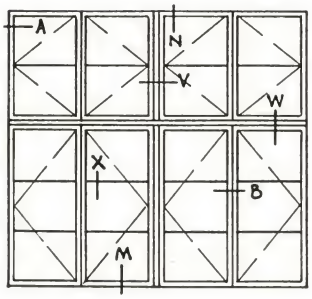
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JULY 1930









LEA STEEL WINDOWS

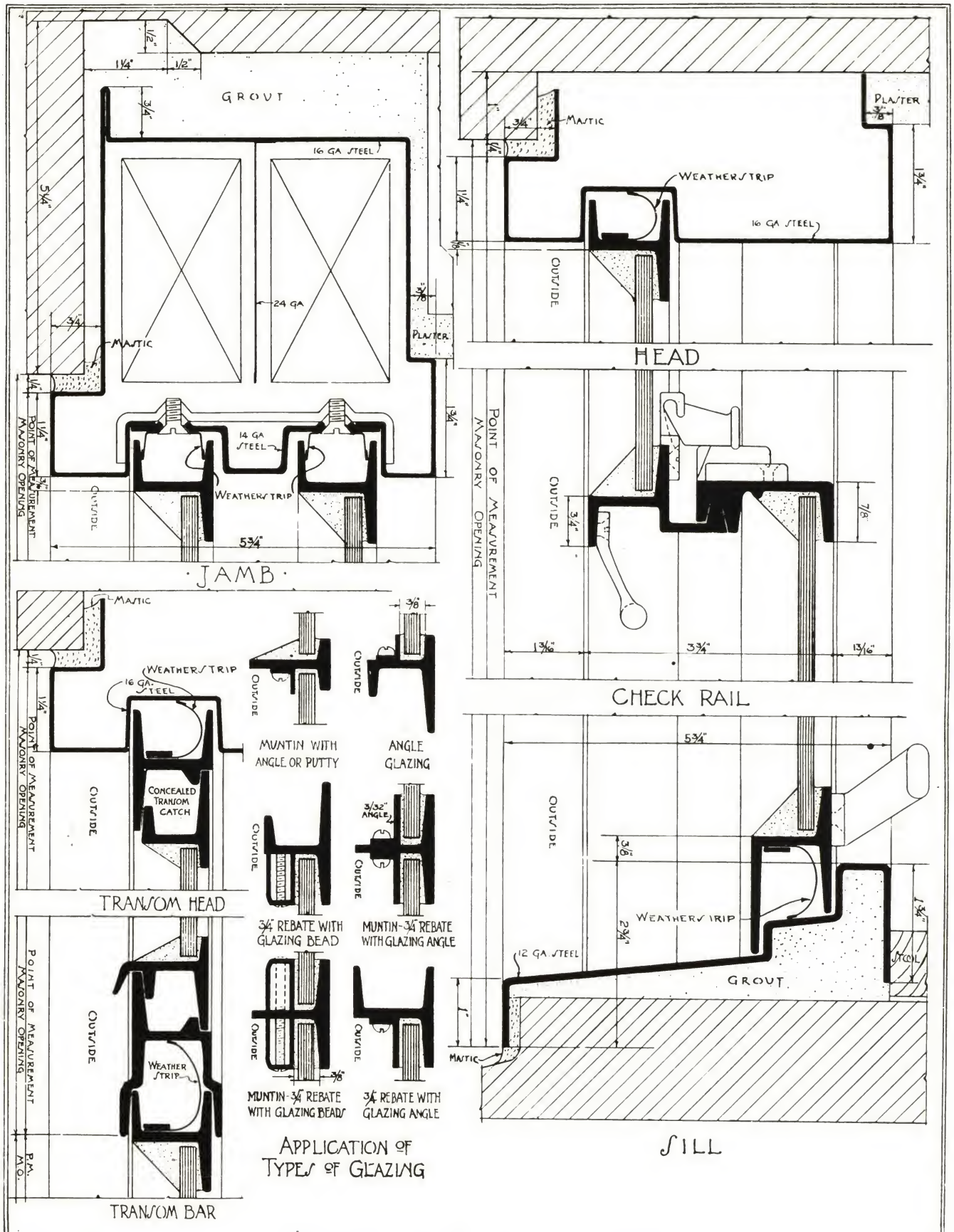
W. C. LEA

FULL SIZE DETAILS
LEA STEEL CASEMENTS

LOS ANGELES, CALIF.

708-B

JULY 1930



LEA STEEL WINDOWS

· HALF · FULL · SIZE · DETAILS ·

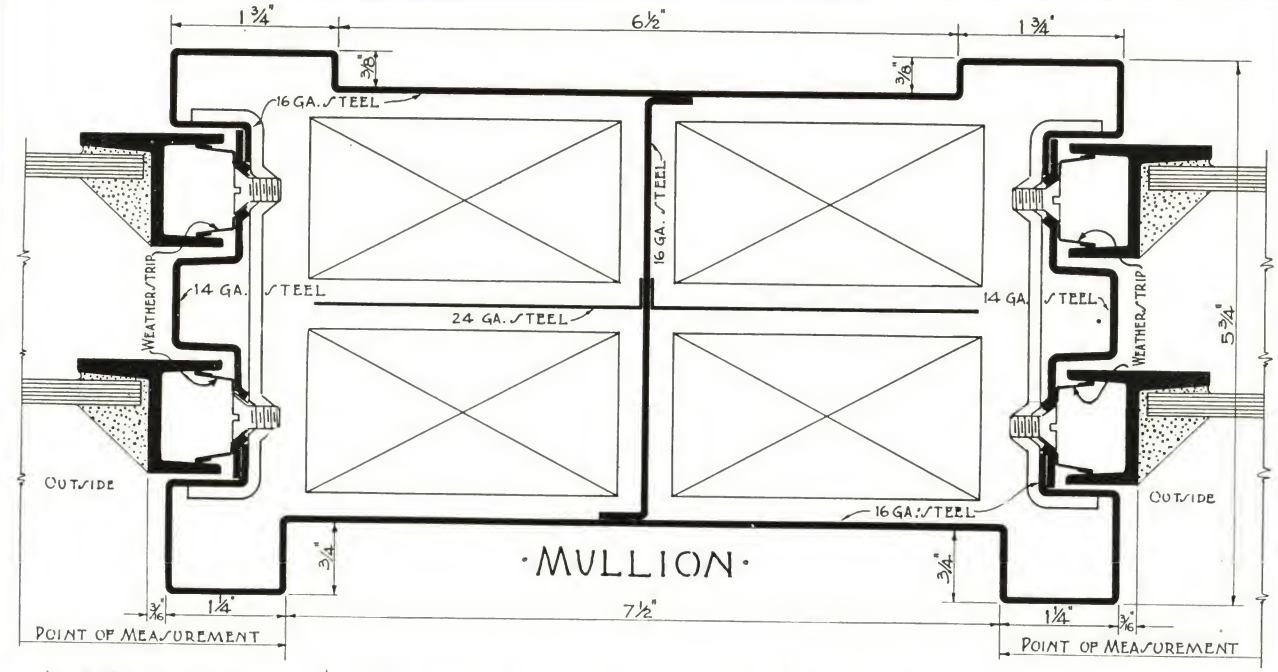
· LEA · DOUBLE · HUNG · WINDOWS ·

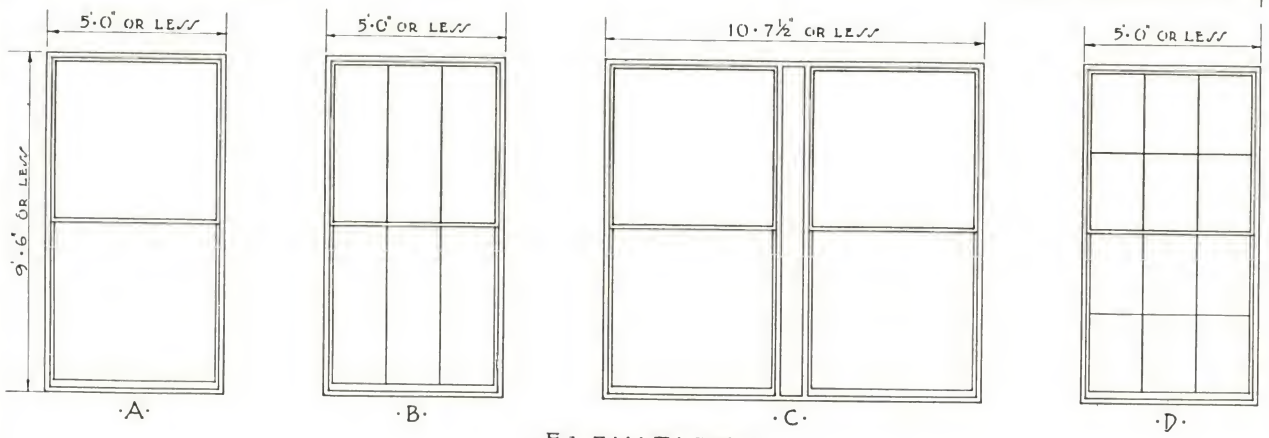
· PATENDED ·

· W. C. LEA · · LOS ANGELES · CALIF ·

750

SEPT. 1931





·ELEVATIONS·
SCALE 3/16"-1'-0"

Specifications for "Lea" Steel Double Hung Windows

General—All exterior steel double hung windows shall be "Lea" Steel Double Hung Windows as manufactured by W. C. LEA, Los Angeles, Calif.

Work Not Included in Steel Double Hung Window Contract—Setting of frames, filling of sills with concrete, grouting, calking, pointing and hoisting, glass, glazing, putty, (metal stools), metal trim or plaster mould, grounds, screens or painting (except standard shop coat of paint).

Material—Frame members to be constructed with the following gauges of galvanized steel:

Weight box	No. 16 gauge
Weight box covers	No. 14 gauge
Head jamb	No. 16 gauge
Sill	No. 12 gauge
Weight division	No. 24 gauge

Special "Lea" Weatherstrip (bronze).

Sash members to be constructed of hot rolled copper bearing solid steel sections, containing not less than 0.15% nor more than 0.30% of copper.

Minimum weight per lineal foot of sash members to be as follows:

Top rail and sides	1.45 lb.
Top check rail	1.95 lb.
Bottom check rail	2.08 lb.
Bottom rail	1.95 lb.

Glazing angles to be $\frac{7}{16} \times \frac{3}{4} \times \frac{3}{32}$ in.

Construction—Joints between weight boxes, head jambs and sills to be welded and ground smooth, weight box covers to be fastened to weight box by means of especially formed clamps and screws.

Dimensions of frame shall not be more than 5¾ in. from outside to inside. Weight box shall be so formed as to provide a continuous anchor behind grout.

All double hung frames shall be equipped with (bronze) guides, which form a weatherstrip, so that sash will slide against same instead of sliding against steel portion of frame. Head jamb, sill (and transom bar where required) to be equipped with (bronze) weatherstrips.

Corners of sash shall be mitred, electrically butt-welded and ground smooth. Sash sections are to be punched and tapped for the attachment of all finish hardware.

Hardware—All hardware to be "Lea" standard hardware. Frames are to be equipped with special removable pulleys with $\frac{7}{8}$-in. diameter steel pins. Sash are to be hung with heavy (red metal) galvanized steel chain No. A or equal. Sash are to be properly balanced with one-piece cast iron weights $1\frac{1}{16} \times 3\frac{1}{4}$ in. in section.

Frames are to be equipped with "Lea" No. 125 window cleaner bolts and reinforcements.

All finish hardware shall be solid bronze finished to match other hardware in the building. Such hardware to consist of two bar lifts for lower sash, one bar pull for upper sash, and sash lock.

Where transoms occur they shall be reversible type to open in at top with concealed reversible hardware and concealed transom catch at top with solid bronze control on inside face of transom. Finish hardware and weights are to be shipped separately to be attached at the building.

Paint—Before shipment, windows are to be thoroughly cleaned and given one shop coat of "Lea" gray metallic paint.

Installation—General contractor will fill sills of window frames with concrete and will set or build the window frames in the wall perfectly true, straight, square and plumb and do all necessary grouting, calking and pointing. After frames are set, steel double hung window contractor will install all sash weights and, when glazing is done by others, will properly balance sash and weights. After painting is done by others, steel double hung window contractor will apply all "Lea" standard finish hardware and properly adjust all sash, leaving them in a first class working condition.

Hoisting—General contractor will do all hoisting of materials, for steel double hung window contractor, from the street level to the floors on which the material is to be used, steel double hung window contractor to do all necessary distributing of the sash and hardware on the floors. Such hoisting shall be without cost to steel double hung window contractor.

LEA STEEL WINDOWS

·HALF·FULL·SIZE·DETAILS-ELEVATIONS & SPECIFICATIONS·

·LEA·DOUBLE·HUNG·WINDOWS·

W.C.LEA PAT. PENDING ·LOS·ANGELES, CALIF.

725 SEPT. 1931

ESTABLISHED 1879

MESKER BROS. IRON CO.

Manufacturers of Windows, Doors and Ornamental Iron

ST. LOUIS, MO.

REPRESENTATIVES IN ALL PRINCIPAL CITIES

Member Solid Section Steel Window Industry

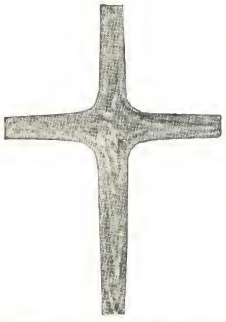
Wrought Iron

It has been our pleasure to originate and develop solid section metal window sash made from genuine wrought iron.

This material, due to its inherent ability to resist progressive corrosion, coupled with its new improved heavy duty construction, has found an immediate acceptance wherever quality products and low maintenance costs are wanted.

This metal is made to A.S.T.M. Specification A-84-30 Grade C, and where required, should be specified as such to eliminate the possibility of less corrosive resistant substitutes.

All our wrought iron bars have clearly rolled on their surface the distinguishing mark H. W. I. and can thus be readily identified.



Transverse Etch Wrought Iron Normal Size

For further information refer to our literature on wrought iron. It tells how to specify to insure getting the genuine.

Sizes and Details

Our local representative will be glad to furnish complete information and show samples. Write the home office for literature or special services.

Types

We are able to furnish products as listed below in either genuine wrought iron or steel in standard or special sizes.

Windows—
Pivoted
Projected—commercial and architectural
Continuous Top Hung
Basement
Labeled
Double Hung—plate type or hollow metal
Heavy Casements—hinged or projected
Residential Casements

Doors—
Swing
Slide
Hangar
Accordion
Special types

Screens—
Steel Bronze or Aluminum for all types of metal and wood windows.

Ornamental Iron—
Stairs
Fire Escapes
Railings
Grilles, etc.



Transverse Etch Steel Normal Size



Benjamin Franklin's lightning rod, after serving 158 years on St. Paul's Cathedral, London, shows no appreciable signs of serious corrosion. The surface is pitted, but the inner parts are as good as the day it was fabricated. The etched section (transverse) shows the same structure that has always characterized good wrought iron, the cinder layers which are such an efficient stop to progressive corrosion. (Compare this with the etch; the similarity is striking.)

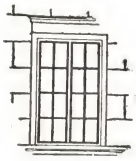
DETAILS AND SPECIFICATIONS FOR LUPTON STEEL PRODUCTS

LUPTON
STEEL PRODUCTS

1932

DAVID · LUPTON'S · SONS · COMPANY
ALLEGHENY AVENUE AND TULIP STREET · PHILADELPHIA, PA.
SALES REPRESENTATIVES IN ALL PRINCIPAL CITIES

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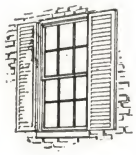






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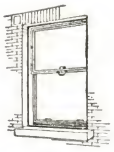
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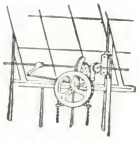
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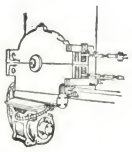
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LUPTON

STEEL PRODUCTS « « «

DAVID LUPTON'S SONS CO., Allegheny Ave. and Tulip St., Philadelphia
Sales representatives in principal cities - - - Member Solid Section Steel Window Industry

Lupton Service

Lupton Service is maintained to assist you in solving your problems in daylighting and natural ventilation. We will welcome the opportunity to work with you in submitting tentative designs showing practical application of any of our products.

By careful study, research and experimentation, we are constantly producing refinements and new designs to meet the increasingly exacting requirements of modern building construction.

In the following pages we present information concerning our products, to assist you in the preparation of details and specifications. Irrelevant matter has been eliminated. Text is used to supplement drawings only where it is necessary to give a clear idea of construction or application of our products.

Details are typical, showing construction and general principles underlying satisfactory installation.

Lupton Products are designed to give full investment value and to this end we offer our service and cooperation in whatever degree required to obtain desired results in the natural daylighting and ventilating of your buildings.

ADDITIONS AND CHANGES

Since the printing of the 1931 Sweet's Architectural Catalogues, new products have been developed and changes made in existing ones. For convenience the more important additions and modifications are listed here. Newly developed products are as follows: Screened Casements, Master Casements, Georgian Windows, Master Office Windows, Master Projected Windows and Double Hung Windows Types G and H.

Details and Specifications for Detention Windows of the double hung type have been included. Corrugated Wire Glass details have been transferred to another part of Sweet's Catalogue under "Skylights." Casements previously referred to as Heavy Type Casements are now called Custom Built Casements. The number of standard types of Residence Casements has been revised in accordance with the recommendations of the industry.

Listing

To insure accurate estimates, all products should be accurately listed and located either in schedules on plans or in specifications. If more than one type of product or type of hardware is desired, each type should be separately listed and located or otherwise clearly designated.

Erecting

Where preferred, we will erect any of our products, but stock items such as Pivoted, Basement and Residence Casement Windows are usually more economically erected by the general building contractor.

All other Lupton Products, however, because of their special application should be erected by our own forces to assure satisfactory installation and service.

There is an erection specification prepared for each product which should be exactly followed and which will secure satisfactory use of product at reasonable cost.

Glazing

Glazing should be done by experienced steel window glaziers. We suggest that glazing of Pivoted, Basement, Commercial and Architectural Projected and Residence Casement Windows be handled by others. However, we will arrange for glazing of any of our products when this is preferred. When glazing, the glass should be bedded in putty to form a watertight seal and to prevent glass touching metal.

Putty

Always specify steel window putty for glazing steel windows. Ordinary putty intended for wood windows will not be satisfactory as it dries hard and cracks away from steel. Because various climates require variations in the ingredients of satisfactory putty, we recommend that putty be obtained from local sources. When this is impossible, putty may be secured from the Lupton Company or its sales representatives.

Calking

See calking specification for each product. The calking cement furnished by Lupton is elastic, dark gray in color and will not stain masonry. When Lupton applies calking, application is for weathertightness only and is understood not to be a finished pointing job. Erector spreads cement on edge of window and strikes off excess after window is set in place.

Painting

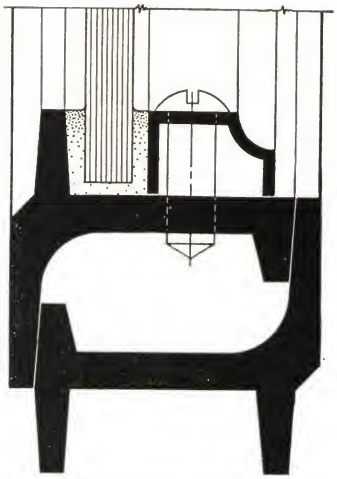
All Lupton Products are given a shop coat of paint before shipment. After glazing, no painting should be done until putty has set (about three weeks). It is advisable to hold the painting contractor responsible for cleaning plaster or other foreign matter from the weathering surfaces of the windows in order that it may not be painted over and cause imperfect contact.

LUPTON CASEMENTS

The several types of casements here illustrated have been developed by Lupton to meet the varying requirements of modern building construction.

Their distinctive appearance, durability and continued ease of operation appeal to architect, owner and tenant.

Lupton Casements are made by skilled craftsmen, experienced in casement work and familiar with the high degree of perfection required in this type of window. The fine quality implied when casements are specified is assured by rigid inspection and close adherence to manufacturing standards.



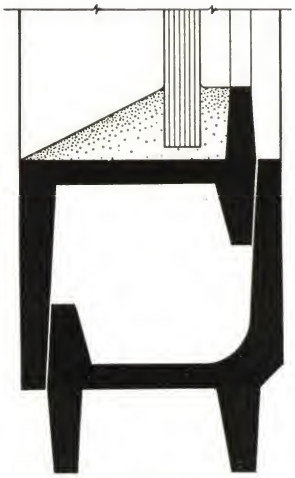
Custom Built Casement
Typical Section
Full Size

Custom Built Casements

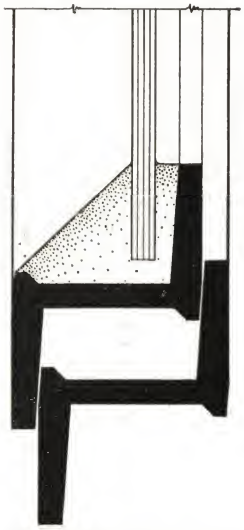
Custom built to meet the most exacting requirements for monumental buildings, etc. Built to sizes and designs as established by the architect. Typical units indicated on page 6 may be combined in steel plate frames or otherwise to form large windows. Usually inside glazed, though outside putty glazing is permissible.

Master Casements

A new design. Made in standard sizes, with or without muntins. Suitable for fine residences and similar type construction. Improved locking and operating hardware and screens offer an ingenious and practical solution to the screening problem. Outside glazed.



Master Casement
Typical Section
Full Size



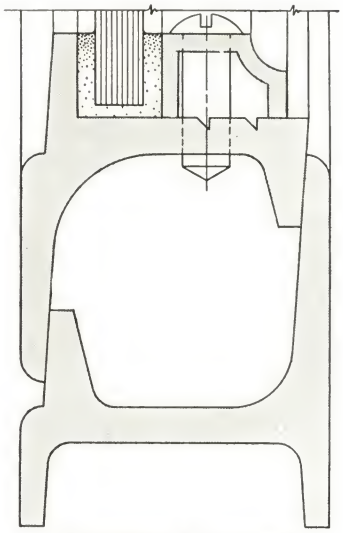
Residence Casement
Typical Section
Full Size

Residence Casements

Casements of standard and stock sizes and designs with improved hardware permitting operation without removal of screen. Used in residences or wherever a casement is required in smaller size openings. With or without muntins. Outside glazed.

Aluminum Casements

These casements made of a non-corroding alloy, never need painting and have a natural color quite in the spirit of modern decoration. Custom built. Inside glazing is recommended.

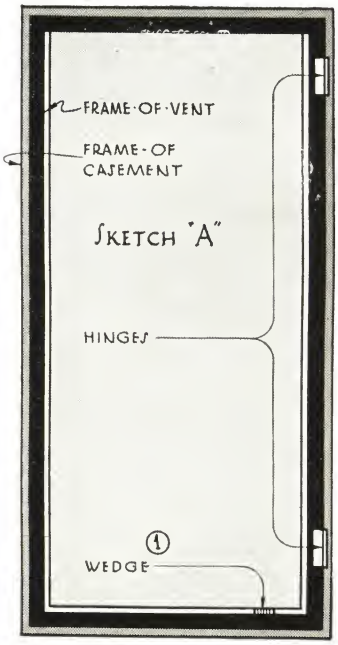


Aluminum Casement
Typical Section
Full Size

GEORGIAN WINDOWS

A new Lupton window of steel, the slender lines of which are reminiscent of the graceful Georgian period. Designed for use in residences, apartments or other buildings where architectural style or personal preference dictates the choice of a double hung window. Detailed information is given on pages 48 to 53.

CASEMENT GLAZING



To assure satisfactory service, weathertightness, and neat appearance, glazing should be done by experienced glaziers, using special steel window putty. (See page 3.)

Glazing Side Hinged Casements

All side hinged vents will eventually sag and rub on the bottom frame rail unless the following correct glazing method is used:

1. Check casement to see that vent seats properly and that outer frame has not been twisted or sprung in masonry opening.
2. Bed vent frame with putty.*
3. Set wood wedge and glass in position in vent frame as shown in Sketch "A."
4. Open and close vent several times to seat glass.
5. Open the vent slightly and with a chisel or other lever placed between bottom of vent and frame of window at point (2) Sketch "B" spring entire vent upward. This will open up the space between vent and glass at point (3) Sketch "B." Insert another wood wedge at point (3) before pressure is released on lever.
6. Wedges must be tight and are left permanently in place. Puttying can now be completed or glazing beads attached.



Outside Glazing

Glass should be bedded in putty* and small wooden wedges inserted to prevent squeezing out putty due to pressure on glass.

Glazing stops are carefully fitted and attached in our shop. When glazing, care should be taken to get each piece of moulding back in its original position.

Several types of glazing beads are available for steel casements. All have the same overall dimensions. Standard type (Sec. 377) is cold rolled from 16 gauge steel.

Alternate types are, a hot rolled steel bead (Sec. 379) retaining the advantages of a solid bead without needless weight; and an extruded bronze bead (Sec. 380). An extruded bronze bead (Sec. 378) with a channel in its upper surface for collecting condensation may be had if desired, but usually is unnecessary.

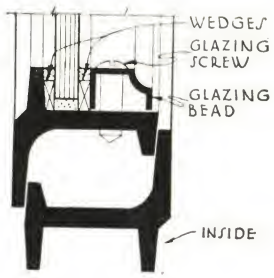
Aluminum casements have aluminum beads fastened with aluminum screws.

Inside Glazing

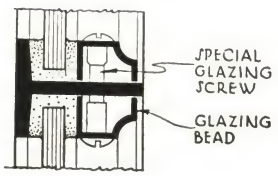
Glass should be bedded in putty* and small wooden wedges inserted to prevent squeezing out of back putty. Glazing angles or clips should then be attached and face putty carefully applied and beveled so as to preserve even sight lines.

Outside glazing is not recommended for aluminum casements.

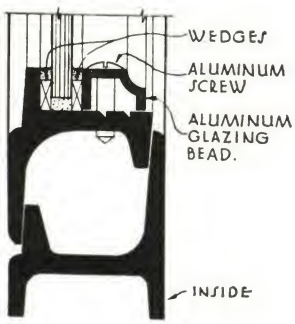
Putty
see page 3



CUSTOM BUILT CASEMENTS



MUNTIN

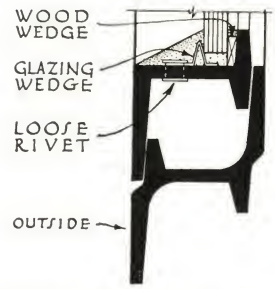


ALUMINUM CASEMENTS

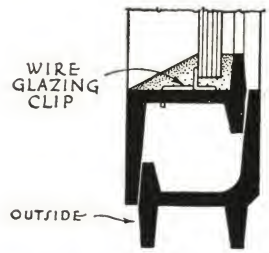


GLAZING STOPS FOR CUSTOM BUILT CASEMENTS

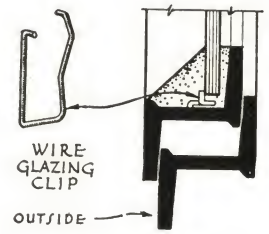
Scale :- All sections shown here are Half Actual Size.



MASTER OFFICE AND PROJECTED WINDOWS



MASTER CASEMENTS

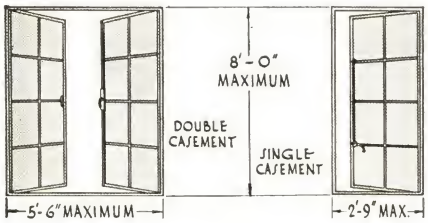


RESIDENCE CASEMENTS

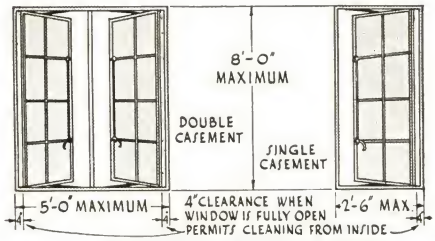
CUSTOM BUILT CASEMENTS

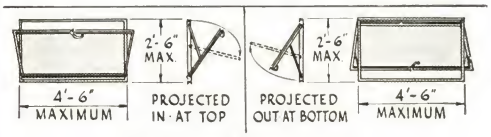
Custom Built Casements are designed for use in the most lasting forms of building construction—monumental and public buildings, university buildings, libraries, fine residences, clubs, hotels and like structures. Built with the finest craftsmanship to sizes specified by the architect. Lupton will gladly co-operate in submitting tentative designs and details.



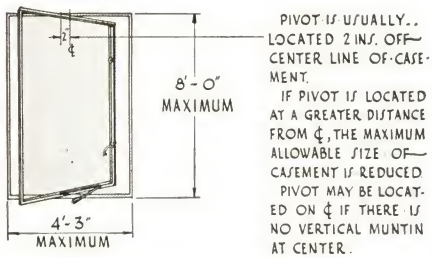


Side Hinged Casements

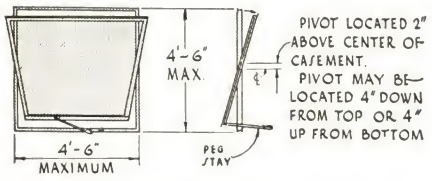




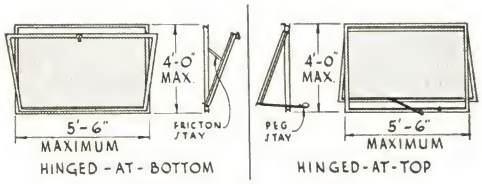
Projected Casements



Vertically Pivoted Casements



Horizontally Pivoted Casements



Top and Bottom Hinged Casements

Side Hinged Casements

Swing-out casements are recommended in preference to swing-in or vertically pivoted casements. In addition to their superior weathering, they do not interfere with draperies when open.

Hinges are bronze butts or malleable iron friction hinges, as specified.

Single casements and double casements with fixed meeting stile have locking handles. Double, folding casements (illustrated) have exposed or concealed cremone bolt. Sliding adjusters are used if friction hinges are not specified.

Projected Casements

Made in three types as illustrated. Adjustable bronze friction device hold casement open at any angle without stay bars, etc. There is no protruding hinge, yet both sides of glass can be cleaned from inside the building. Can be readily screened and shaded.

Out-at-side type have locking handles. Double casements must have fixed meeting stiles.

Out-at-bottom and In-at-top types are usually used for transoms, but may be placed one above another to form a large window. Operation is by locking handles or spring catches. Cannot be used with mechanical operators.

Vertically Pivoted Casements

Not recommended, except where width desired is too great for side hinged casement. Pivot is usually placed 2 in. off center. Pivot may be nearer jamb but this reduces maximum size.

Casements are usually equipped with locking handles and peg stays.

Horizontally Pivoted Casements

Usually used for transoms or as ventilating units in large windows where casement operators described on pages 00 to 00 are used. When hand operated, top and center pivoted casements within reach are equipped with peg stays. Bottom pivoted may have spring catch or cam handle and friction stays.

Top Hinged and Bottom Hinged Casements

Used as transoms and with mechanical operators described on pages 21 to 25. When hand operated, top hinged casements have stay bar; bottom hinged casements have spring catch or locking handle and friction stay.

General

Fixed units may be of any size within reasonable limits.

Casements may be inside or outside glazed and may be made with or without muntins.

Units may be combined to form composite windows using mullion and impost bars, or 13 gauge formed steel plate mullions and imposts. See pages 10 to 14.

When viewed from the outside a left-hand casement has hinges on left side and a right-hand casement has hinges on right side.

Hardware is shown on pages 8 and 9.

CUSTOM BUILT CASEMENTS

SPECIFICATIONS

Work Included

1. Furnish and install where shown on drawings, Lupton Steel Custom Built Casements as manufactured by David Lupton's Sons Co., Philadelphia, Pa.

Materials

2. Frame and ventilator members shall be made of copper-bearing rust-resisting steel specially rolled in solid, one-piece sections. Bars shall be straightened and sand-blasted.

3. Muntins shall be specially designed steel T bar section.

4. Vertical mullions shall be specially designed steel H section. Imposts shall be specially designed steel lug bars.

Note:—Two sizes of lug bars are standard, the width of the section being 4 in. for the large bar and 2½ in. for the small one. The large bar is used for the larger multiple unit casement windows.

Construction

5. All casement windows shall be designed for inside glazing with metal glazing stops (or, specify outside glazing).

6. All casement windows shall be straight and true, members in alignment and surfaces in a plane.

7. Ventilator and frame members shall be mitered at corners and solidly butt welded. Exposed welded surfaces shall be ground flush with members. The frame and ventilator shall form a two-point, flat, continuous, weathering contact.

8. Muntin bars shall be continuous from top to bottom and from side to side between frame members or ventilator members. They shall be attached to frame members or ventilator members by tenoned, riveted joints and shall be interlocked and welded at their intersections so as not to decrease their ultimate strength.

9. Provide mullions and bolts for attachment wherever two or more units are placed side by side in an opening.

10. Provide imposts and bolts for attachment wherever two or more units are placed one directly above the other in an opening.

11. At the head of all open out ventilators a No. 16 gauge formed steel hot galvanized weather bar shall be used, except when condition necessitates the use of a lug bar, the lug bar shall be bent and used as weathering bar.

12. Furnish No. 14 gauge steel strap anchors where shown on details for anchoring in masonry.

*Note:—(a) Specify No. 13 gauge steel continuous anchors if desired.**

*(b) If plate subframes (shown on pages 13 and 14) are desired, specify: "Frames formed of 13 ga. steel plate with profile as shown on details shall be furnished. Units shall be welded and exposed part of weld ground flush."**

Glazing Stops

13. Glazing stops shall be of detail shown on window manufacturer's standard drawings and shall be made of drawn rolled steel. All stops shall be accurately coped and fitted.

Note:—See details on page 15.

Hardware

14. Hinges shall be attached and painted with casements in factory.

Note:—Five types of hinges are available. See pages 8 and 9. Specify the type desired.

(a) Solid bronze butt hinges with steel pins.

*(b) Close-up friction hinges of malleable iron or bronze.**

*(c) Extended friction hinges of malleable iron or of bronze.**

15. Hardware listed below shall be fitted in factory, and shipped unattached, carefully packed to prevent damage.

Note:—Standard hardware is illustrated on the two pages immediately following. Types required (see preceding page) should be listed here. Standard hardware is solid bronze with polished (U. S. No. 9) finish (not lacquered). Other finishes can be furnished if definitely specified. Hardware can be furnished also in malleable iron with painted finish or bronze plated. Malleable iron must be used for Underwriters' Labeled casements. See pages 19 to 21 for Casement Door Hardware.*

*Screened Casements**

Note:—Where casements are to be screened, hardware and screens may be similar to that for Screened Master Casements. See pages 31 and 32.

Calking Cement

16. The window manufacturer shall furnish non-staining elastic calking cement (as indicated on window manufacturer's standard details) in quantities sufficient to make head, sill, jambs, mullions and imposts weathertight. Wooden filler-strips shall be furnished and used where indicated on details. (See page 3.)

Note:—Where casements are to bear Underwriters' label, filler strips must be of metal.

Erection

17. All casement windows shall be erected in prepared openings by the window contractor. (See page 3.)

18. All casement windows shall be set plumb and true, properly aligned and securely anchored before glazing. Mullions and imposts shall be bolted securely to frames. Calking cement and filler-strips shall be neatly applied at points indicated on window manufacturer's standard details.

Note:—Include in the masonry specifications that all masonry openings shall be accurately constructed in accordance with the installation details for Casement Windows. All grouting, pointing, etc., should be done by the mason contractor after the windows are set.

Glass and Glazing

Note:—(See also pages 3 and 5). Specify glass and glazing under proper heading elsewhere in general specifications of other trades.

(a) Do not specify single thickness glass.

(b) Specify a high grade steel Casement putty.

(c) Specify that all casement windows shall be glazed from the inside, the glass set in a bed of putty and held by the Lupton metal glazing stops, (or)

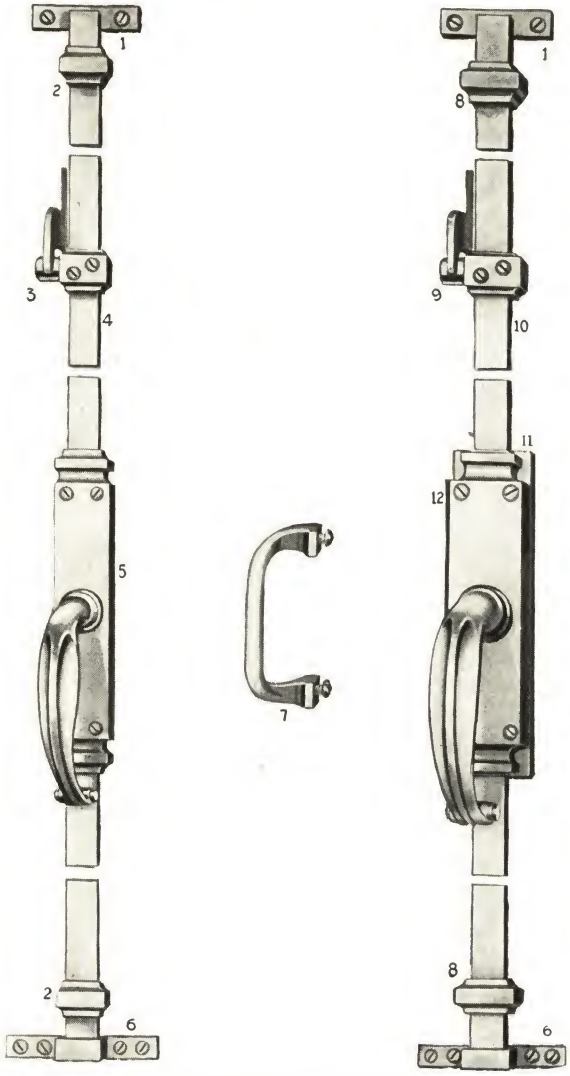
(d) That all casement windows shall be glazed from the outside, the glass set in a bed of putty and held by glazing clips.

**Note*

No. 13 gauge steel continuous anchors, friction hinges of malleable iron or bronze, plate subframes, screens, and special hardware, or special hardware finishes, will be furnished if clearly specified, indicated on drawings, and mentioned in contract for windows.

HARDWARE for CUSTOM BUILT CASEMENTS

Hardware numbers given are for solid bronze hardware highly polished (unless otherwise noted). Hardware is also available in bronze in several special finishes and in malleable iron painted, or bronze plated. See note at bottom of page 7. Malleable iron must always be used on Underwriters' casements. See pages 19 to 21 for Casement Door Hardware.



Cremone Bolts for double casements consists of the following parts:

For casements up to 7 ft. high:

1. *Keeper No. 291 at top and bottom of swing out casements. Or*
6. *Keeper No. 285 at top and bottom of swing in casements.*
2. *Bar Guides No. 293 (spaced about 1 ft. apart).*
3. *Center latches and keepers (spaced about 2 ft. apart).*

No. 286 above handle.
No. 292 below handle.

4. *Bronze bar ½x¼ in.*
5. *Handle and case No. 290.*
7. *Pull handle No. 237.*

For casements over 7 ft. high:

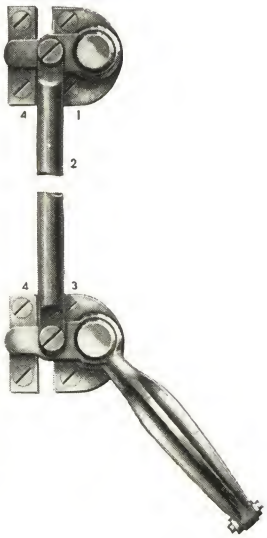
1. *Keeper No. 291 at top and bottom of swing out casements. Or*
6. *Keeper No. 285 at top and bottom of swing in casements.*
8. *Bar Guides No. 340 (spaced about 1 ft. apart).*
9. *Center latches and keepers (spaced about 2 ft. apart.)*

No. 337 above handle.
No. 338 below handle.

10. *Bronze bar ⅝x¼ in.*
11. *Malleable iron base plate No. 146.*
12. *Handle and case No. 256.*
7. *Pull handle No. 237.*

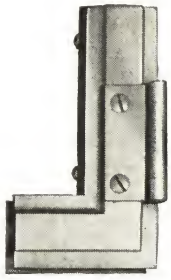
Double locking device for side hinged, swing out and vertically pivoted casements 4 ft. to 8 ft. high consists of the following:

1. *Auxiliary latch No. 390.*
2. *½ in. steel tube.*
3. *Locking handle (as shown No. 392 or opposite hand No. 393).*
4. *Wedge Plate No. 601. This device is also used for swing in casements 4 ft. to 8 ft. high. When used on swing in casements wedge plates are replaced by single or triple keepers shown at bottom of this page.*

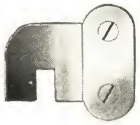




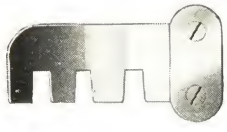
Locking handle No. 386 and wedge plate No. 601 for side hinged or vertically pivoted casements up to 4 ft. high. (Opposite hand No. 387.)



Bronze butt hinge No. 2200 used on hinged casements unless another type is specified. Hinges have steel pins and painted finish.



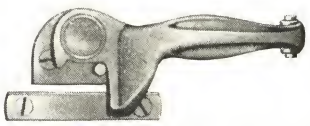
Single Keeper No. 396 for swing in casements (opposite hand No. 397).



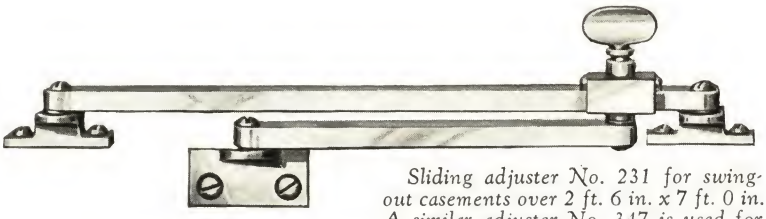
Triple Keeper No. 398 for swing in casements (opposite hand No. 399).

HARDWARE for CUSTOM BUILT CASEMENTS

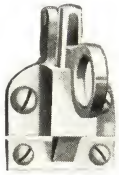
Hardware numbers given are for solid bronze hardware highly polished (unless otherwise noted). Hardware is also available in bronze in several special finishes and in malleable iron painted, or bronze plated. See note at bottom of page 7. Malleable iron must always be used on Underwriters' Casements. See pages 19 to 21 for Casement Door Hardware.



Locking handle No. 374 for open-out-at-bottom ventilators.



Sliding adjuster No. 231 for swing-out casements over 2 ft. 6 in. x 7 ft. 0 in. A similar adjuster No. 347 is used for smaller casements not less than 1 ft. 6 in. wide.



Spring catch No. 243 for open-out-at-bottom ventilators beyond reach from floor.



Peg stay No. 209 for horizontally pivoted casements. A similar stay No. 249 or a stay terminating in a scroll (No. 250) is used on vertically pivoted casements.



Locking handle No. 388 for open-in-at-top ventilators.



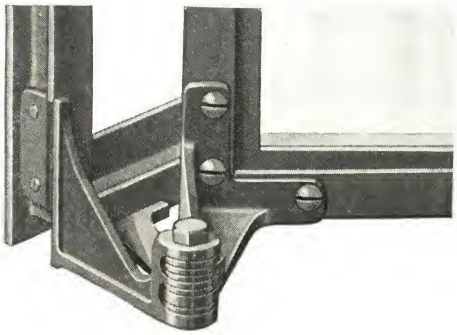
Interior sliding adjuster No. 236 for swing-in casements.



Spring catch No. 248 for open-in-at-top ventilators beyond reach from floor.

Pull down ring No. 358 for open-out-at-bottom ventilators beyond reach from floor.

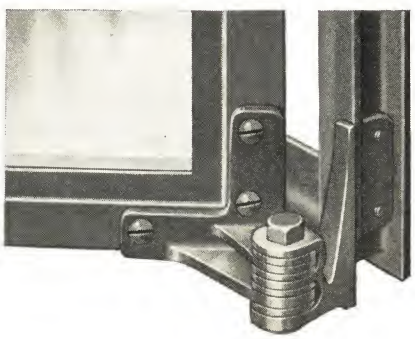




Friction hinges hold casements at the desired degree of opening up to 180° without the use of adjusters. Made of malleable iron or bronze with painted finish. Bronze washers and cadmium plated pins assure smooth operation.

(At left) Extended hinge permits cleaning the glass from inside the building. Opens 180°.

(At right) Close-up hinge. Opens 180°.

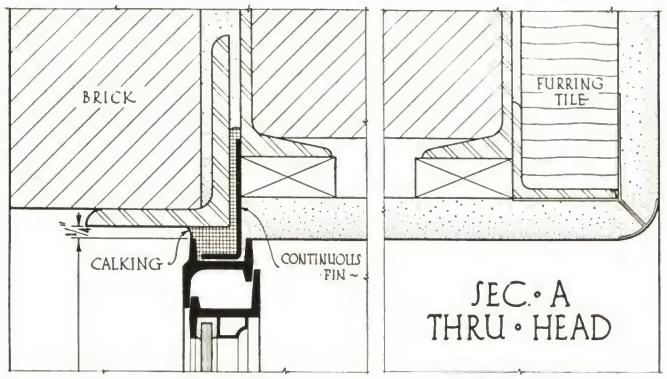


Note: Application of hinges is limited by the width of casements as follows:

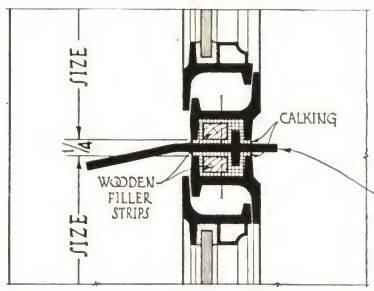
Minimum over-all width of casements	With extended hinge	With close-up hinge
Single Casement	1 ft. 4⅝ in.	8⅝ in.
Double Casement	2 ft. 7¼ in.	1 ft. 3¼ in.

CUSTOM BUILT SIDE HINGED CASEMENTS WITH PROJECTED TRANSOMS

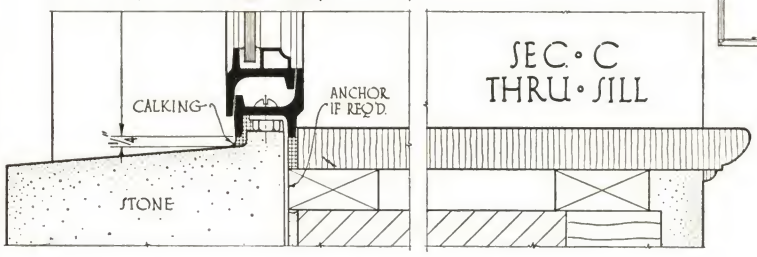
SCALE FOR DETAILS 3"=1'-0"



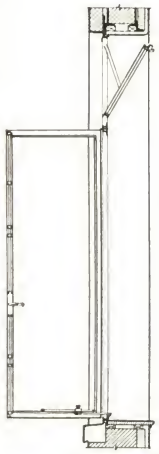
SEC. A THRU. HEAD



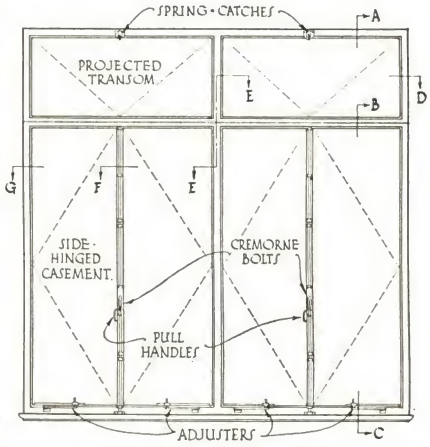
SEC. B THRU. IMPOST



SEC. C THRU. SILL



SECTION VENTILATORS OPEN



INSIDE ELEVATION VENTILATORS CLOSED

SCALE 1/4"—1'-0"

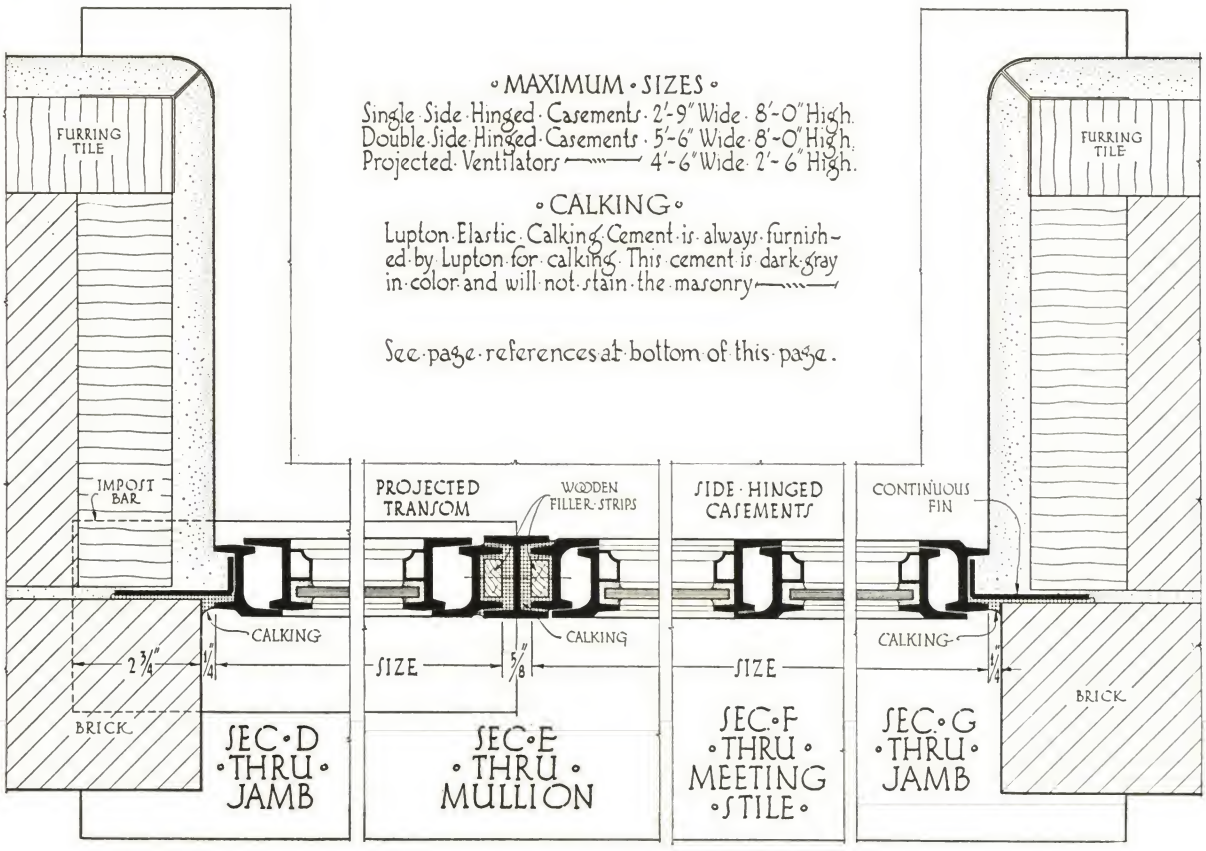
MAXIMUM SIZES

Single Side Hinged Casements 2'-9" Wide 8'-0" High.
Double Side Hinged Casements 5'-6" Wide 8'-0" High.
Projected Ventilators 4'-6" Wide 2'-6" High.

CALKING

Lupton Elastic Calking Cement is always furnished by Lupton for calking. This cement is dark gray in color and will not stain the masonry

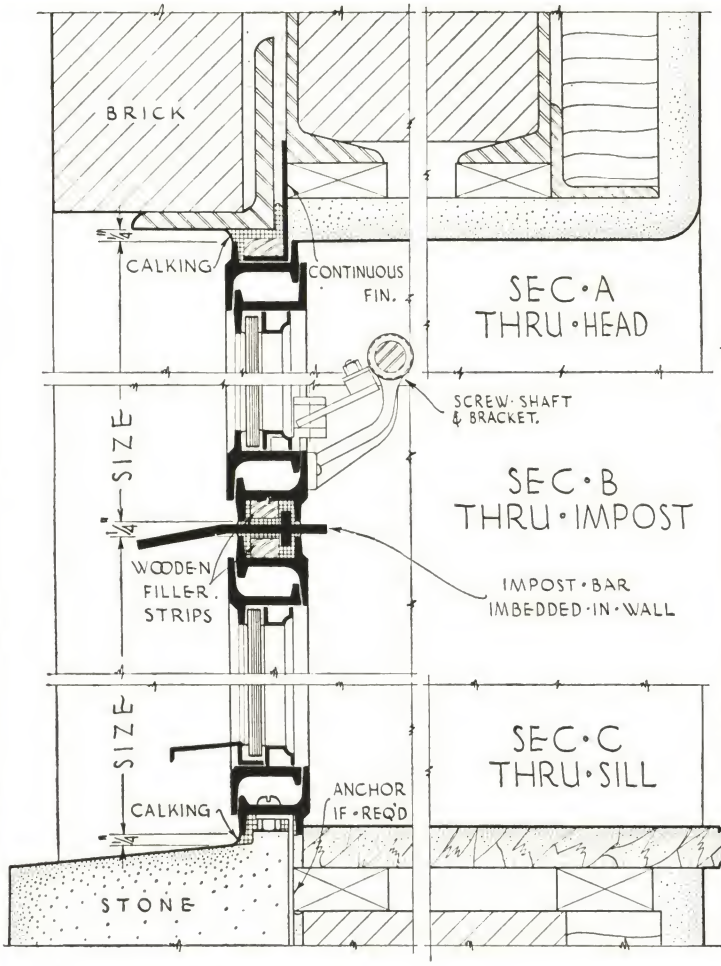
See page references at bottom of this page.



Page references—General Information and Calking, pages 3 and 4; Glazing, page 5; Types of Casements, page 6; Specifications, page 7; Hardware, pages 8 and 9; Full Size Sections, pages 15, 16 and 17

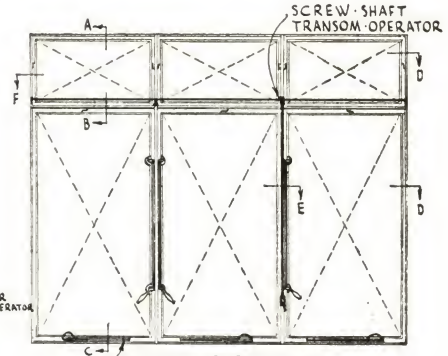
CUSTOM BUILT VERTICALLY PIVOTED & HORIZONTALLY PIVOTED CASEMENTS

SCALE FOR DETAILS 3"=1'-0"

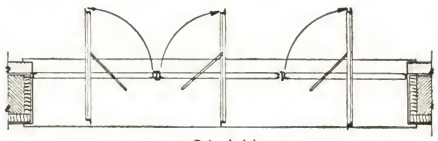




SECTION



INSIDE·ELEVATION



·PLAN·
VENTILATORS·OPEN

SCALE 3/16" = 1'-0"

·NOTES·

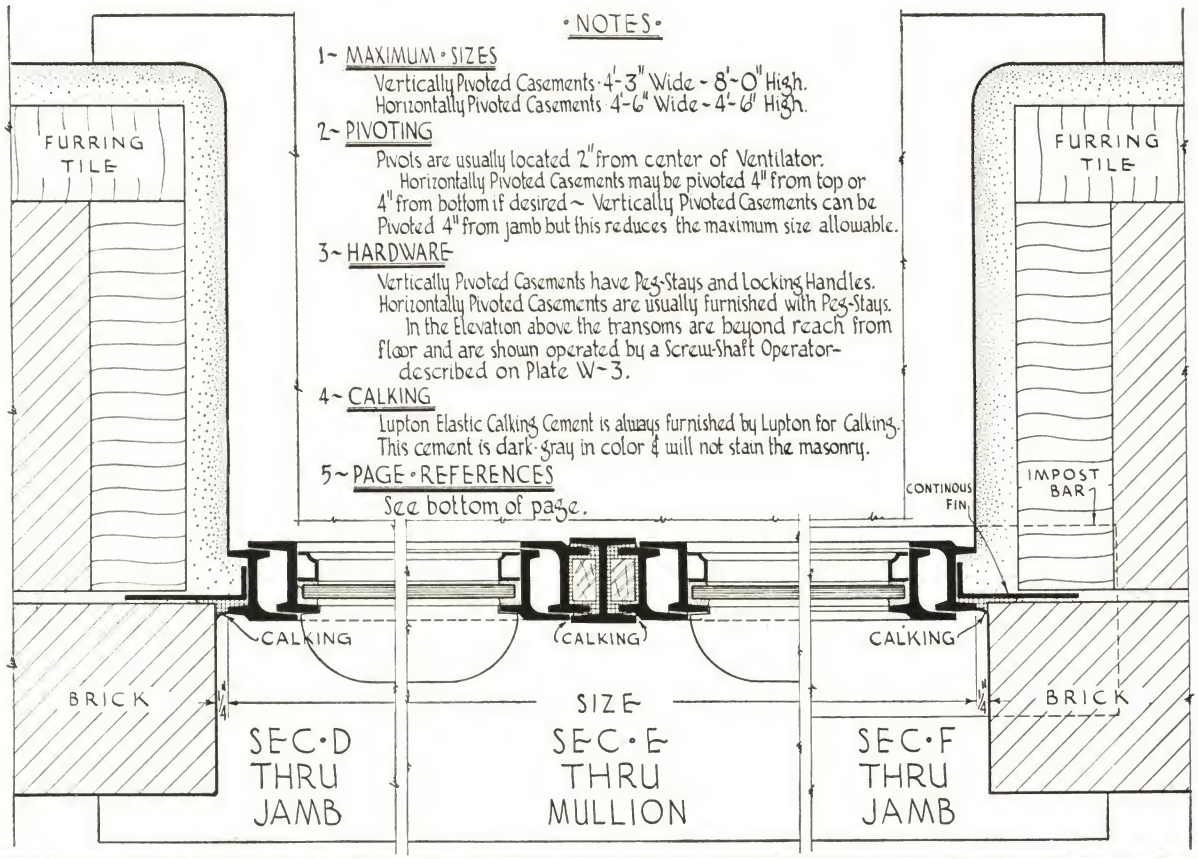
1~ MAXIMUM·SIZES
Vertically Pivoted Casements·4'-3" Wide ~ 8'-0" High.
Horizontally Pivoted Casements 4'-6" Wide ~ 4'-6" High.

2~ PIVOTING
Pivots are usually located 2" from center of Ventilator.
Horizontally Pivoted Casements may be pivoted 4" from top or 4" from bottom if desired ~ Vertically Pivoted Casements can be Pivoted 4" from jamb but this reduces the maximum size allowable.

3~ HARDWARE
Vertically Pivoted Casements have Peg-Stays and Locking Handles.
Horizontally Pivoted Casements are usually furnished with Peg-Stays.
In the Elevation above the transoms are beyond reach from floor and are shown operated by a Screw-Shaft Operator-described on Plate W~3.

4~ CALKING
Lupton Elastic Calking Cement is always furnished by Lupton for Calking.
This cement is dark-gray in color & will not stain the masonry.

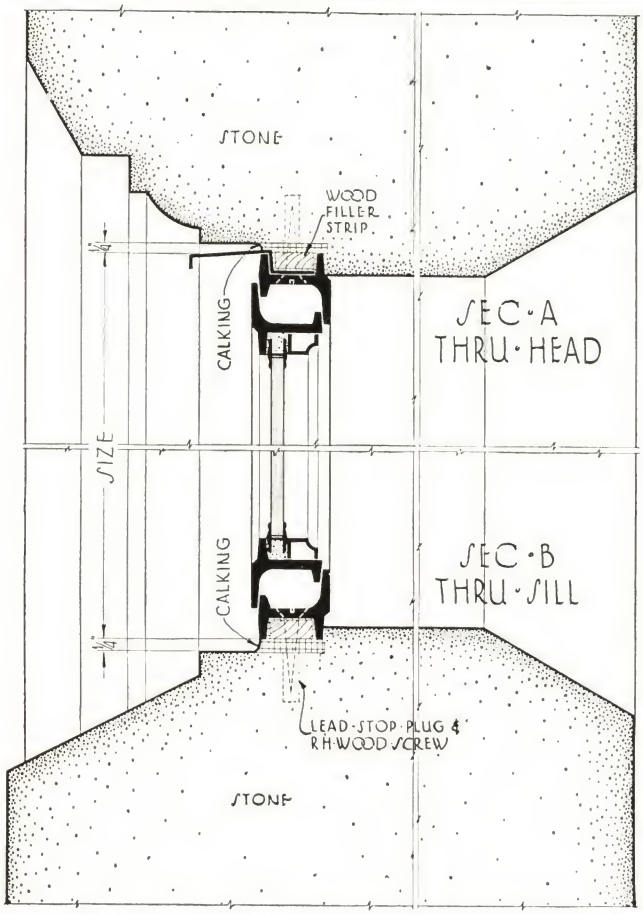
5~ PAGE·REFERENCES
See bottom of page.

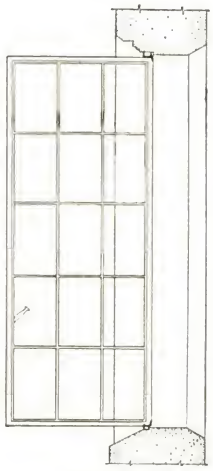


Page references—General Information and Calking, pages 3 and 4; Glazing, page 5; Types of Casements, page 6; Specifications, page 7; Hardware, pages 8 and 9; Full Size Sections, 15, 16 and 17; Casement Operators, page 21

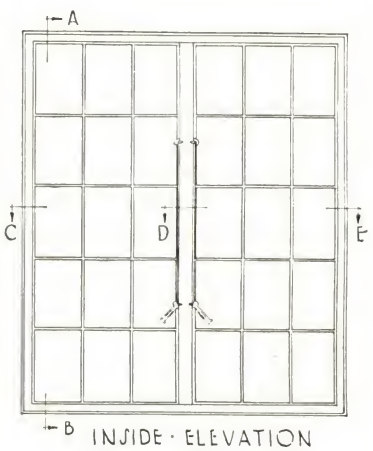
CUSTOM BUILT PROJECTED CASEMENTS

SCALE FOR DETAILS 3"=1'-0"

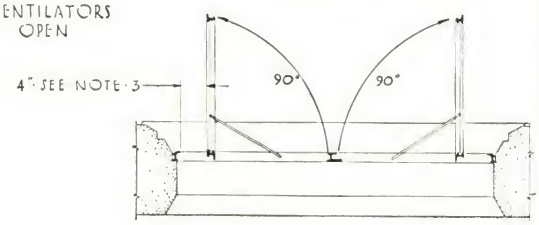




SECTION
VENTILATORS OPEN



INSIDE · ELEVATION
VENTILATORS · CLOSED



PLAN
VENTILATORS·OPEN

NOTES

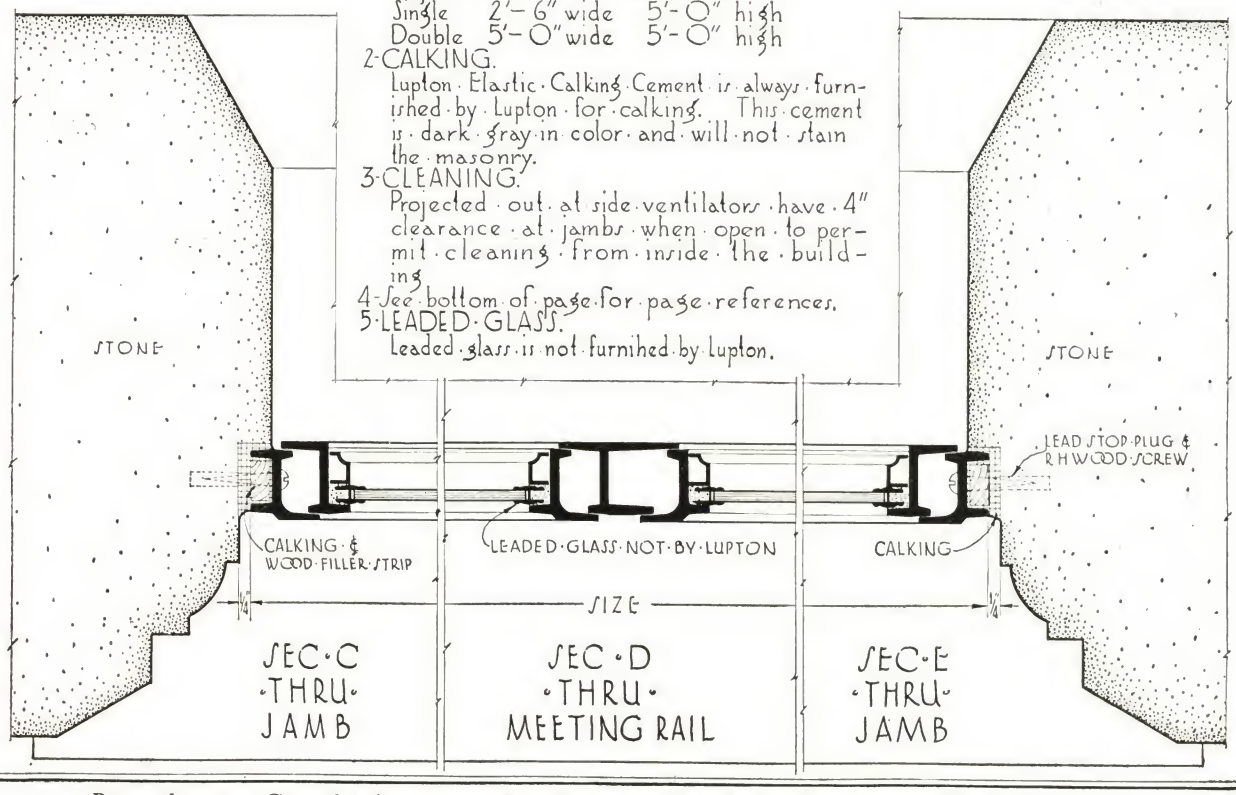
1-MAXIMUM·SIZES.
Projected·Out·at·Side·Casements.
Single 2'-6" wide 5'-0" high
Double 5'-0" wide 5'-0" high

2-CALKING.
Lupton·Elastic·Calking·Cement·is·always·furnished·by·Lupton·for·calking. This·cement is·dark·gray·in·color·and·will·not·stain the·masonry.

3-CLEANING.
Projected·out·at·side·ventilators·have·4" clearance·at·jambs·when·open·to permit·cleaning·from·inside·the·building.

4-See·bottom·of·page·for·page·references.

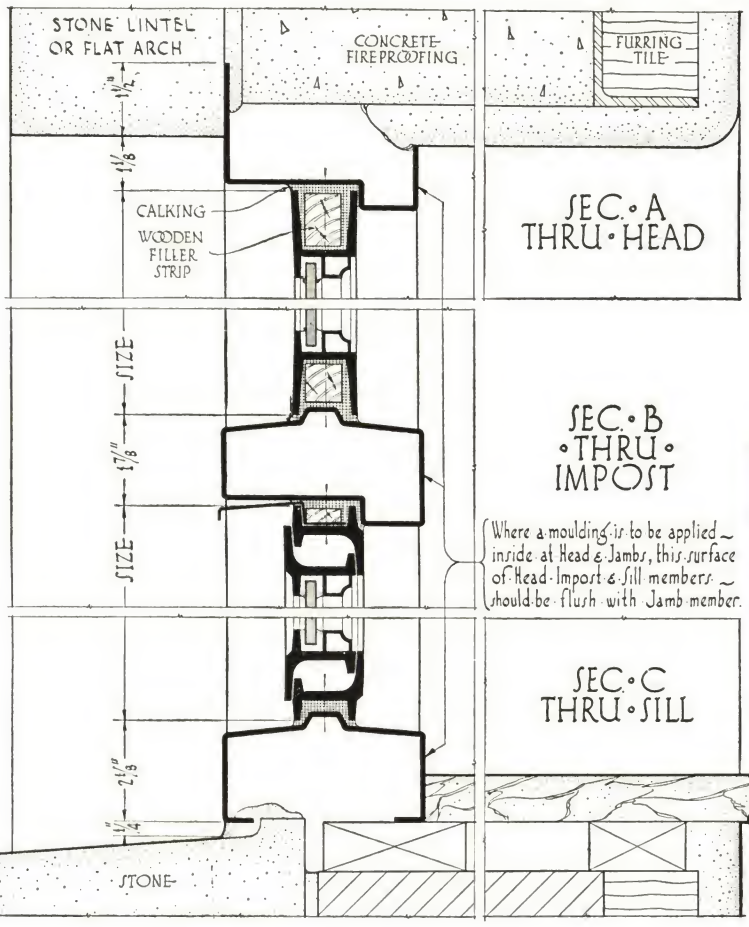
5-LEADED·GLASS.
Leaded·glass·is·not·furnished·by·Lupton.

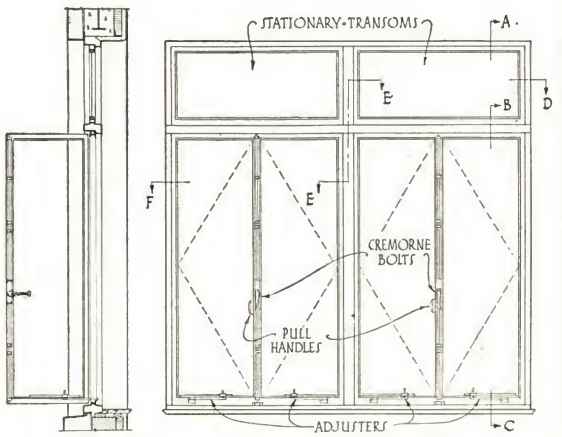


Page references—General Information and Calking, pages 3 and 4; Glazing, page 5; Types of Casements, page 6; Specifications, page 7; Hardware, pages 8 and 9; Full Size Sections, pages 15, 16 and 17

CUSTOM · BUILT CASEMENTS · WITH 4″ PLATE · SUB-FRAMES

SCALE FOR DETAILS 3″ = 1′-0″





SCALE · ¼″ = 1′-0″

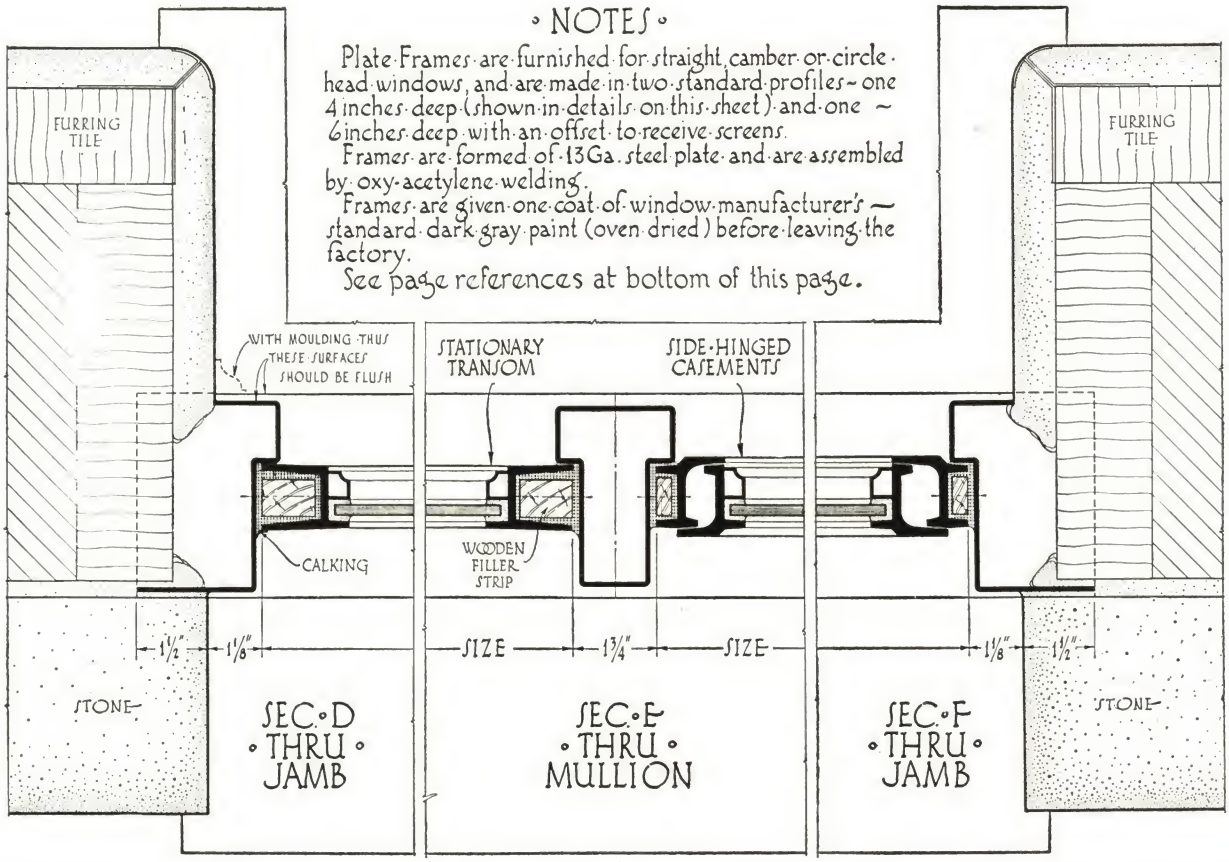
· NOTES ·

Plate Frames are furnished for straight, camber or circle head windows, and are made in two standard profiles ~ one 4 inches deep (shown in details on this sheet) and one ~ 6 inches deep with an offset to receive screens.

Frames are formed of 13 Ga. steel plate and are assembled by oxy-acetylene welding.

Frames are given one coat of window manufacturer's ~ standard dark gray paint (oven dried) before leaving the factory.

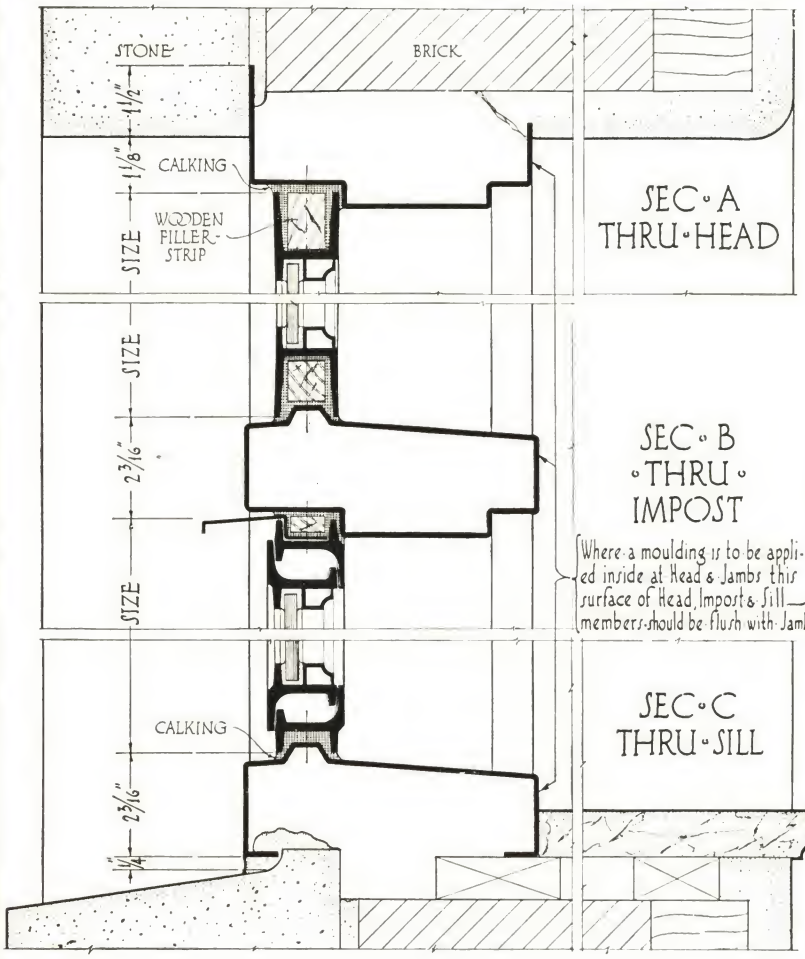
See page references at bottom of this page.



Page references—General Information and Calking, pages 3 and 4; Glazing, page 5; Types of Casements, page 6; Specifications, page 7; Hardware, pages 8 and 9; Full Size Sections, pages 15, 16 and 17

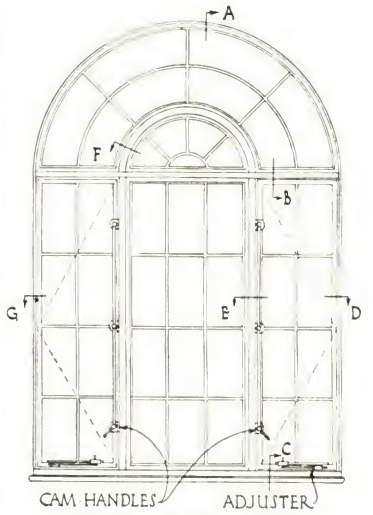
CUSTOM · BUILT CASEMENTS · WITH 6″ PLATE · SUB · FRAMES

SCALE FOR DETAILS 3″ = 1′-0″



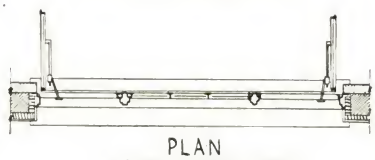


SECTION VENTILATORS OPEN



INSIDE · ELEVATION

SCALE ¼″ = 1′-0″

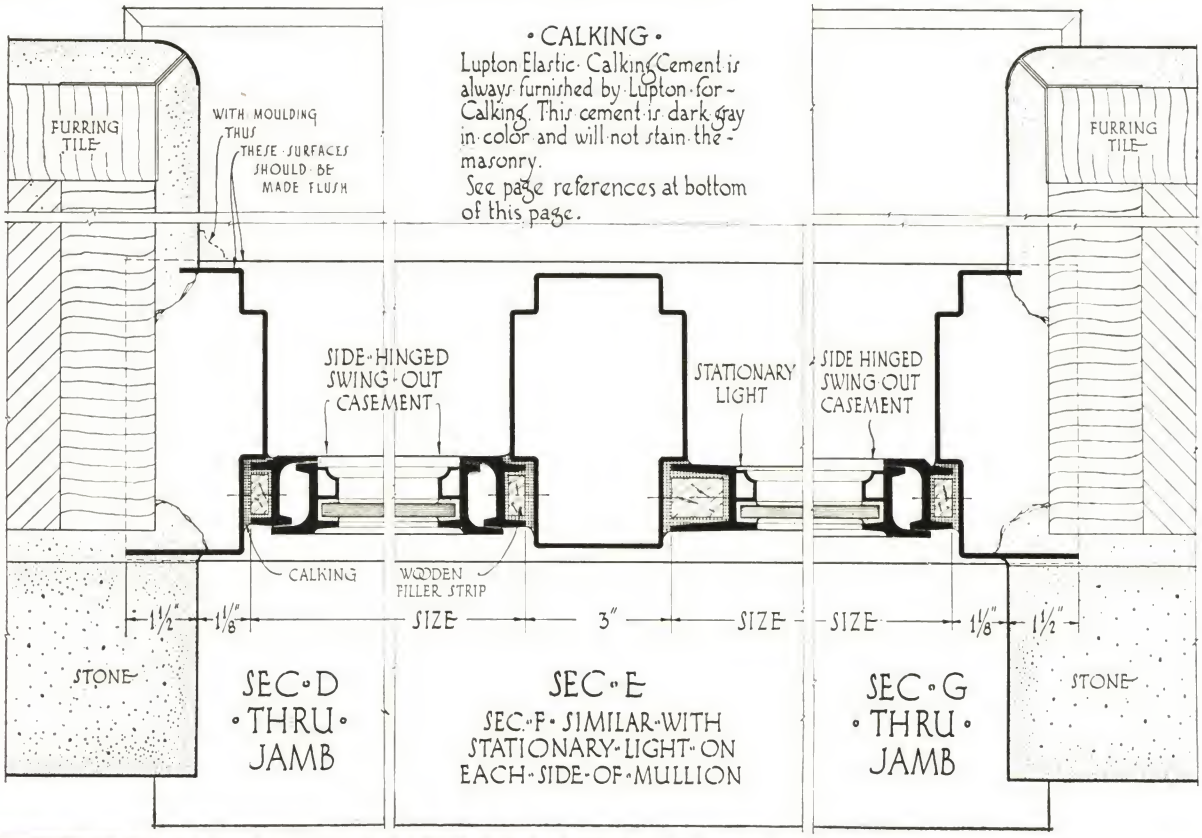


PLAN VENTILATORS · OPEN

· CALKING ·

Lupton Elastic Calking Cement is always furnished by Lupton for Calking. This cement is dark gray in color and will not stain the masonry.

See page references at bottom of this page.

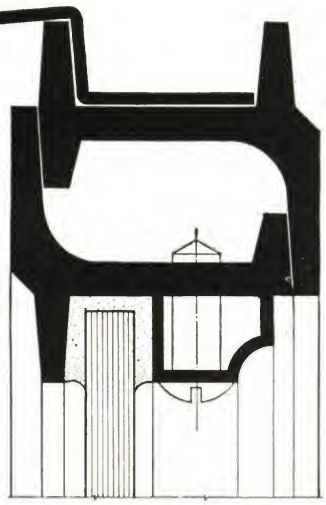


Page references—General Information and Calking, pages 3 and 4; Glazing, page 5; Types of Casements, page 6; Specifications, page 7; Hardware, pages 8 and 9; Full Size Sections, pages 15, 16 and 17

CUSTOM BUILT CASEMENTS
FULL SIZE SECTIONS

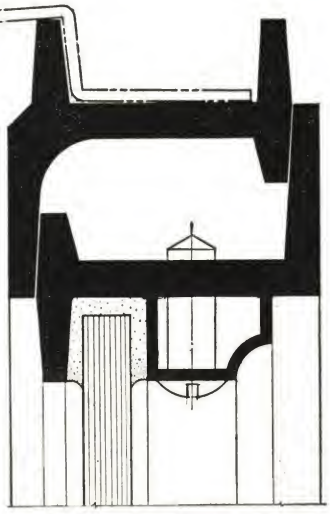
AT HEAD ONLY

HEAD FOR SWING OUT CASEMENTS
JAMB SIMILAR
USED ALSO FOR SWING OUT SIDE OF VERTICALLY PIVOTED CASEMENTS

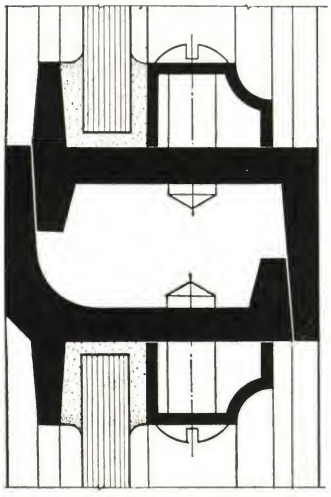


USED ONLY AT HEAD OF VERTICALLY PIVOTED CASEMENTS

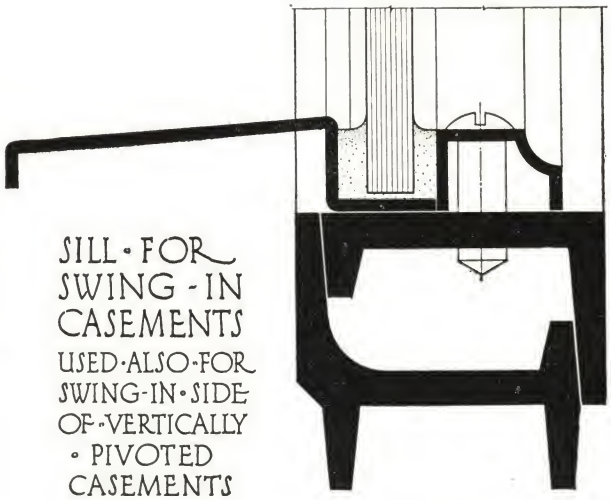
HEAD FOR SWING IN CASEMENTS
JAMB SIMILAR
USED ALSO FOR SWING IN SIDE OF VERTICALLY PIVOTED CASEMENTS



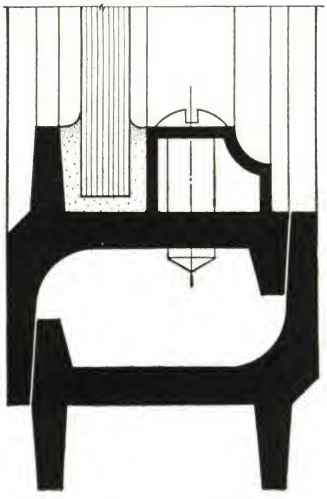
MEETING STILE FOR DOUBLE CASEMENTS
SWING OUT OR SWING IN



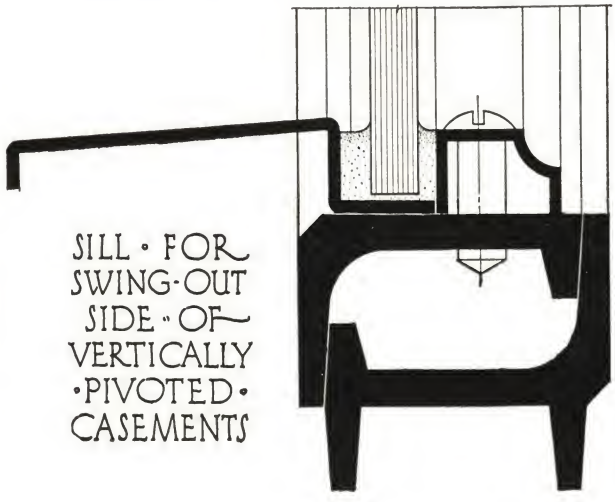
SILL FOR SWING IN CASEMENTS
USED ALSO FOR SWING IN SIDE OF VERTICALLY PIVOTED CASEMENTS



SILL FOR SWING OUT CASEMENTS

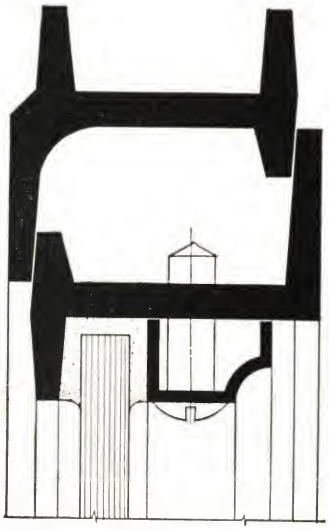


SILL FOR SWING OUT SIDE OF VERTICALLY PIVOTED CASEMENTS

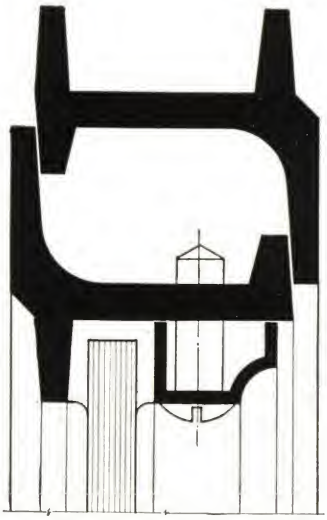


Page references—General Information and Calking, pages 3 and 4; Glazing, page 5; Types of Casements, page 6; Specifications, page 7; Hardware, pages 8 and 9

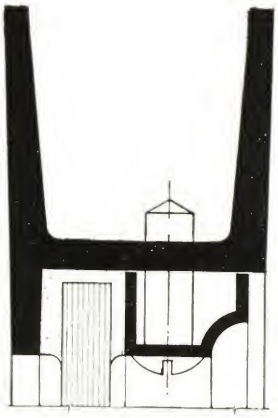
CUSTOM BUILT CASEMENTS
FULL SIZE SECTIONS



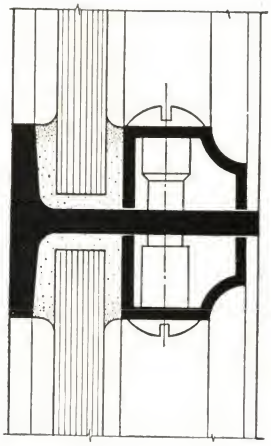
HEAD · FOR PROJECTED·OUT AT · BOTTOM · VENTILATOR
HEAD · & · JAMB · FOR · PROJECTED IN · AT · TOP · VENTILATOR · SIMILAR



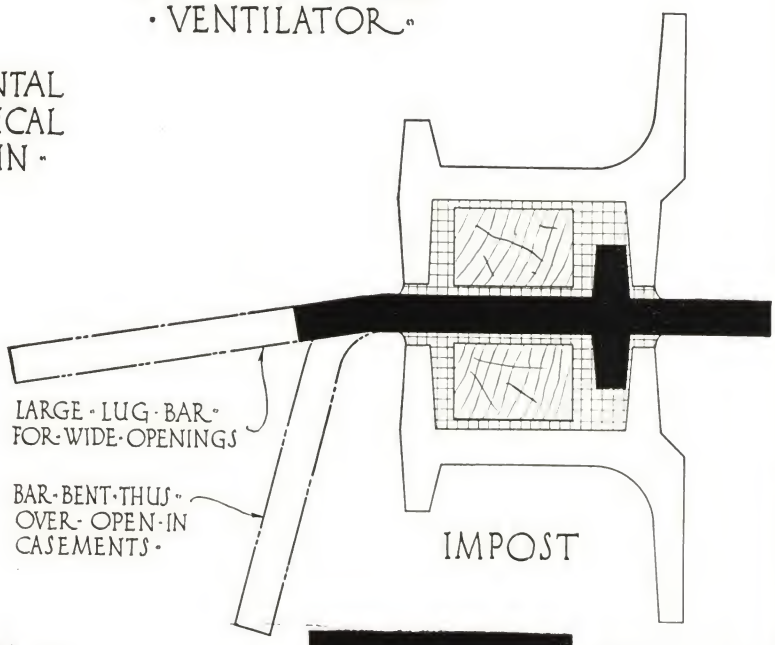
JAMB · FOR · PROJECTED · OUT · AT · BOTTOM · VENTILATOR

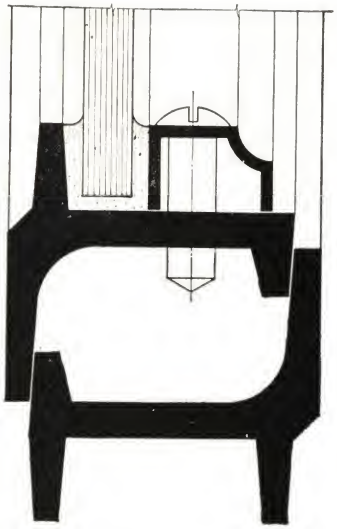


FRAME · MEMBER FOR · STATIONARY · LIGHT ·

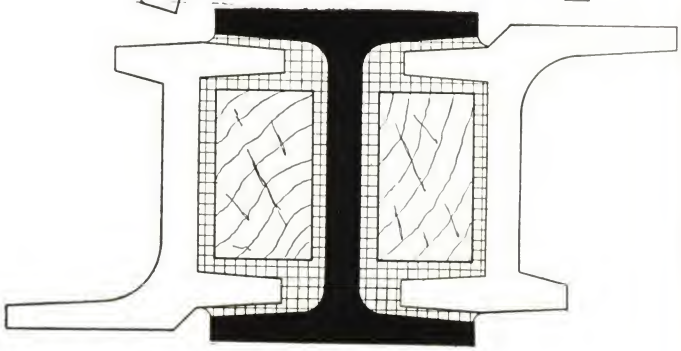


HORIZONTAL OR · VERTICAL · MUNTIN ·





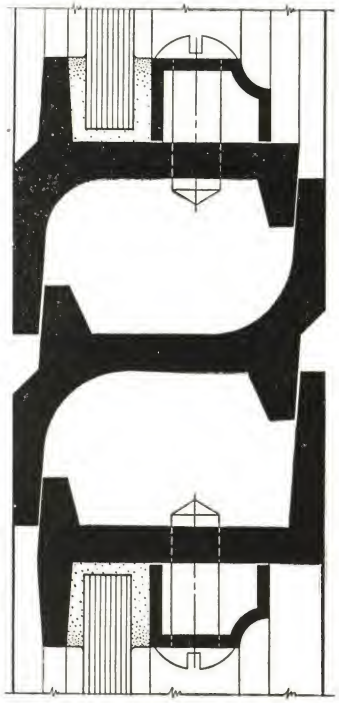
SILL · FOR PROJECTED·OUT AT · BOTTOM · VENTILATOR
SILL · FOR · PROJECTED · IN · AT · TOP · VENTILATOR · SIMILAR ·



MULLION

Page references—General Information and Calking, pages 3 and 4; Glazing, page 5; Types of Casements, page 6; Specifications, page 7; Hardware, pages 8 and 9

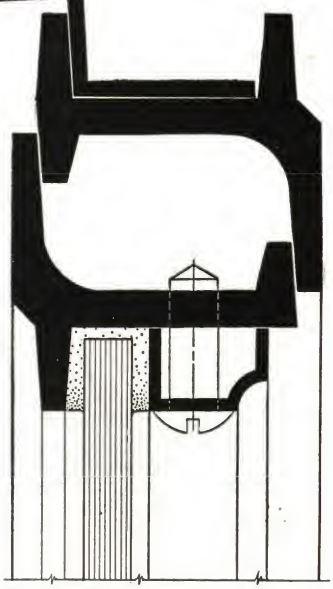
CUSTOM·BUILT·CASEMENTS ·FULL·SIZE·SECTIONS·

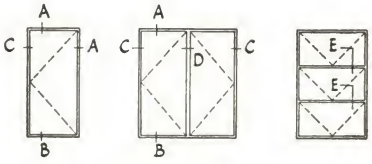


MEETING·RAIL
Section·E· between
PROJECTED
OUT *at* BOTTOM
·or·
PROJECTED
IN·*at*·TOP
VENTILATORS

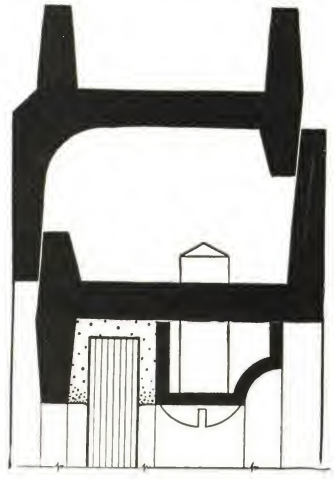


HEAD *or* JAMB
·Section·A·
for PROJECTED
OUT·*at*·SIDE
VENTILATOR



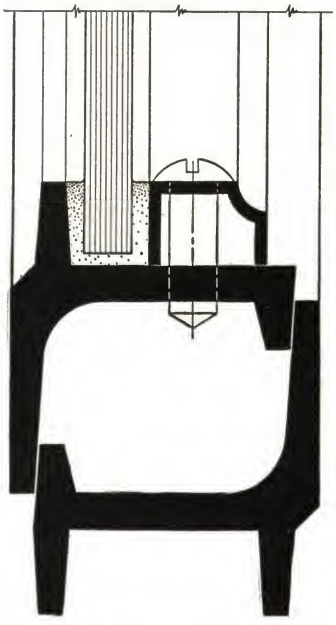


Typical Elevations



·JAMB·
·Section·C·
for PROJECTED
OUT·*at*·SIDE
VENTILATOR

·SILL·
·Section·B·
for PROJECTED
OUT·*at*·SIDE
VENTILATOR





MEETING·STILE
·Section·D·
for PROJECTED
OUT·*at*·SIDE
CASEMENTS

Page references—General Information and Calking, pages 3 and 4; Glazing, page 5; Types of Casements, page 6; Specifications, page 7; Hardware, pages 8 and 9

CUSTOM BUILT CASEMENTS

with Underwriters' Labels

Custom Built Casements may receive underwriters' labels, subject to the following limitations:

1. Maximum sizes—see diagrams.
2. Construction is essentially the same as for non-labeled casements except:

(a) All ventilators must open out.

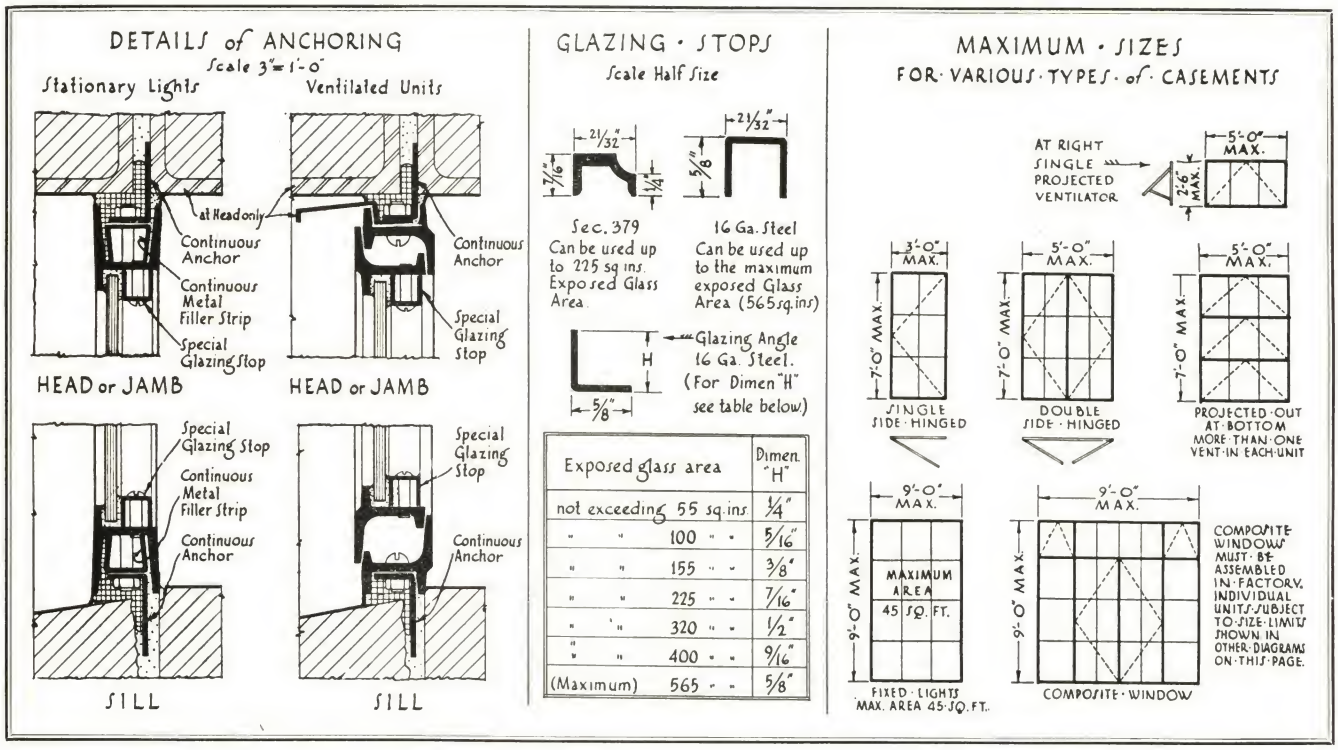
(b) Windows composed of two or more units must be assembled in factory and filler strips used in calking mullions and imposts must be metal.

(c) Continuous anchors must be used at head, jambs and sill.

(d) Hardware must be malleable iron (bronze plated if desired). Bronze hinges can be used if vents are equipped with steel stop pins.

(e) Glass must be ¼" thick wire glass.

(f) Maximum exposed glass area is 565 sq. in. and steel glazing stops must be used. (See details.)



Exposed glass area	Dimen. "H"
not exceeding 55 sq. ins.	¼"
" " 100 " "	5/16"
" " 155 " "	3/8"
" " 225 " "	7/16"
" " 320 " "	½"
" " 400 " "	9/16"
(Maximum) 565 " "	5/8"

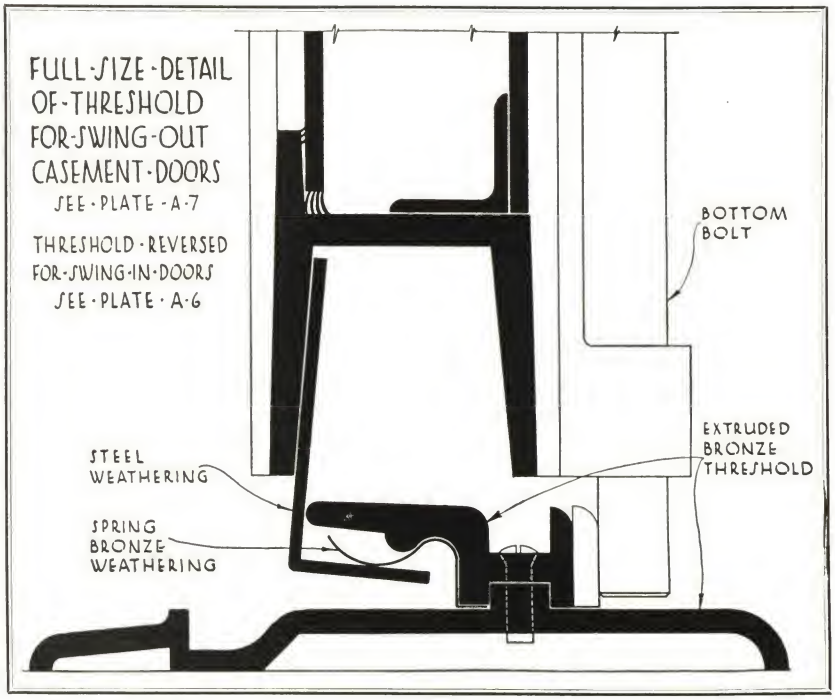
CASEMENT DOORS

Custom Built

These doors are made in sizes and designs specified by the architect. Materials and construction are the same as for Custom Built Casements, specifications for which are given on page 7.

Casement doors have a patented, extruded bronze threshold and usually a 13 gauge steel panel extends across the bottom forming a kick plate.

Doors are hung on bronze butts with steel pins and may be equipped with friction stays or door stops as desired. Methods of operation and locking are indicated in the details on pages 19 and 20. Detail on page 21 shows correct method for framing lock to avoid glass breakage. See also page 38.

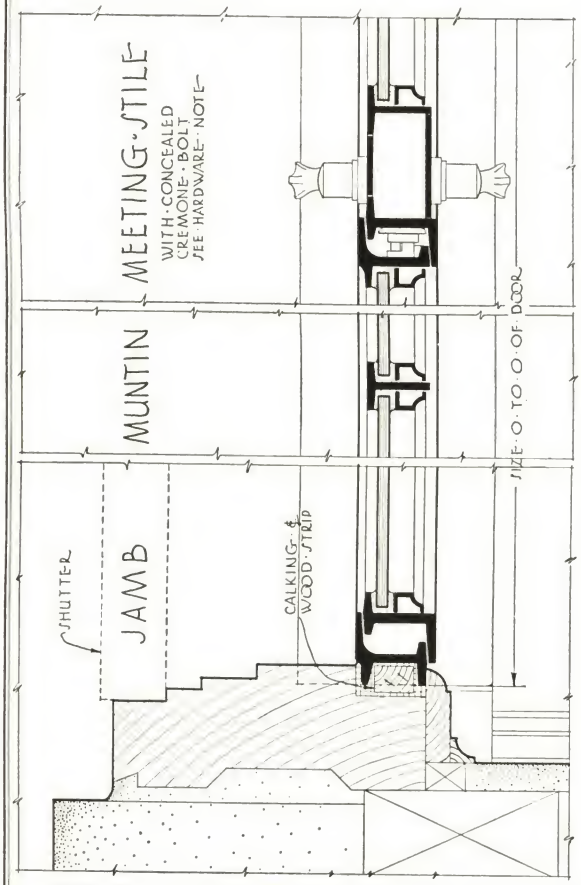


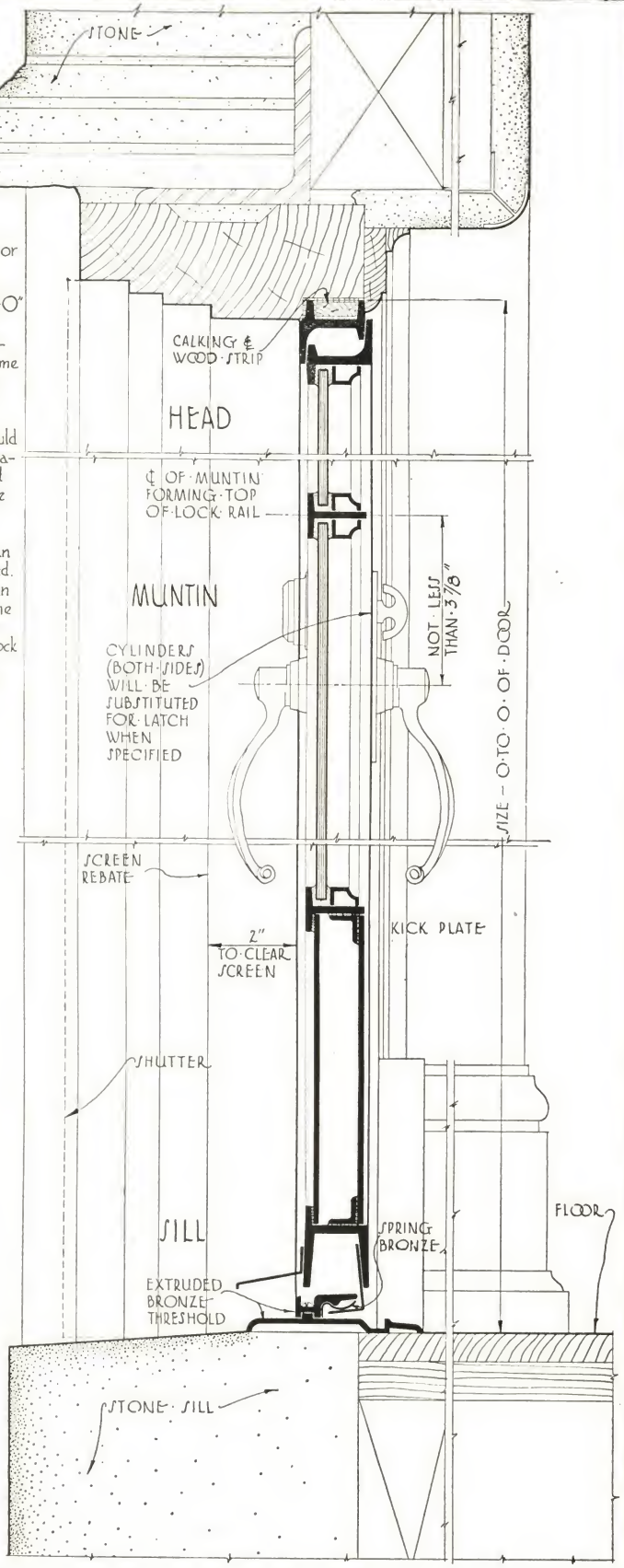


PLAN
Scale 1/4" = 1'-0"

• NOTE •
Doors may be single or double. Maximum sizes (doors with kick plates) single 2'-9" x 9'-0" double 5'-6" x 9'-0" Specifications for casement doors are the same as for windows, except that 13 ga. steel kick plate (if desired) and bronze threshold should be included in specifications. Muntins cannot be entirely omitted, see Plate A-8.

• HARDWARE •
Casehold adjusters can be furnished if specified. Locking hardware can be concealed cremone bolt as shown on this drawing or mortise lock and top and bottom bolt as shown on Plate A-7.



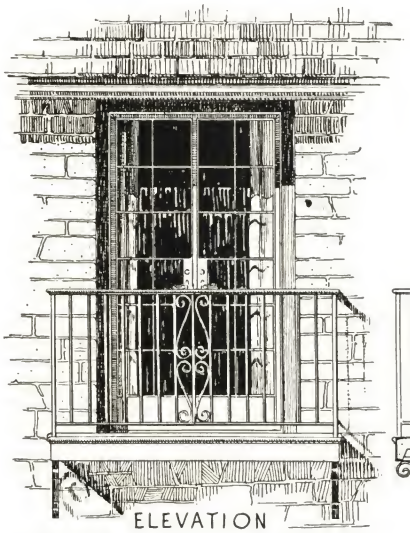


SCALE FOR DETAILS
3" = 1'-0"

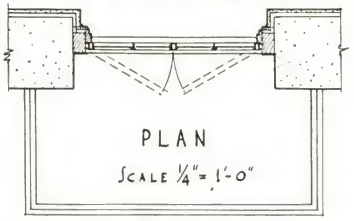
CASEMENT DOORS TO SWING IN

LUPTON CUSTOM BUILT CASEMENTS

PLATE NUMBER
A-6
JANUARY-1930







NOTES

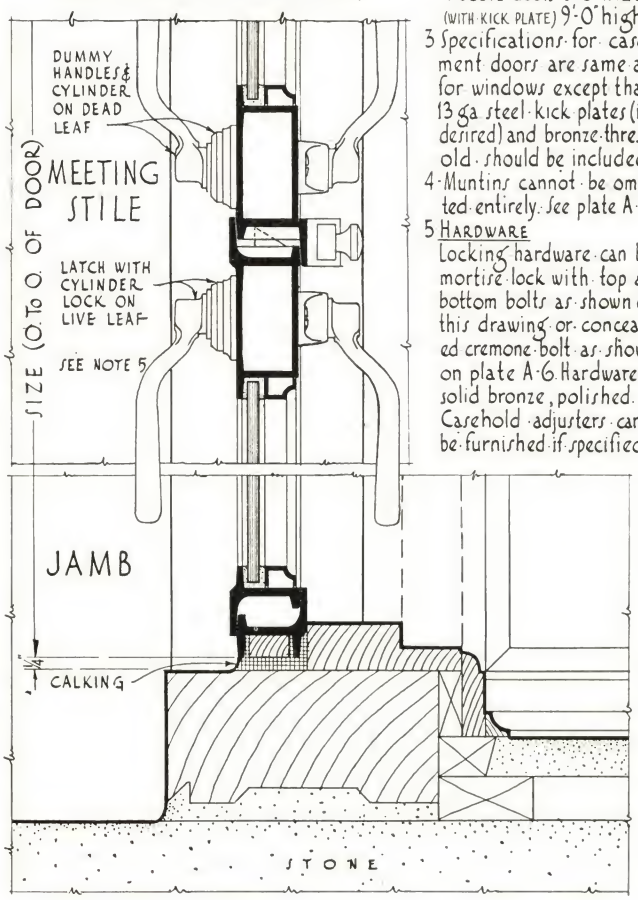
1 Doors may be single or double.

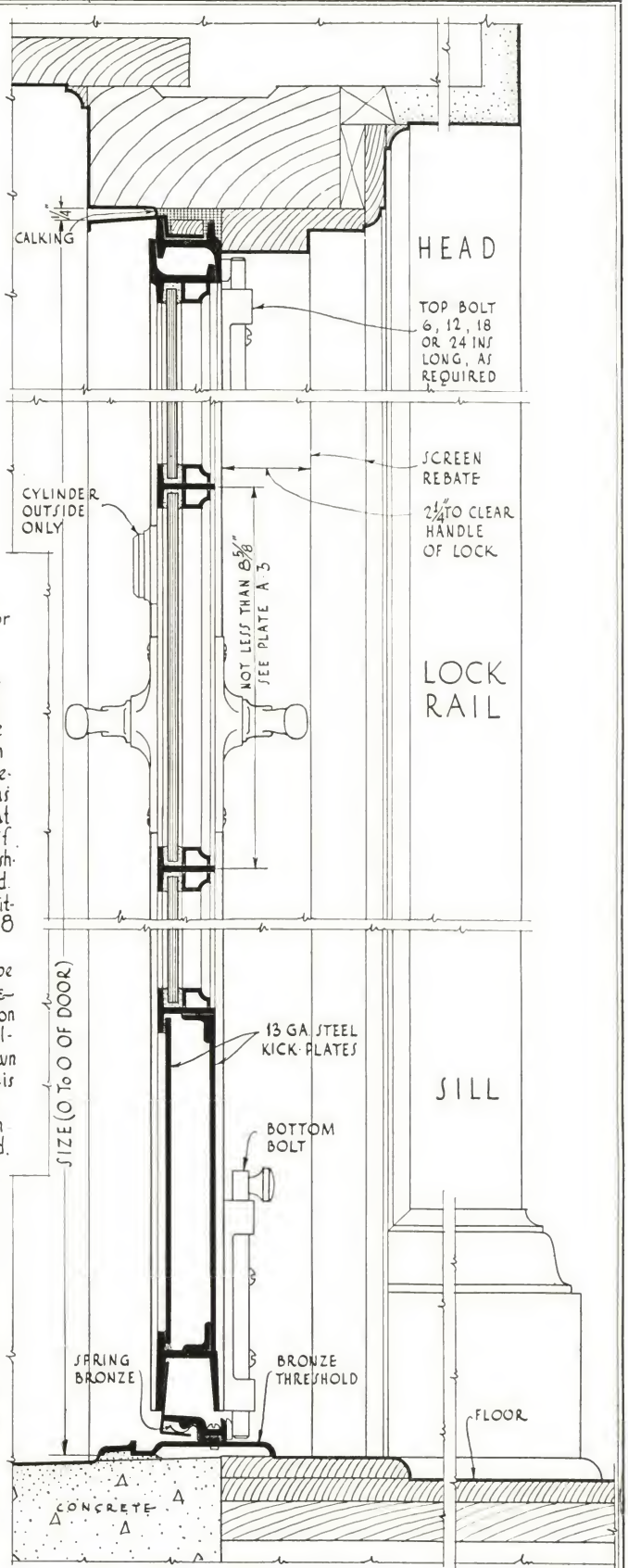
2 MAXIMUM SIZES
Single doors 2'-9" wide (WITH KICK PLATE) 9'-0" high
Double doors 5'-6" wide (WITH KICK PLATE) 9'-0" high

3 Specifications for casement doors are same as for windows except that 13 ga steel kick plates (if desired) and bronze threshold should be included.

4 Muntins cannot be omitted entirely. See plate A-8

5 HARDWARE
Locking hardware can be mortise lock with top & bottom bolts as shown on this drawing or concealed cremone bolt as shown on plate A-6. Hardware is solid bronze, polished. Casehold adjusters can be furnished if specified.





SCALE FOR DETAILS- 3" = 1'-0"	CASEMENT DOORS TO SWING OUT LUPTON CUSTOM BUILT CASEMENTS	PLATE NUMBER A-7 SEPTEMBER 1931

CASEMENT OPERATORS

In banks, libraries and other buildings where large multiple unit casements are used it is necessary to provide a means for operating casement ventilators that are beyond reach from floor. For this purpose Lupton has developed a screw type operator in several forms to suit varying requirements.

There are two general types of operators, those operated by an endless cord, and those operated by a crank and shaft.

Cord Operation

This type operator is designed for operating single ventilators (usually transoms). It has two forms which are indicated on next page.

One form has a grooved pulley attached at the center of a shaft mounted on the stationary frame of the ventilator. Shaft is threaded at one end with a right hand thread and at the opposite end with a left hand thread. As the shaft is revolved (by pulling the endless cord which passes over the pulley) two bronze nuts travel along the threaded portions of the rod opening or closing the ventilator.

The other form (segment type) has a pulley with a threaded core running on a threaded bronze rod bent in an arc. As the pulley revolves it moves backward or forward on the rod opening or closing the ventilator. Where ventilators open out rod is attached to ventilators. Where ventilators open in rod is attached to frame.

Crank and Shaft Operation

This method is used where a number of ventilators are to be operated simultaneously.

With the horizontal screw shaft operator (page 25) the degree of opening is limited by the width of the ventilator. This should be remembered when designing.

The vertical screw shaft operator (pages 23 and 24) will operate a greater number of ventilators and a longer length of shaft than the horizontal type and the degree of opening is not limited by the width of the ventilator, but not more than two tiers of ventilators can be operated from one crank.

SPECIFICATIONS

Work Included

1. Furnish and install where shown on drawings Lupton Casement Operator Screw Type, manufactured by DAVID LUPTON'S SONS CO., Philadelphia, Pa.

Material and Construction

Note:—Operators are available in three types.

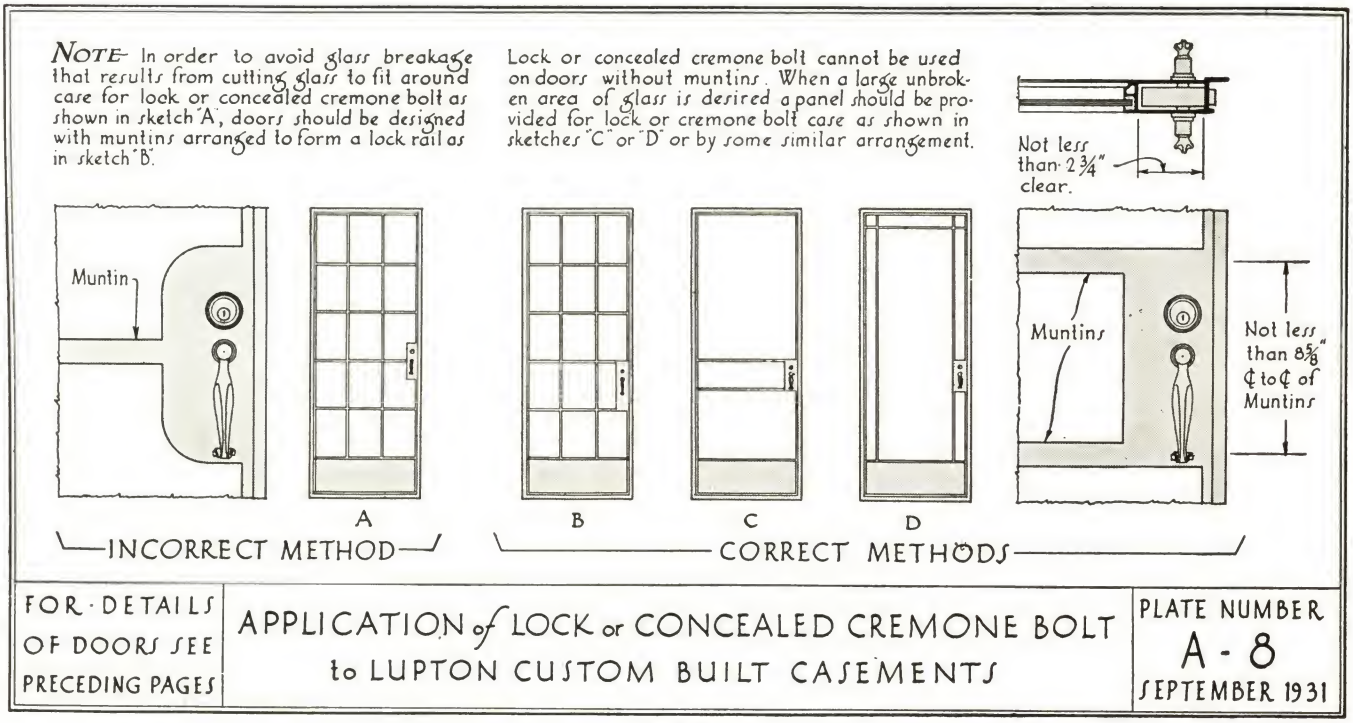
(A) Horizontal, vertical or curved screw shaft operated by cord and pulley.

(B) Horizontal screw shaft operated by vertical shaft, crank and miter gears.

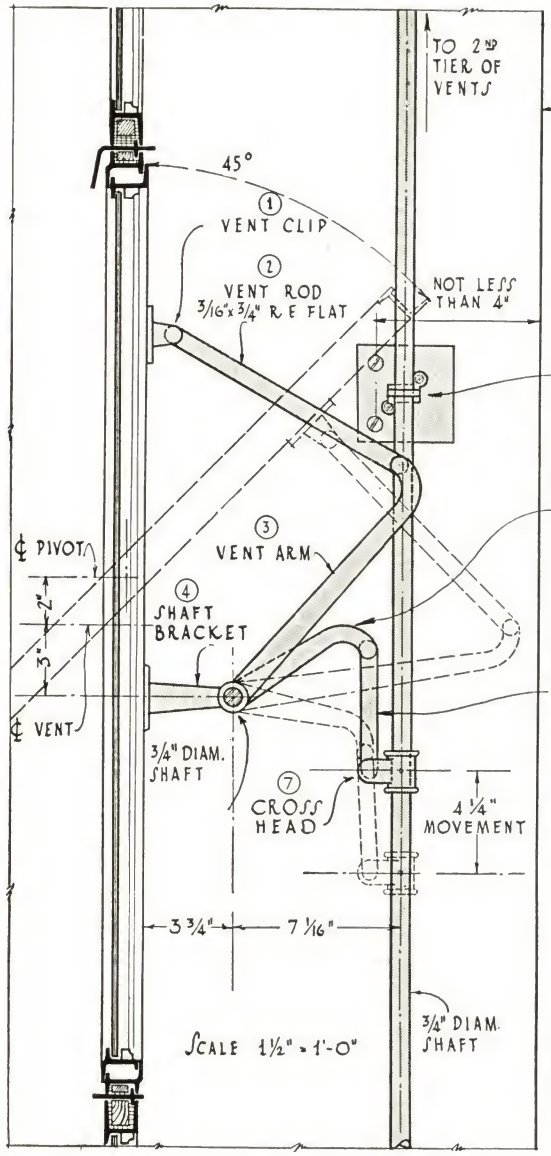
(C) Vertical screw shaft, operated by crank and miter gears.

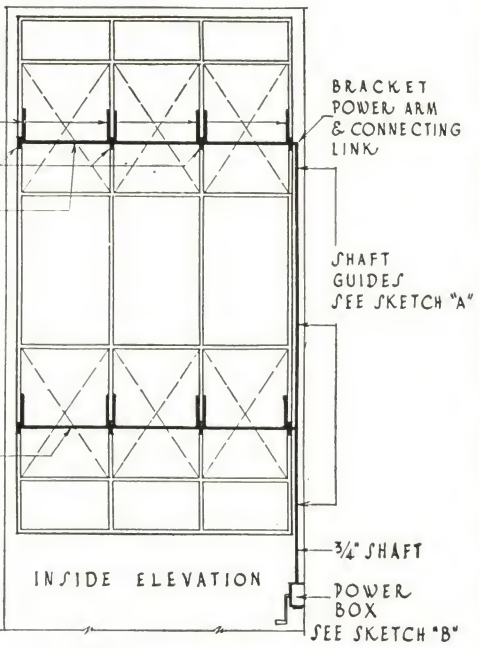
2. (A-1) Operator shall have a $\frac{3}{8}$-in. diameter steel shaft threaded with right- and left-hand threads mounted on three malleable iron brackets attached to frame of casement. Each threaded portion of the shaft shall be equipped with an adjustable bronze traveling nut. Sash rods shall be of $\frac{3}{16}$x$\frac{3}{4}$-in. round edge high car-

Please turn to next page→



FOR DETAILS OF DOORS SEE PRECEDING PAGES	APPLICATION of LOCK or CONCEALED CREMONE BOLT to LUPTON CUSTOM BUILT CASEMENTS	PLATE NUMBER A-8 SEPTEMBER 1931





LIMITS

NOT MORE THAN 2 TIERS OF VENTS TO BE OPERATED FROM ONE POWER.

CENTER PIVOTED (PIVOTED 2 IN. ABOVE CENTER)
NOT MORE THAN 140 SQ. FT. NOR MORE THAN 14 VENTS.
HORIZONTAL SHAFT NOT MORE THAN 21 FT LONG ON ONE RUN

TOP HUNG (PIVOTED 4 IN FROM TOP~OR TOP HINGED)
NOT MORE THAN 100 SQ.FT. NOR MORE THAN 10 VENTS.
HORIZONTAL SHAFT NOT MORE THAN 15-FT. LONG ON ONE RUN.

MATERIAL

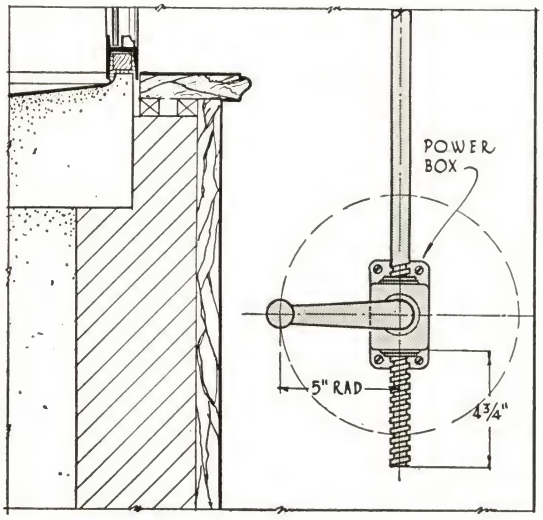
OPERATORS ARE FURNISHED WITH STEEL SHAFTS AND SOLID BRONZE OR MALLEABLE IRON FITTINGS. MITRE GEARS ARE ALWAYS BRONZE. GEAR BOX MAY BE IRON OR BRONZE

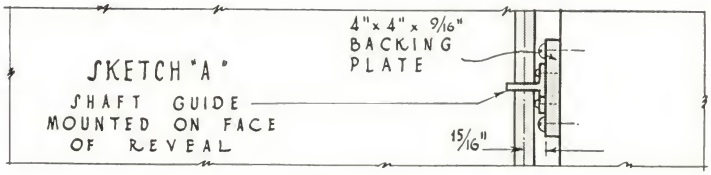
① VENT CLIP
② VENT ROD
③ VENT ARM
} 2 PER VENT

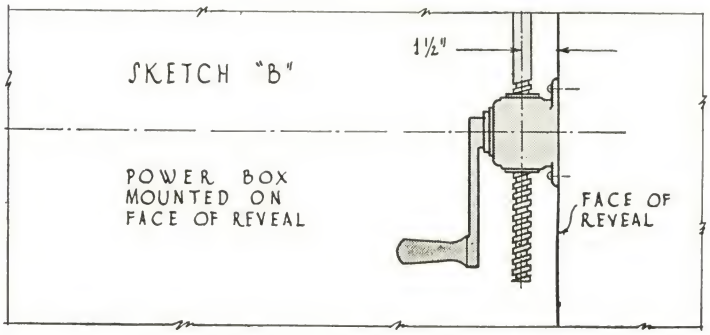
④ SHAFT BRACKET } AT ENDS OF SHAFT AND AT MULLIONS

⑤ POWER ARM
⑥ CONNECTING LINK
⑦ CROSS HEAD
} ONE PER HORIZONTAL SHAFT

⑧ SHAFT GUIDE } NOT MORE THAN 6FT. APART.







SCALE FOR DETAILS 1½" = 1'-0"	•OPERATOR•WITH•VERTICAL•SCREW•SHAFT• •APPLIED•TO CENTER•PIVOTED•CASEMENTS• •LUPTON•CASEMENT•OPERATOR ~ SCREW•TYPE•	PLATE NO. W~2 AUGUST 1929

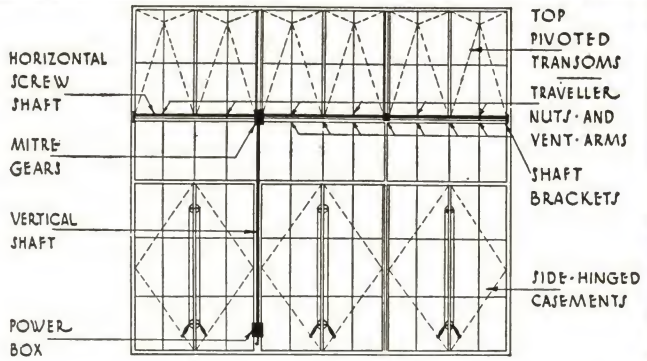
LIMITS

TOP HUNG (PIVOTED 4 IN. FROM TOP OR TOP HINGED)
NOT MORE THAN 90 SQ. FT. OR 9 VENTS • SHAFT NOT MORE THAN 10 FT. EITHER SIDE OF MITER GEAR BOX
PIVOTED (PIVOTED 2 IN. ABOVE CENTER)
NOT MORE THAN 120 SQ. FT. OR 12 VENTS • SHAFT NOT MORE THAN 15 FT. EITHER SIDE OF MITER GEAR BOX.

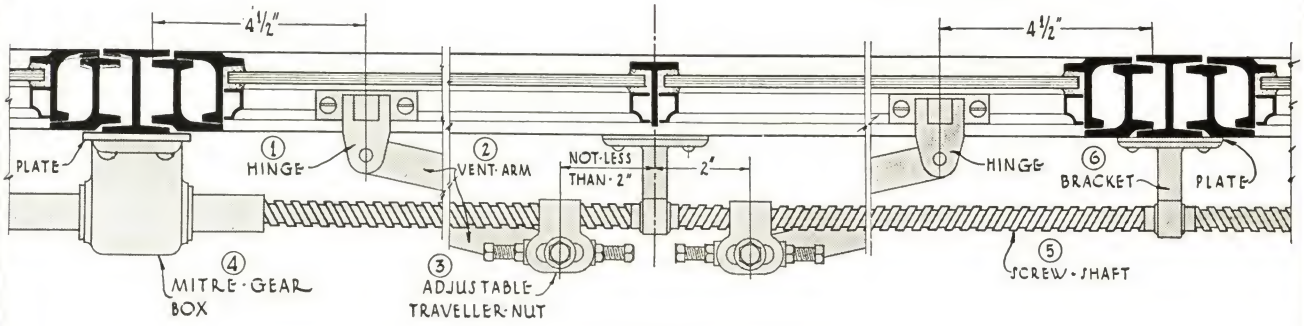
MATERIAL

OPERATORS ARE FURNISHED WITH STEEL SHAFTS AND SOLID BRONZE OR MALLEABLE IRON FITTINGS • FINISH IS BRONZE POLISHED OR MALLEABLE IRON PAINTED

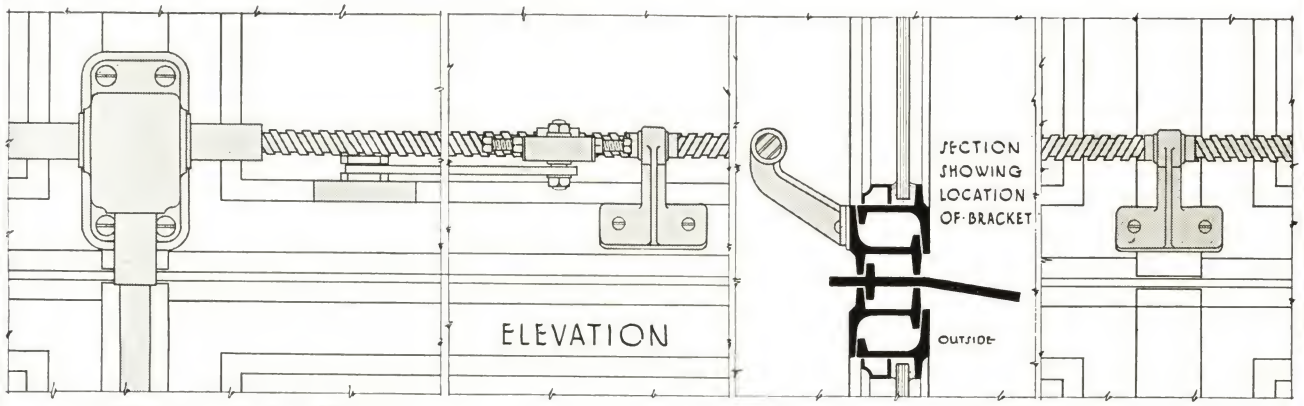
① HINGE & BRACKET
② VENT ARM
③ TRAVELLER NUT
} 2 PER VENT
④ MITER GEAR BOX (2, 3 OR 4 WAY)
⑤ SCREW SHAFT
⑥ SHAFT & BRACKET
⑦ VERTICAL SHAFT
⑧ POWER BOX

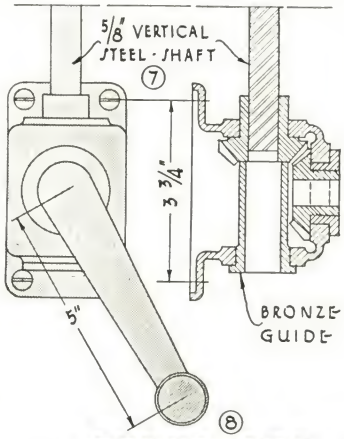


INSIDE ELEVATION



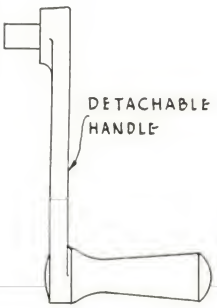
PLAN

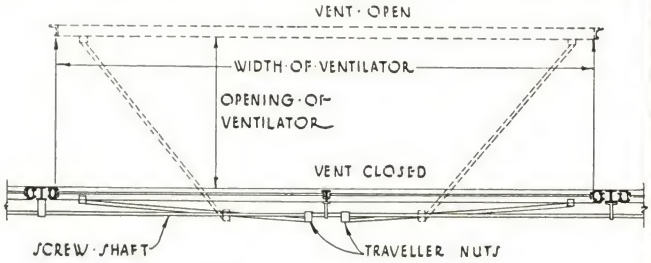




POWER BOX

NOTE
Gears are always Bronze • Case may be Malleable Iron or Bronze





PLAN • DIAGRAM
NOT TO SCALE

OPENING OF VENTILATOR VARIES WITH WIDTH OF VENTILATOR AND IS EQUAL TO APPROXIMATELY 6 INS LESS THAN ONE HALF THE WIDTH OF THE VENTILATOR

SCALE FOR DETAILS 3" = 1'-0"

OPERATOR WITH HORIZONTAL SCREW SHAFT APPLIED TO TOP PIVOTED TRANSOMS

LUPTON CASEMENT OPERATOR — SCREW TYPE

PLATE NO W-3
AUGUST 1929

ALUMINUM CASEMENTS



Casements made of Aluminum add a distinct note in harmony with modern decoration, while the enduring and non-corroding properties of the metal give assurance of continued fine appearance with minimum maintenance cost.

Casement members are formed by extruding which produces bars of great density and uniformity. The alloy used compares favorably with mild steel in strength with but approximately one third the weight. Bars are assembled by a welding process that produces a strong, smooth, solid joint.

Casements are usually furnished with a natural soft gray lustrous finish, but may have a highly polished reflecting finish or a sand blast finish if preferred. The polished finish must be protected with several coats of clear varnish or other coating.

Side hinged open-out casements are recommended wherever possible to use them. Maximum sizes are given on page 28. Composite windows can be built up as shown on page 29.

Aluminum is not appreciably affected by normal atmospheric conditions, steam or boiling water. Sea water affects it to a very small extent. Precautionary measures should be taken to prevent the use of ammonia, caustic alkalies, hydrochloric, nitric and strong sulphuric acids in cleaning preparations for walls or windows as these substances react with aluminum. Aluminum with natural finish gradually weathers to a darker tone but the original appearance may be restored, if desired, by rubbing with fine steel wool or emery.

SPECIFICATIONS

Work Included

1. All windows called for in these specifications or shown on the drawings shall be Aluminum Casement Windows, manufactured by DAVID LUPTON'S SONS CO., Philadelphia Pa.

Material

2. The members shall be of special alloy, extruded in solid one-piece sections.

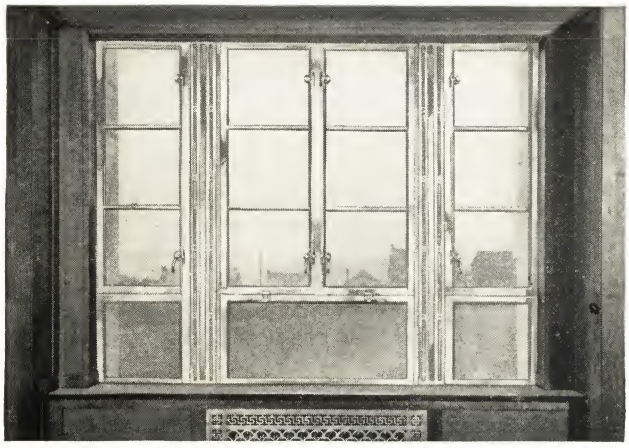
Construction

3. The weathering of ventilators shall be made by double contacts of the members without the use of built up or added sections.

4. All members shall be accurately straightened and true. All joints shall be welded, eliminating all riveted joints. Exposed welded surfaces shall be ground flush with members. Plates to receive handles shall be solidly welded in place. Face of members shall be free from hammer marks and sight lines shall be carefully preserved. All aluminum casements shall be designed for inside glazing with glazing stops.

Glazing Stops

5. Glazing stops shall be of the details shown on window manufacturers' standard drawings and made of extruded aluminum sections. All glazing stops to be accurately and carefully fitted and fastened with low round head, white bronze screws.



Aluminum Casements in Research Laboratory Building of Aluminum Company of America at New Kensington, Pa. Henry Hornbostel, Architect, P. R. L. Hogner, Assoc. Architect.

Finish

6. Casements shall have natural extruded aluminum finish, brushed and dipped in cleaning bath before leaving the factory.

Note:—Sandblast or highly polished and lacquered finish may be specified if desired.

Hardware

7. Hinged casements shall be hung on specially designed aluminum friction hinges constructed with non-corrosive parts. All friction hinges to be securely attached to frame and ventilator members with steel screws, heavily cadmium plated.

Note:—Where friction hinges are not desired, specify cadmium-plated bronze hinges and white bronze sill adjusters. Sill adjusters shall be substantially made and shall hold the window at various angles of opening.

8. Where projected ventilators occur, all parts of projected movement shall be made of special alloy aluminum.

9. All hardware shall be white bronze attached with white bronze screws. Strike wedges are white bronze. All hardware shall have dull finish, lacquered.

Calking Cement

10. The window manufacturer shall furnish non-staining elastic calking cement (as indicated on window manufacturers' standard details) in quantities sufficient to make head, sill, jambs, mullions and imposts weathertight. Wooden filler-strips shall be furnished and used where indicated on details.

Note:—See page 3.

Erection

11. All Aluminum Casements shall be erected in prepared openings by the window contractor.

12. They shall be set plumb and true, properly aligned and securely anchored before glazing. Mullions and imposts shall be bolted securely to frames. Calking cement and wooden filler-strips shall be neatly applied at points indicated on window manufacturers' standard details.

Note —See page 3.

Note —Include in the masonry specifications that all masonry openings shall be accurately constructed in accordance with the installation details for Aluminum Casements. All grouting, pointing, etc., should be done by the mason contractor after the windows are set.

Glass and Glazing

Note:—(See also pages 3 and 5.) Specify glass and glazing under proper heading elsewhere in general specifications of other trades.

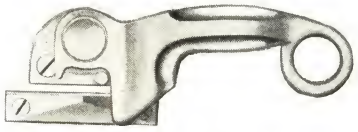
(a) Do not specify single thickness glass.

(b) Specify a high grade metal casement putty.

(c) Specify that aluminum casements shall be glazed from the inside, the glass set in a bed of putty and held by the Lupton aluminum glazing stops.

HARDWARE for ALUMINUM CASEMENTS

Hardware is white bronze with dull, lacquered finish unless noted otherwise.



Ring handle No. 432 used in addition to Pull Down Ring No. 439 for pole operation of open out at bottom ventilators



Ring handle No. 429 for pole operation of open in at top ventilators.



Spring catch No. 422. An alternate to handle No. 429 for pole operation of open in at top ventilators.



Locking handle No. 430 for open out at bottom ventilators.



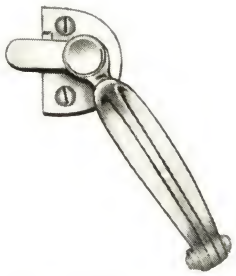
Locking handle No. 427 for open in at top ventilators.



Cremone bolt for double casements consists of the following:

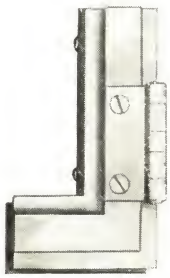
1. *Keepers for top and bottom of casements.*
2. *Bar guides (spaced approximately 1 ft. apart).*
3. *Center latches and keepers (spaced approximately 2 ft. apart).*
4. *Bar 1/2x1/4 inches.*
5. *Handle and case.*
7. *Pull handle for "dead" leaf.*



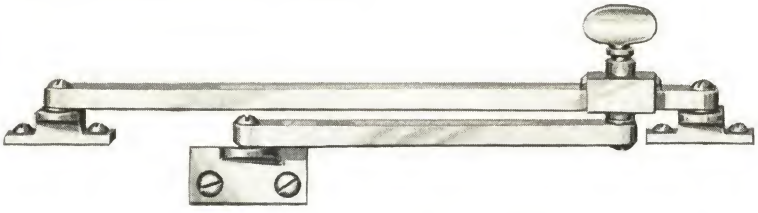


Bronze butt hinge heavily plated with cadmium or nickel.

Locking handle No. 433 (Opposite hand No. 434) for side hinged casements not over 4 ft. high.

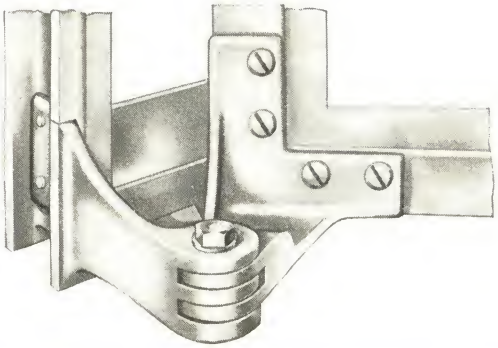


Double locking device for casements 4 ft. to 8 ft. high is similar to the one shown on page 8, and consists of the following parts: Auxiliary Latch No. 437, 1/2-in. white bronze tube, and Locking Handle No. 435 (or opposite hand No. 436).



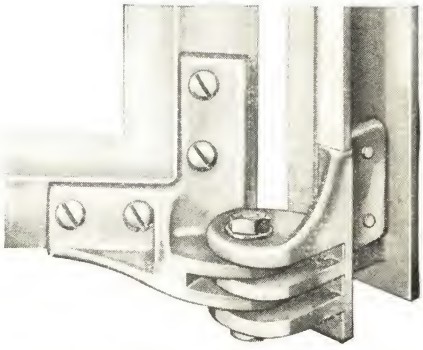
Sliding adjuster used only on side hinged casements with butt hinges.

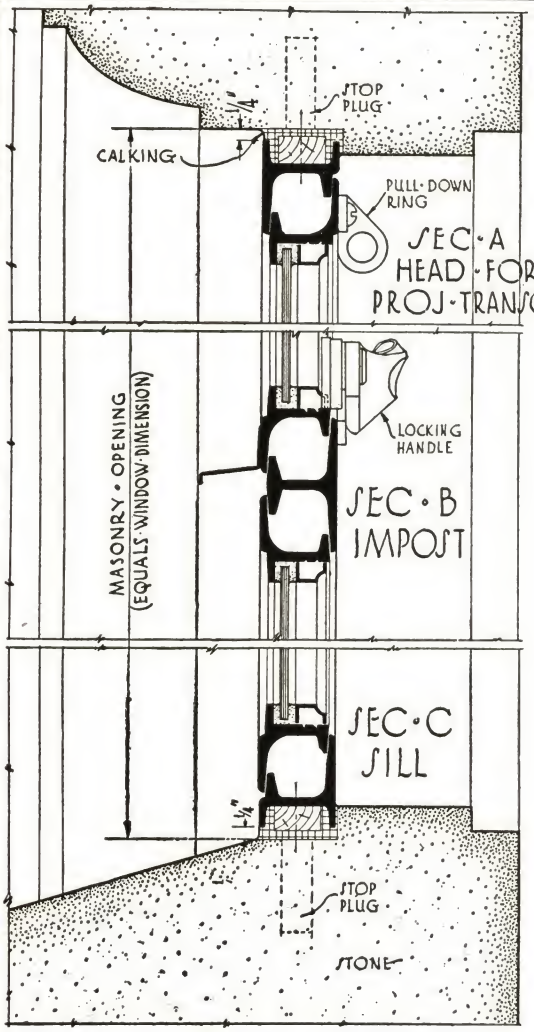
Friction Hinges of aluminum hold casements at any degree of opening up to 180° and make sliding adjusters unnecessary. There are two types as shown below. Hinge pin is steel, extra heavily cadmium plated and friction is adjustable.

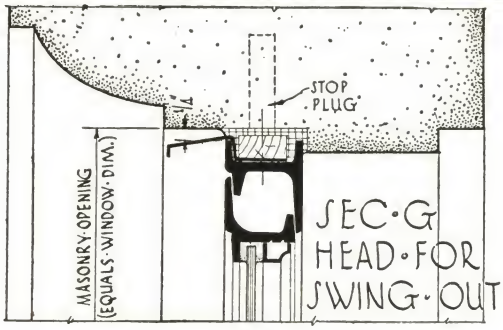


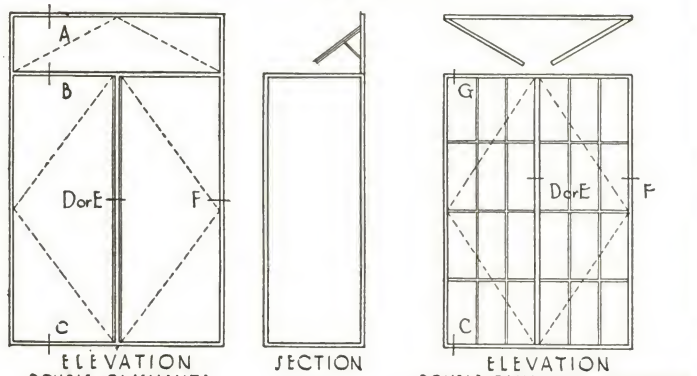
At left. Extended type friction hinge which permits cleaning outside of window from inside the building.

At right. Close-up type friction hinge.







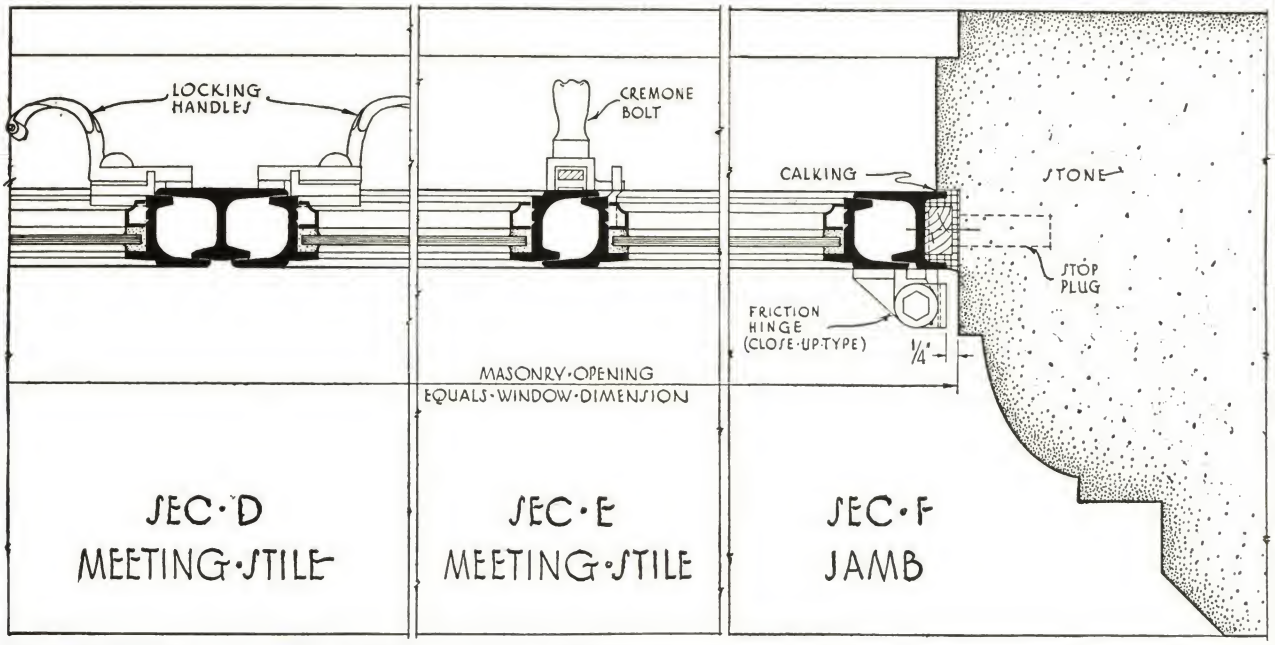


MAXIMUM SIZES

Projected Out at Bottom		4'-6" wide	x 2'-6" high
Side Hinged Casements	Single	2'-9" "	x 8'-0 "
	Double	5'-6" "	x 8'-0 "

HARDWARE

See pages 27 and 28. All locking hardware is white bronze, dull finish. Single casements have locking handles. Double or triple locking device is furnished when casement is more than 4'-0" high.
Double casements may have locking handles as in Sec. D or cremone-bolt as in Sec. E.
Projected transoms beyond reach have ring-type locking handles.

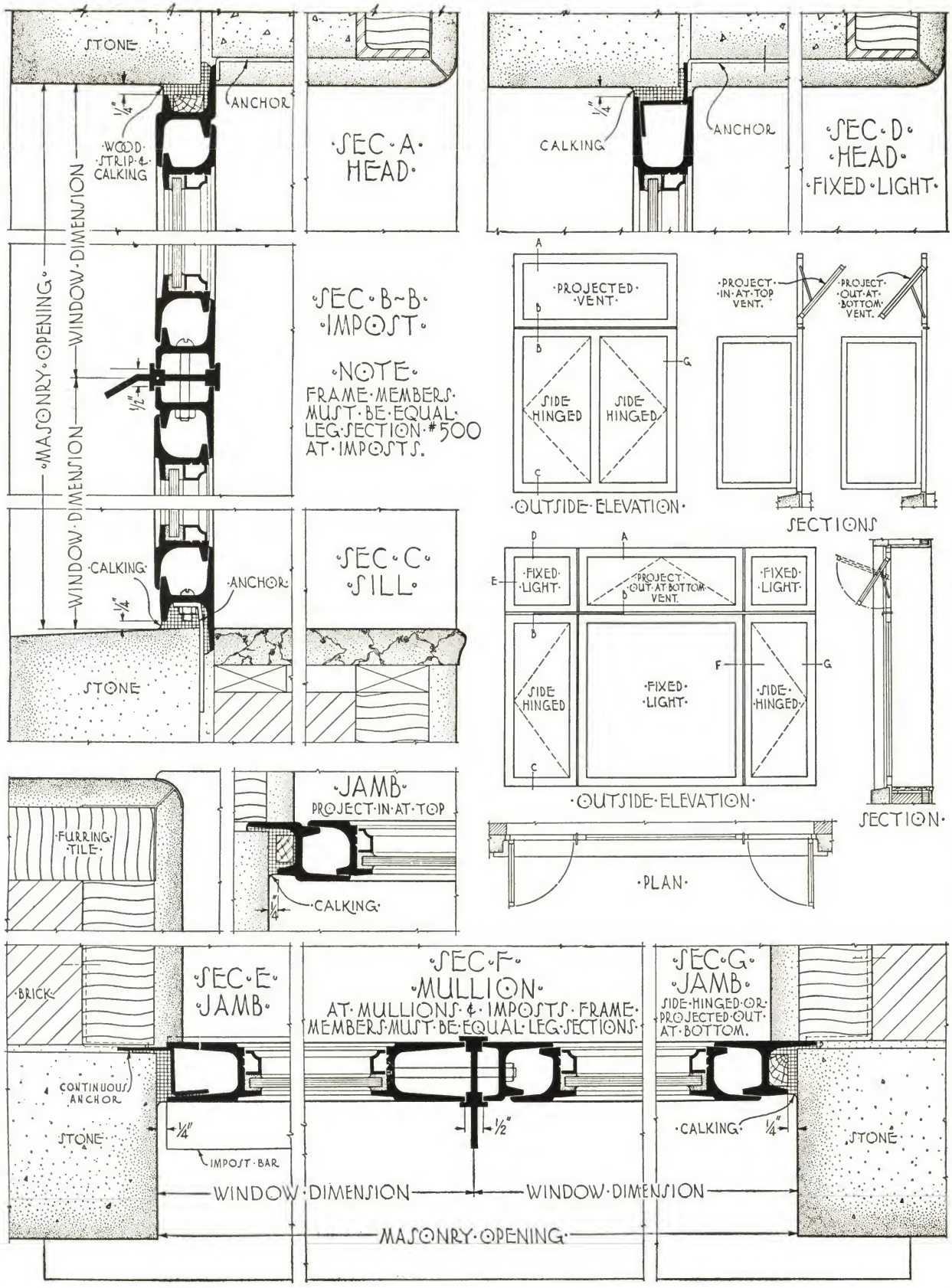


SCALE FOR DETAILS 3" = 1'-0"

HINGED·CASEMENTS

LUPTON·ALUMINUM·CASEMENTS

PLATE·NO. AA-1
AUGUST·1930



SCALE FOR DETAILS 3" = 1'-0"

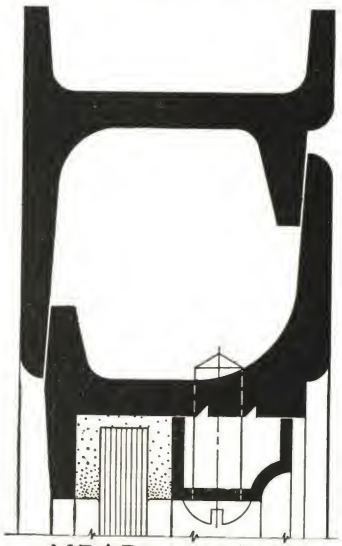
COMPOSITE WINDOWS

LUPTON ALUMINUM CASEMENTS

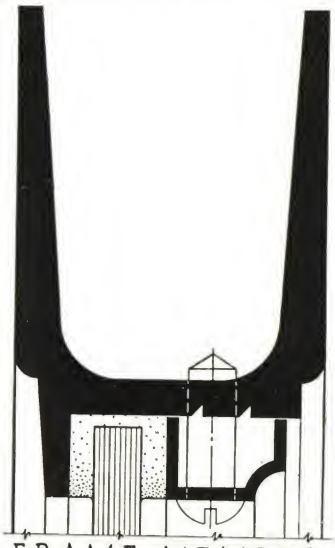
PLATE NO. AA-2 AUGUST 1930

• ALUMINUM • CASEMENTS - FULL • SIZE • SECTIONS •



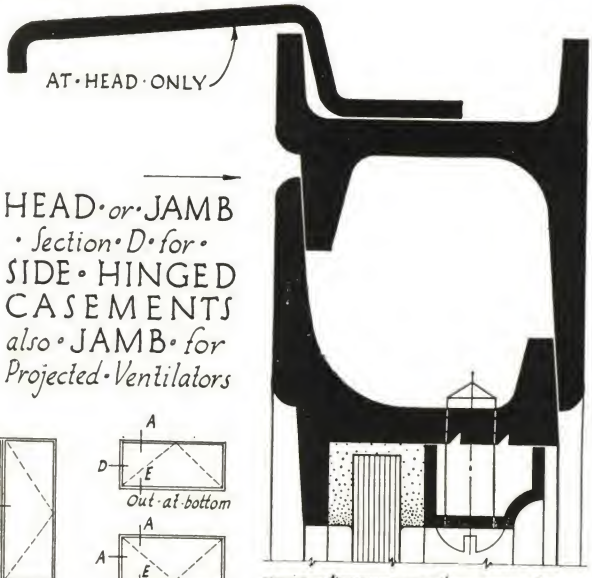


• HEAD • *or* • JAMB •
• Section • A • for •
PROJECTED • VENTILATORS



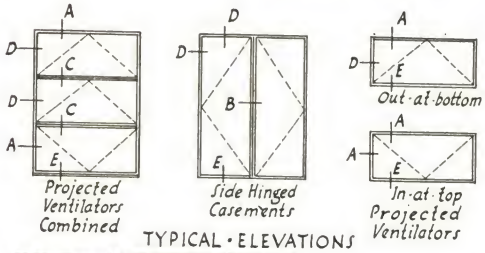
FRAME • MEMBER
for • FIXED • LIGHTS

MEETING • STILE
Section • B • between
SIDE • HINGED
CASEMENTS

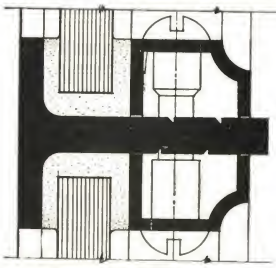


HEAD • *or* • JAMB
• Section • D • for •
SIDE • HINGED
CASEMENTS
also • JAMB • *for*
Projected • Ventilators





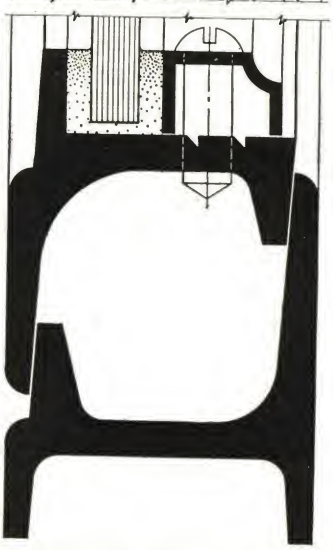
TYPICAL • ELEVATIONS



MUNTIN

MEETING • RAIL
Section • C • between
PROJECTED
VENTILATORS

• SILL •
• Section • E • for •
SIDE • HINGED
or • PROJECTED
VENTILATORS



SCREENED CASEMENTS

Lupton Screened Casements include Custom-built and Aluminum Casements, as well as Master and Residence Casements. Graceful, newly designed, screened casement hardware and the narrow frame, all-aluminum screens combined with any of these types of casements produce ideal windows that can be operated or locked without opening screens.

New simplicity, effectiveness and convenience are achieved in the "Screened" Casement windows produced by Lupton. Casements can be opened, closed and locked without removing screens. Screens can be removed and replaced for washing the windows, without disturbing draperies.

All hardware has been redesigned and relocated in such manner that a new type, all-aluminum screen can be set directly against the casement frame where its slender lines blend with the frame in the most unobtrusive manner imaginable. The locking latch on double casements is set on the meeting stile (or dividing bar) between the adjacent screen frames, locking or releasing both ventilators by a simple in-and-out motion. In single casements the latch is at the side of the frame close to the window reveal. In neither case does the operation of the locking-latch interfere with the screens.

The windows are opened, closed and locked in any position by means of a new rattle-proof underscreen operator which is attached directly to the casement at the sill line.

The screen itself is held in place by means of two spring clips near the head and two small corner brackets at the bottom. The head of the screen is slipped above the upper clips without disturbing draperies, shades or Venetian blinds and without removing the latch or casement operator, and then dropped down a fraction of an inch seating it into the lower brackets and engaging the head clips at the same time.



This gracefully patterned handle with its convenient thumb and finger knob locks or releases both casements with an easy in-and-out motion.

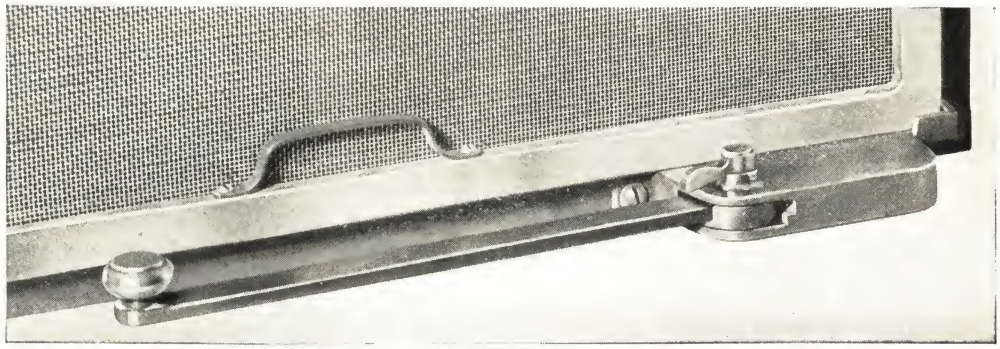
Screens are unbelievably strong and light and frames do not encroach upon the glass opening. Frames are extruded aluminum bars 7/16 in. x 5/8 in. and are rewireable with 16-mesh, 32 gauge aluminum wire cloth. Corners of frame are solidly welded.

Frame has a wire brushed, satin finish, which will gradually acquire a soft gray patina, but may be painted to harmonize with any decorative scheme.

Specification clauses for screens and screened casement hardware applied to Master and Residence Casements will be found on pages 32 and 39. Similar clauses will cover screens applied to Custom-Built and Aluminum Casements.



Notice the clean profiles of the Lupton Screened Casement. The hardware does not project over the glass area at any point to mar the lines of the casements or window frame, whether opened or closed.



A touch on the terminal knob, of the Lupton Underscreen Operator, drawing the lever arm across the sill in a circular motion, opens the casement positively and easily. A half turn of the wing nut locks the window where wanted.

MASTER CASEMENTS



Master Casements are a new development. Sections are intermediate in weight between those of the Custom Built Casements and those of the Residence Casements, but specially designed to meet the architectural and structural requirements of the better grade buildings for which these windows are intended.

Master Casements are made in the familiar standard casement sizes and designs, illustrated on the following page.

Master Casements of standard design are equipped with the new type locking hardware described on preceding page and where screens are desired (as they usually are in residence work) the all aluminum screen and underscreen operator can be applied.

SPECIFICATIONS

Work Included

1. Furnish and install where shown on drawings Lupton Master Casements as manufactured by David Lupton's Sons Co., Phila., Pa.

Materials

2. All bars shall be rust resisting steel, hot rolled in one piece sections and free of hammer marks.

3. Frame members shall be equal leg sections and shall weigh not less than 1.7 lb./ft. Ventilator members shall weigh not less than 1.4 lb./ft.

Note:—Specify unequal leg section if desired for installation in masonry.

4. Horizontal and vertical mullions shall be T section specially shaped to form a wide contact with frame members of casements.

5. Muntins shall be T sections.

Construction

6. All casements shall be designed for outside putty glazing. Ventilators shall be side hinged or top hinged as indicated on elevations.

7. All casements shall be straight and true with members in alignment and surfaces in a plane.

8. Ventilator and frame members shall be mitered at corners and welded, and the resulting joint ground flush with members. The frame and ventilator shall form a continuous two point flat weathering contact.

9. Muntins shall be continuous between frame or ventilator members. They shall be tenoned and riveted to frame or ventilator members and shall have flush interlocking joints at intersections.

10. Provide Horizontal and Vertical Mullions and bolts for attaching where indicated on drawings.

11. Provide 16 gauge galvanized steel drip wherever a ventilator extends to the head of a casement, excepting when condition necessitates the use of a horizontal mullion bar, the mullion bar may be bent and used as a drip.

Note:—(a) Continuous anchors of 13 gauge steel are furnished if definitely specified, and mentioned in contract for windows.

(b) Anchor clips of 14 gauge steel for head, jambs and sill are furnished if specified.

Hardware

12. The following hardware (except hinges) shall be shipped unattached carefully packed to prevent damage. Hinges shall be attached and painted with the windows in the shop.

For Non-screened Casements specify:

Side hinged casements shall be equipped with locking latches (with lift action) special pull handle and extended friction hinges. Top hinged Transoms shall have locking latch for pole or hand operation and close up friction hinges.

For Screened Casements:

(See under "Screens")

Note:—Hardware is available in standard painted finish or in bronze with standard coin bronze and various special finishes. Specify the finish desired.

Shade and Drapery Brackets

13. All casements shall have holes provided for attaching drapery and shade brackets as indicated on window manufacturer's details.

Note:—Shade brackets are furnished if clearly specified and mentioned in contract for casements.

Calking Cement

(See page 3)

14. The window manufacturer shall furnish non-staining elastic calking cement (as indicated on window manufacturer's standard details) in quantities sufficient to make head, sill, jambs, mullions and imposts weathertight. Wooden filler-strips shall be furnished and used where indicated on details.

Erection

(See page 3)

15. All casements shall be erected in prepared openings by the window contractor (unless otherwise specified).

16. All Casements shall be set plumb and true, properly aligned and securely anchored before glazing. Mullions and imposts shall be bolted securely to frames. Calking cement and filler-strips shall be neatly applied at points indicated on window manufacturer's standard details.

Note:—Include in the masonry specifications that all masonry openings shall be accurately constructed in accordance with the installation details for Casements. All grouting, pointing, etc., should be done by the mason contractor after the windows are set.

Painting

16. All casements shall receive one shop coat of casement manufacturer's standard dark gray paint, oven dried.

Note:—(See page 3.)

Glass and Glazing

Note:—(See pages 3 and 5.) Specify glass and glazing under proper heading elsewhere in specifications.

(a) Do not specify single thickness glass.

(b) Specify high grade steel window putty (ordinary wood sash putty must not be used).

(c) Specify that Lupton Master Casements shall be glazed from the outside. The glass set in a bed of putty and held by Lupton Standard Wire Glazing Clips.

Screens

(Furnished if specified and mentioned in contract for windows.)

17. All Lupton Master Casements shall be equipped with screens designed to fit tightly against casement frame and prevent entrance of insects.

18. Screen frames shall be 7/8 x 5/8 in. extruded aluminum, solidly welded at corners to form a smooth seamless frame and with a wire brush, satin finish. Frames shall be rewireable.

19. Wire shall be 16 mesh, 32 gauge aluminum wire cloth.

Note: When screens are specified the following hardware should be specified instead of that given above for non-screened Casements.

Hardware for Screened Casements

20. Side hinged casements shall have extended non-friction hinges and (one of the following):

(a) Sliding type underscreen operator and standard locking latch (lift action).

(b) Windor series 50 operator and standard locking latch (lift action).

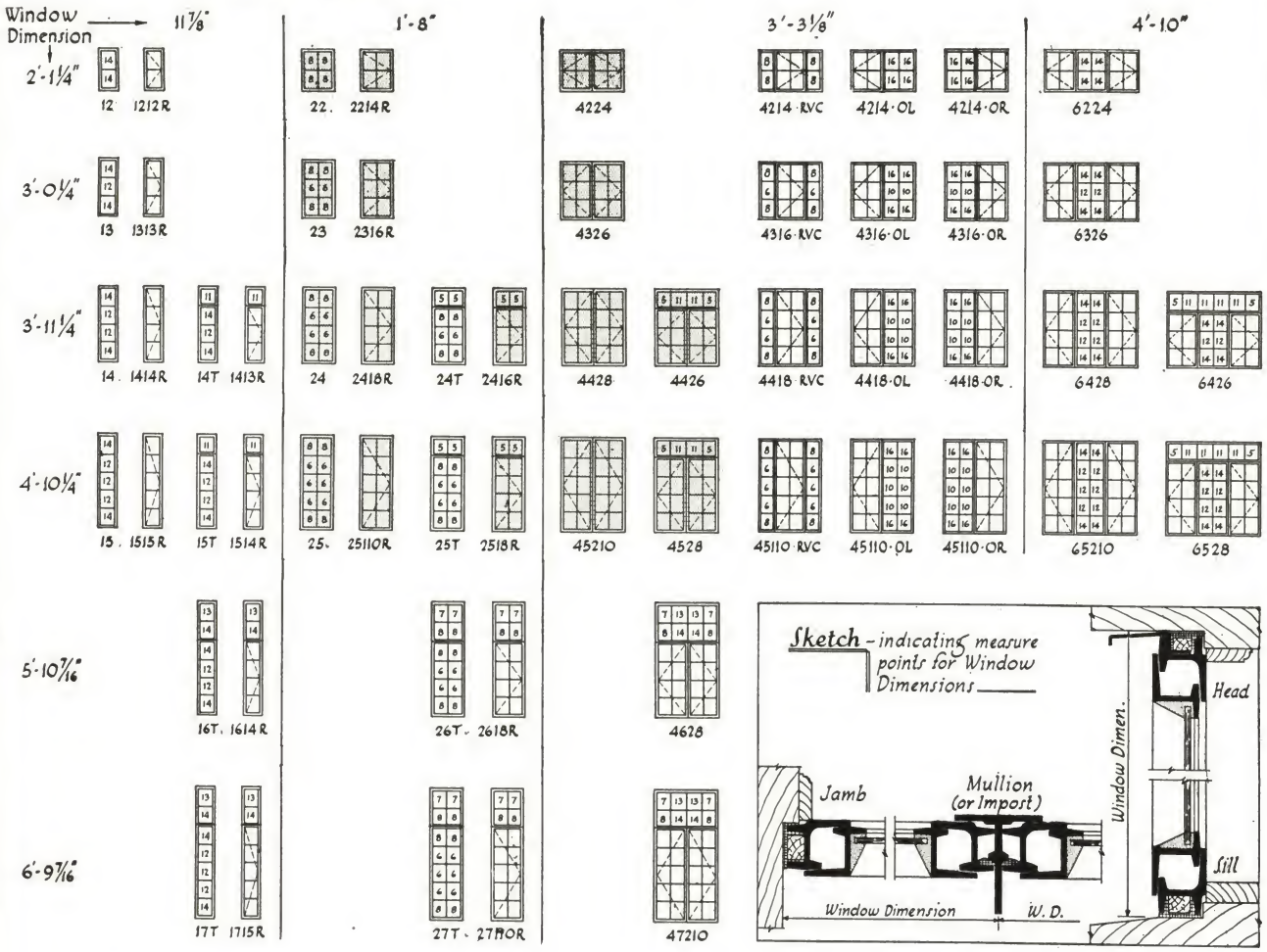
(c) Windor series 50 operator and Windor detachable locking handle (cam action).

21. Top hinged transoms shall have close up friction hinges and special underscreen operator and locking device for pole or hand operation.

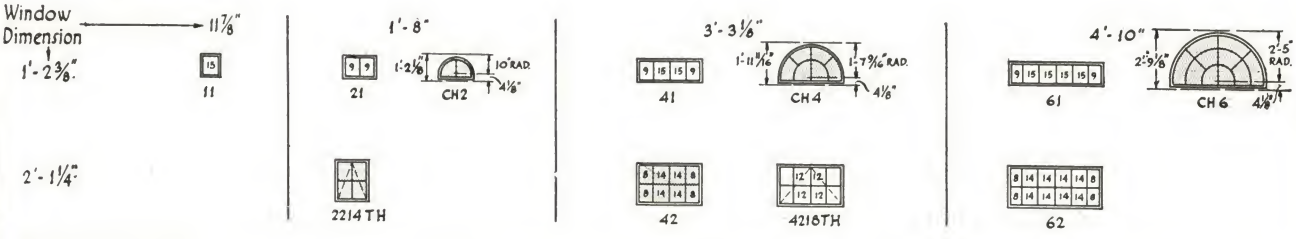
If desired aluminum screens described above may be pivoted at the side to open in. In such cases the underscreen operator is eliminated and friction hinges are used. Hardware specification then becomes the same as for non-screened casements, paragraph 12.

MASTER CASEMENTS
STANDARD SIZES AND DESIGNS

Casements and Fixed Lights



Transom Units



Notes

All elevations shown above are outside elevations. When viewed from outside right hand casements have hinges on the right and left hand casements have hinges on the left. Dotted lines on elevations indicate swing of casement thus: Single casements are made either right or left hand. Letter "R" denotes right hand. Where left hand casements are intended substitute letter "L" and reverse dotted lines.

Units shaded are Stock Types.

Right hand (2214 R)

Left hand (2214 L)

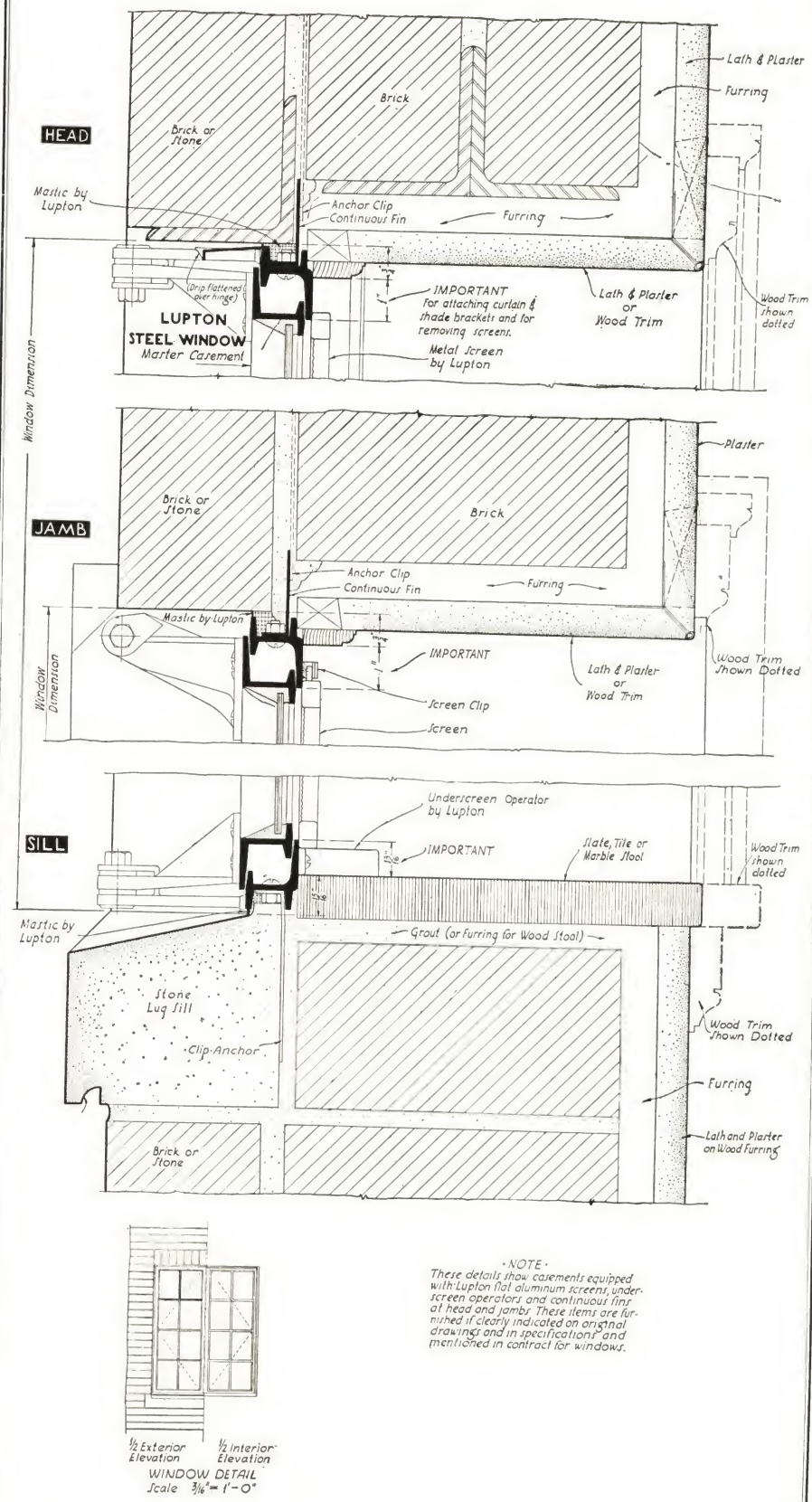
Top hinged (2214 TH)

Glass Sizes

For lights not numbered glass is 8" x 10⅝"
Numbered lights require glass of the following sizes:

5 - 8⅝" x 10"	11 - 9¼" x 10"
6 - 8⅝" x 10⅝"	12 - 9¼" x 10⅝"
7 - 8⅝" x 11"	13 - 9¼" x 11"
8 - 8⅝" x 11⅜"	14 - 9¼" x 11⅜"
9 - 8⅝" x 12"	15 - 9¼" x 12"
10 - 8⅞" x 10⅝"	16 - 8⅞" x 11⅜"

Page references—See details on pages 34 to 37. Master Casement Doors are illustrated on page 38



· NOTE ·
These details show casements equipped with Lupton flat aluminum screens, undersreen operators and continuous fins at head and jambs. These items are furnished if clearly indicated on original drawings and in specifications and mentioned in contract for windows.

MASTER CASEMENTS

DETAIL OF CASEMENT SET WITH CONTINUOUS ANCHORS IN BRICK WALL*

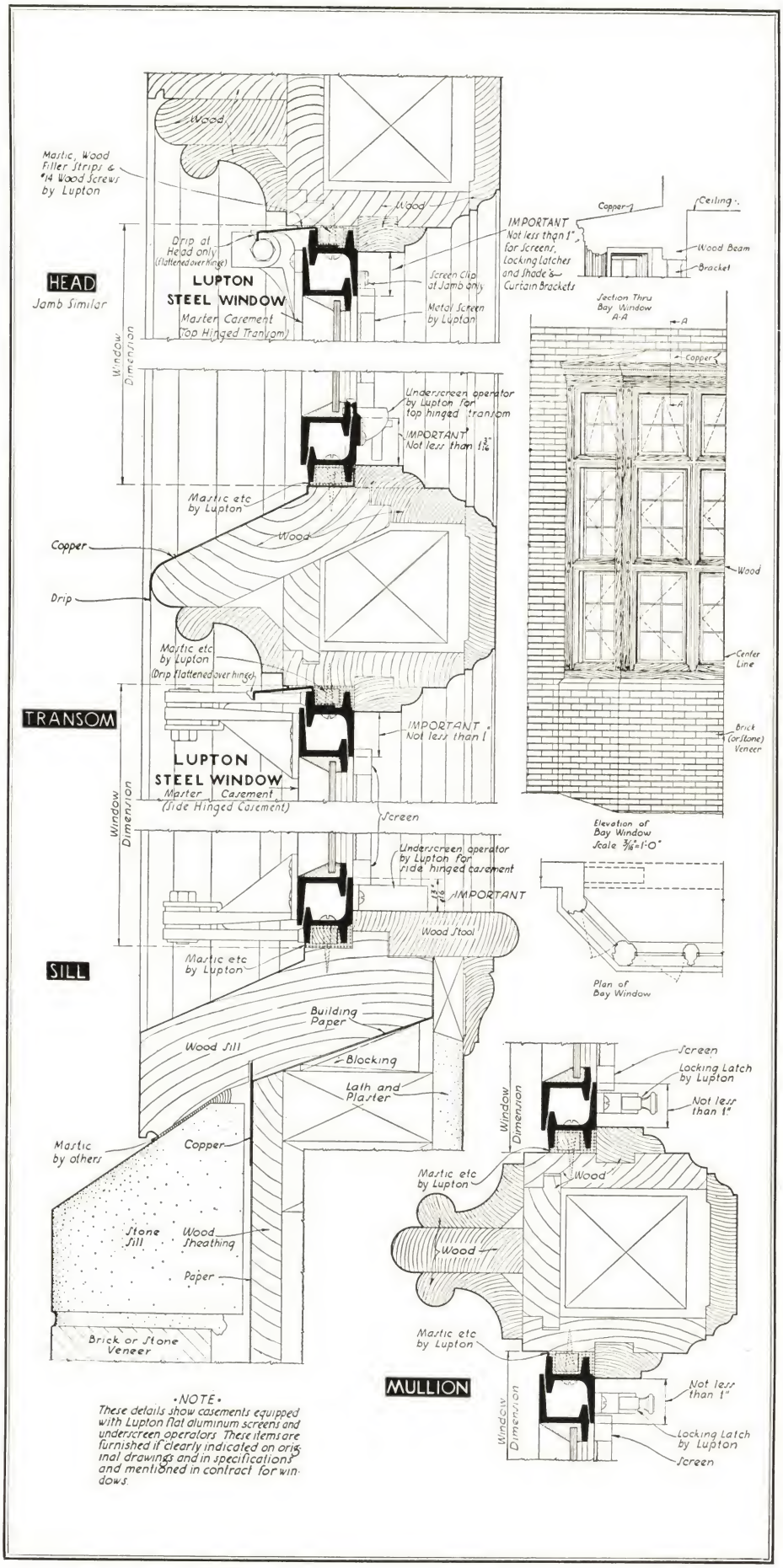
Scale for Details
3" = 1'0"

**Details on this and facing page are reproduced from two of a complete series of approved installation details which may be obtained in blue print form, full size scale, through Lupton sales representatives. All the usual types of surrounding construction are included in series.*

MASTER CASEMENTS

DETAIL OF BAY WINDOW SHOWING METHOD OF SETTING CASEMENTS*

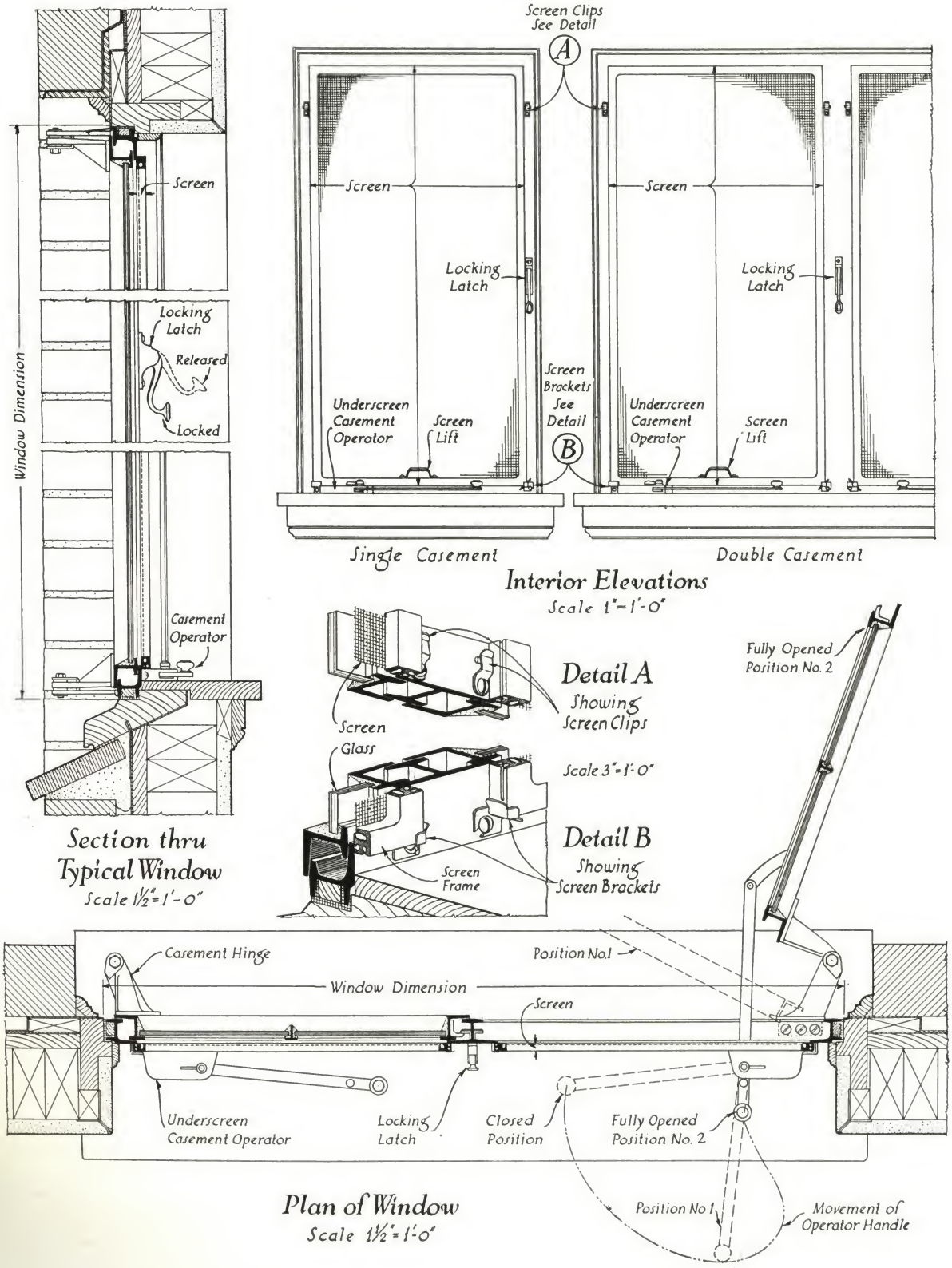
Scale for Details
3″=1′0″



NOTE
These details show casements equipped with Lupton flat aluminum screens and underscreen operators. These items are furnished if clearly indicated on original drawings and in specifications and mentioned in contract for windows.

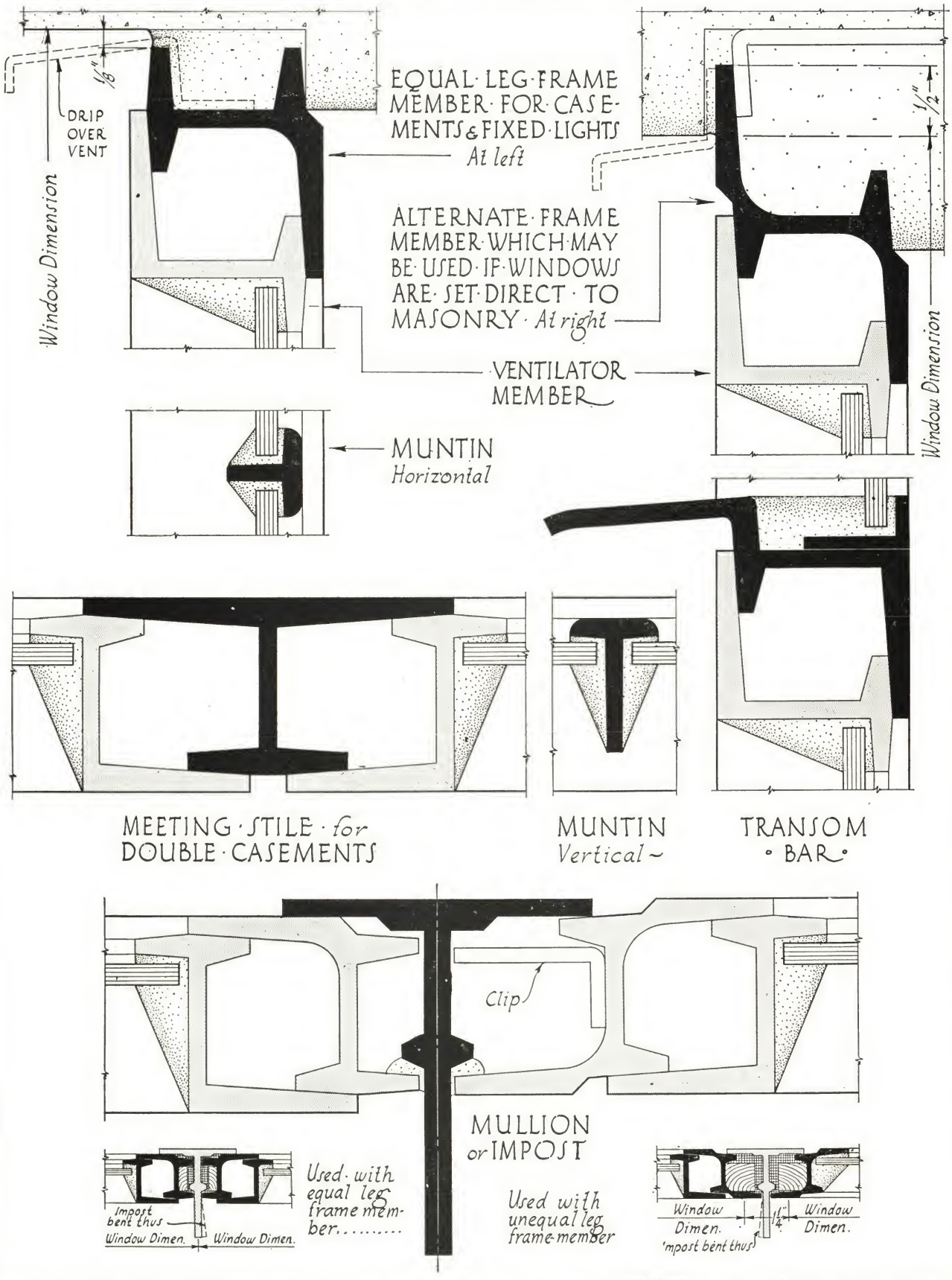
Page References: For specifications see page 32, standard sizes page 33, screening details page 36, full size details page 37. Hardware for screened casements is shown on page 31.

MASTER CASEMENTS
DETAILS OF SCREENING



Page references—For specifications see page 32, sizes page 33, installation details pages 34 and 35, hardware page 31

MASTER CASEMENTS
SECTIONS—FULL SIZE

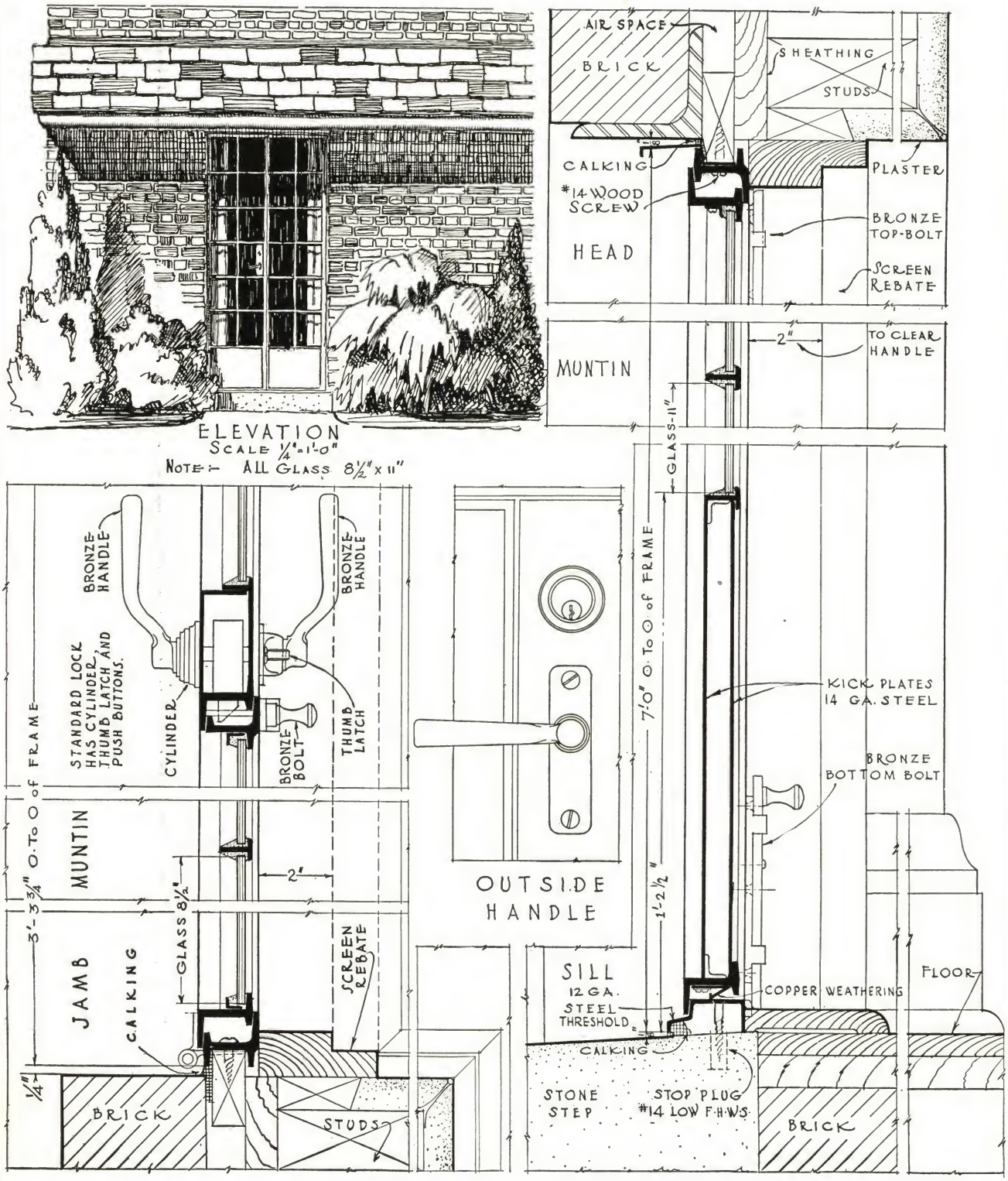


Page references—For specifications see page 32, sizes page 33, installation details pages 34 and 35, hardware page 31

CASEMENT DOORS

DETAILS of STANDARD DOORS SET IN BRICK VENEER WALLS

Scale for Details 3" = 1'-0"



Page references—For Master Casement specifications, see page 32. For Custom built Casement Doors, see pages 18 to 21

RESIDENCE CASEMENTS



The familiar standard casement for residence work with graceful, newly designed hardware and improved all aluminum screens that need not be opened to operate casements, but are quickly removed for cleaning glass without disturbing draperies.

Screens and hardware are illustrated on page 31. The underscreen operator and screens are optional but the locking latch is the same on all casements. Casements are drilled for shade and drapery brackets. See pages 41 and 44 for details.

SPECIFICATIONS

Work Included

1. Furnish where shown on drawings, Lupton Residence Casements as manufactured by David Lupton's Sons Co., Philadelphia, Pa.

Materials

2. Ventilator and frame members, muntins, and mullion and impost bars shall be made of specially rolled steel sections.

Construction

3. All casements shall be designed for outside putty glazing. Ventilators shall be side hinged or top hinged as indicated on elevations.

4. All casements shall be straight and true with members in alignment and surfaces in a plane.

5. Ventilator and frame members shall be mitered at corners, butt welded and the resulting joint ground flush with members. The frame and ventilator shall form a two-point, flat, continuous, weathering contact.

6. Muntins shall be continuous between frame or ventilator members. They shall be tenoned and riveted to frame or ventilator members and shall have interlocking joints at intersections. They shall be flush with frame or ventilator members on the inside.

7. Provide Horizontal and Vertical Mullions and bolts for attaching where two or more units are required in an opening.

8. Weather bars shall be furnished for ventilators that extend to the head and shall be rolled as an integral part of the frame member at the head.

Note:—(a) Continuous anchors of 13 gauge steel are furnished if definitely specified, and mentioned in contract for windows.

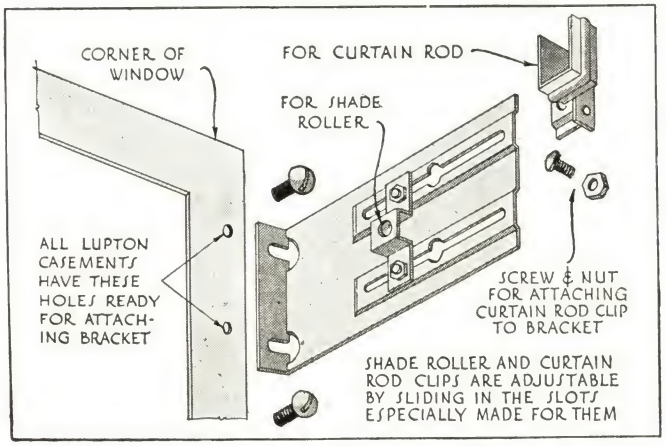
(b) Anchor clips of 14 gauge steel for head, jambs and sill are furnished if specified.

Hardware

Note:—Hardware is available in standard painted finish or in bronze with standard coin bronze and various special finishes. Specify the finish desired.

9. The following hardware (except hinges) shall be shipped unattached carefully packed to prevent damage. Hinges shall be attached and painted with the windows in the factory. For nonscreened casements specify:

Side hinged casements shall be equipped with locking latches (with lift action), special pull handle and extended friction hinges.



All casements are drilled for attaching shade and drapery brackets as shown in detail at left. Brackets for simple or elaborate arrangements of draperies can be furnished if specified.

Top hinged Transoms shall have locking latch for pole or hand operation and close-up friction hinges.

For Screened Casements see under "Screens."

Shade and Drapery Brackets

10. All casements shall have holes provided for attaching drapery and shade brackets as indicated on window manufacturer's details.

Note:—Shade brackets are furnished if clearly specified and mentioned in contract for casements.

Calking Cement

11. The window manufacturer shall furnish non-staining elastic calking cement in quantities sufficient for application as shown on window manufacturer's standard details.

Erection

12. All casements shall be erected by (state by whom). They shall be set plumb and true, properly aligned and securely anchored before glazing. Mullions and imposts (and continuous anchors if specified) shall be bolted securely to frames. Calking cement shall be neatly applied at points indicated on window manufacturer's standard details. Attach hardware.

Note—Unless definitely stated otherwise in order or in specification, hardware will be attached by erector when casement is erected.

Note:—Include in the masonry specifications that all masonry openings shall be accurately constructed in accordance with the installation details for Casements. All grouting, pointing, etc., should be done by the mason contractor after the windows are set.

Painting

13. All casements shall receive one shop coat of casement manufacturer's standard dark gray paint, oven dried.

Note:—(See page 3.)

Glass and Glazing

Note—(See also pages 3 and 5.) Specify glass and glazing under proper heading elsewhere in specifications.

(a) Do not specify single thickness glass.

(b) Specify high grade steel window putty (ordinary wood sash putty must not be used).

(c) Specify that Lupton Residence Casement Windows shall be glazed from the outside. The glass set in a bed of putty and held by Lupton Standard Wire Glazing Clips.

Screens

(Furnished if specified and mentioned in contract for windows.)

14. All Lupton Residence Casements shall be equipped with screens, designed to fit tightly against casement frame and prevent entrance of insects.

15. Screen frame shall be $\frac{7}{8}$ x $\frac{5}{8}$ in. extruded aluminum, solidly welded at corners to form a smooth seamless frame, and with a wire brush, satin finish. Frames shall be rewireable.

16. Wire shall be 16 mesh, 32 gauge aluminum wire cloth.

Note:—When screens are specified the following hardware should be specified instead of that given above for nonscreened casements.

Hardware for Screened Casements

17. Side hinged casements shall have extended non-friction hinges and (one of the following):

(a) Sliding type underscreen operators and standard locking latches (lift action).

(b) Windor series 50 operators and standard locking latches (lift action).

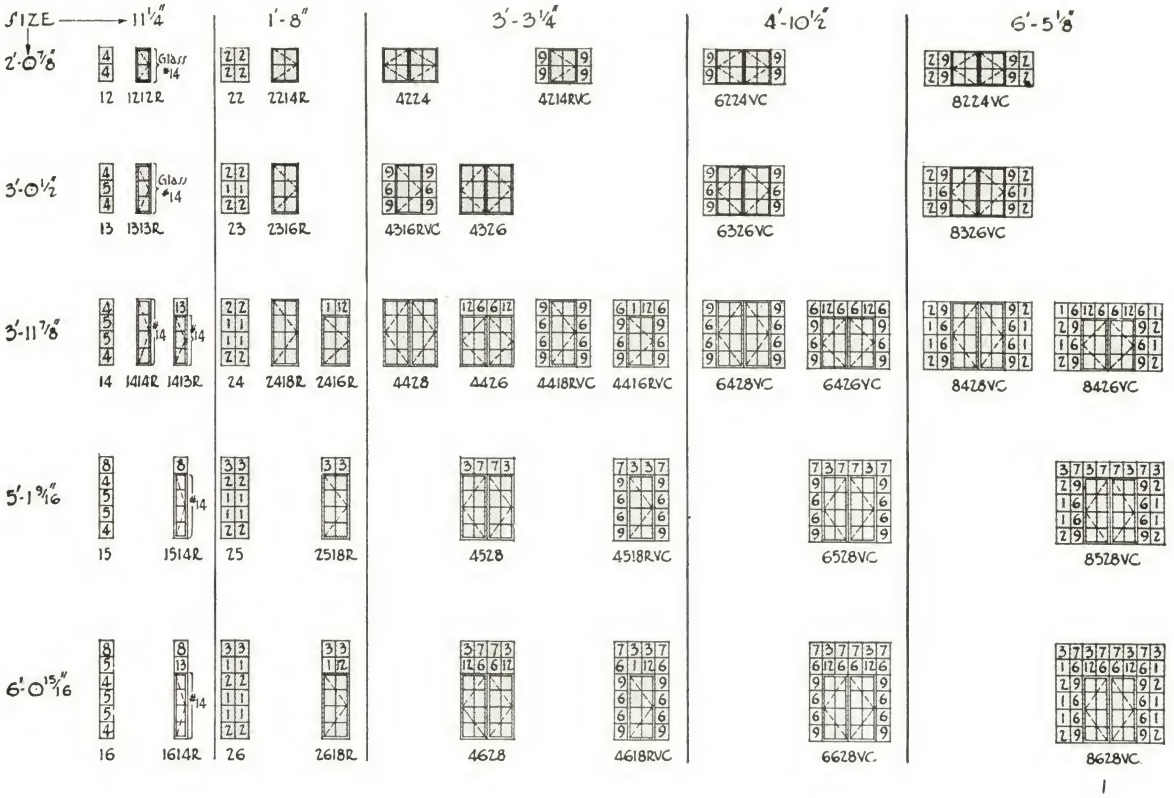
(c) Windor series 50 operator and Windor detachable locking handles (cam action).

18. Top hinged transoms shall have close-up friction hinges and special underscreen operators and locking device for pole or hand operation.

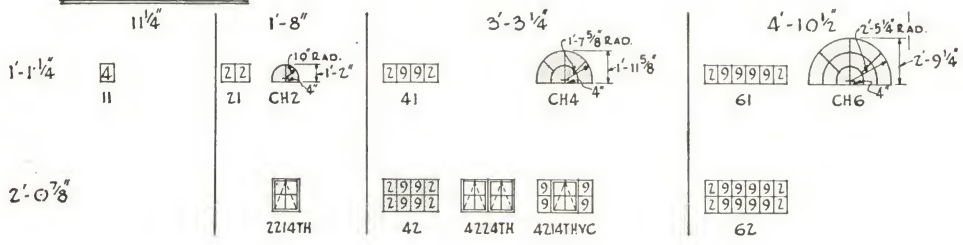
If desired aluminum screens described above may be pivoted at the side to open in. In such cases the underscreen operator is eliminated and friction hinges are used. Hardware specification then becomes the same as for non-screened casements, paragraph 9.

RESIDENCE CASEMENTS
STANDARD SIZES AND DESIGNS

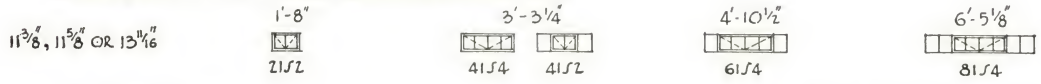
CASEMENTS · AND · FIXED · LIGHTS



TRANSOMS



SILL · VENTILATORS · SEE · PAGE · 46 ·



NOTES ··

All elevations shown above are outside elevations.~When viewed from outside right hand casements have hinges on the right and left hand casements have hinges on the left.~Dotted lines on elevations indicate swing of casement thus.... Single casements are made either right or left hand.~Letter "R" denotes right hand. Where left hand casements are intended substitute letter "L" and reverse dotted lines. Dimensions given are in each case the overall dimensions of the unit.~See details on following pages for measure. points.~When two or more units are used in an opening add ¼" to height or width of opening for each impost or mullion.~

Units shaded are Stock Types



GLASS SIZES

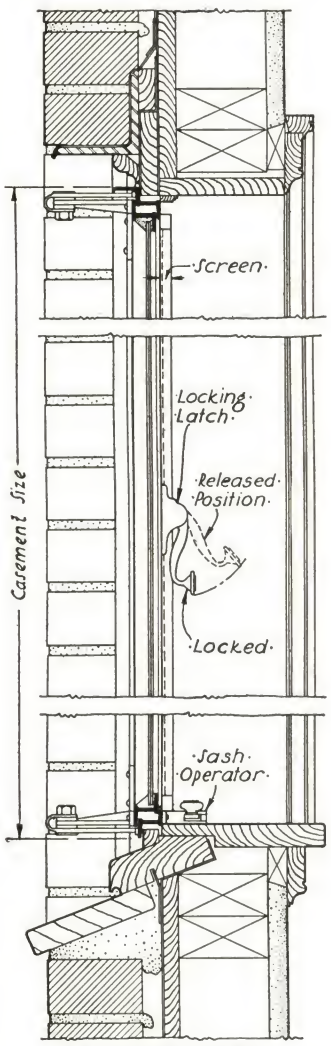
For lights not numbered glass is 8½" x 11"
Numbered lights require glass of the~ following sizes.~

1	–	9" x 11"	9	–	9¼" x 11½"
2	–	9" x 11½"	10	–	8½" x 9¼"
3	–	9" x 13"	11	–	8½" x 11½"
4	–	9½" x 11½"	12	–	9" x 10¾"
5	–	9½" x 11"	13	–	9½" x 10¾"
6	–	9¼" x 11"	14	–	8¼" x 11"
7	–	9¼" x 13"	15	–	9¼" x 9¼"
8	–	9½" x 13"			

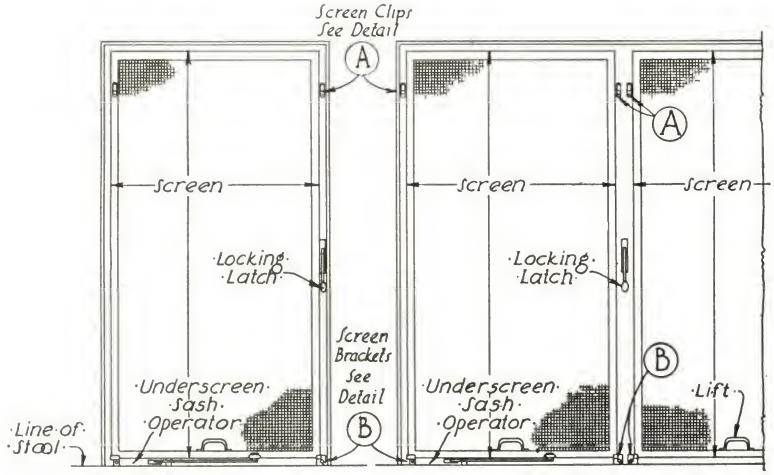
Page references—For specifications see page 39, installation and screening details pages 41 to 44, sill ventilators page 46, full size sections page 45, hardware page 31, casement doors pages 18 and 38

RESIDENCE CASEMENTS
DETAILS for SCREENING

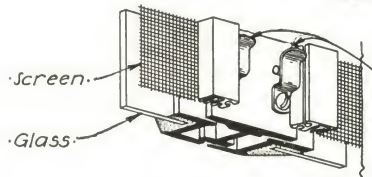
Scale for Details 1½" = 1'-0"



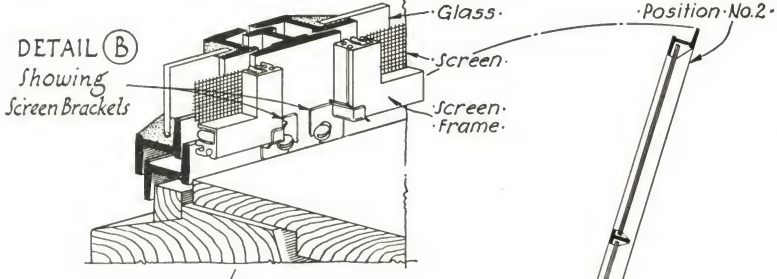
SECTION THRU TYPICAL WINDOW
Scale 1½" = 1'-0"



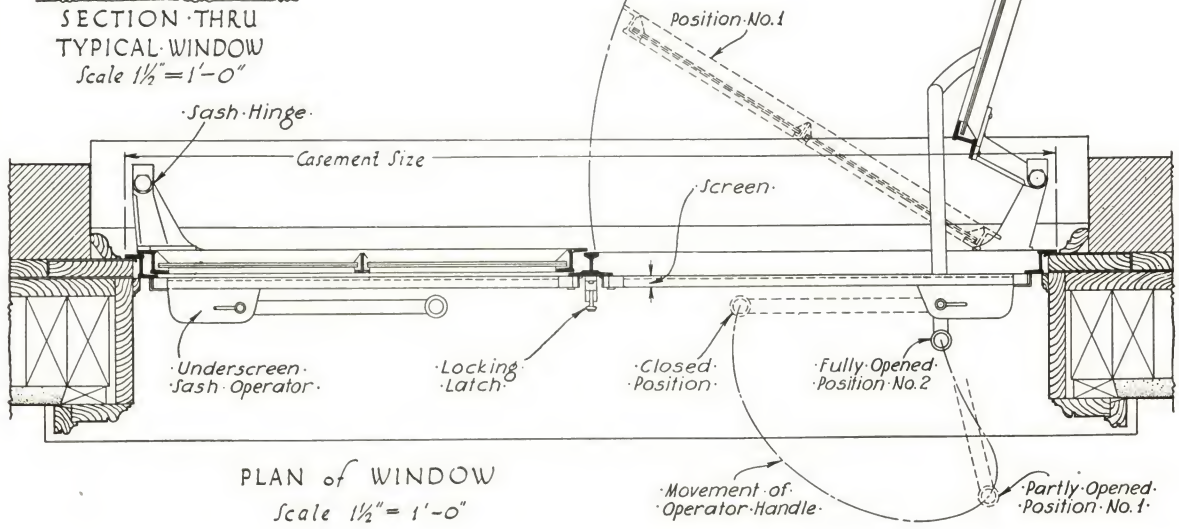
INTERIOR ELEVATIONS
Scale ¾" = 1'-0"



DETAIL (A) Showing Screen Clips

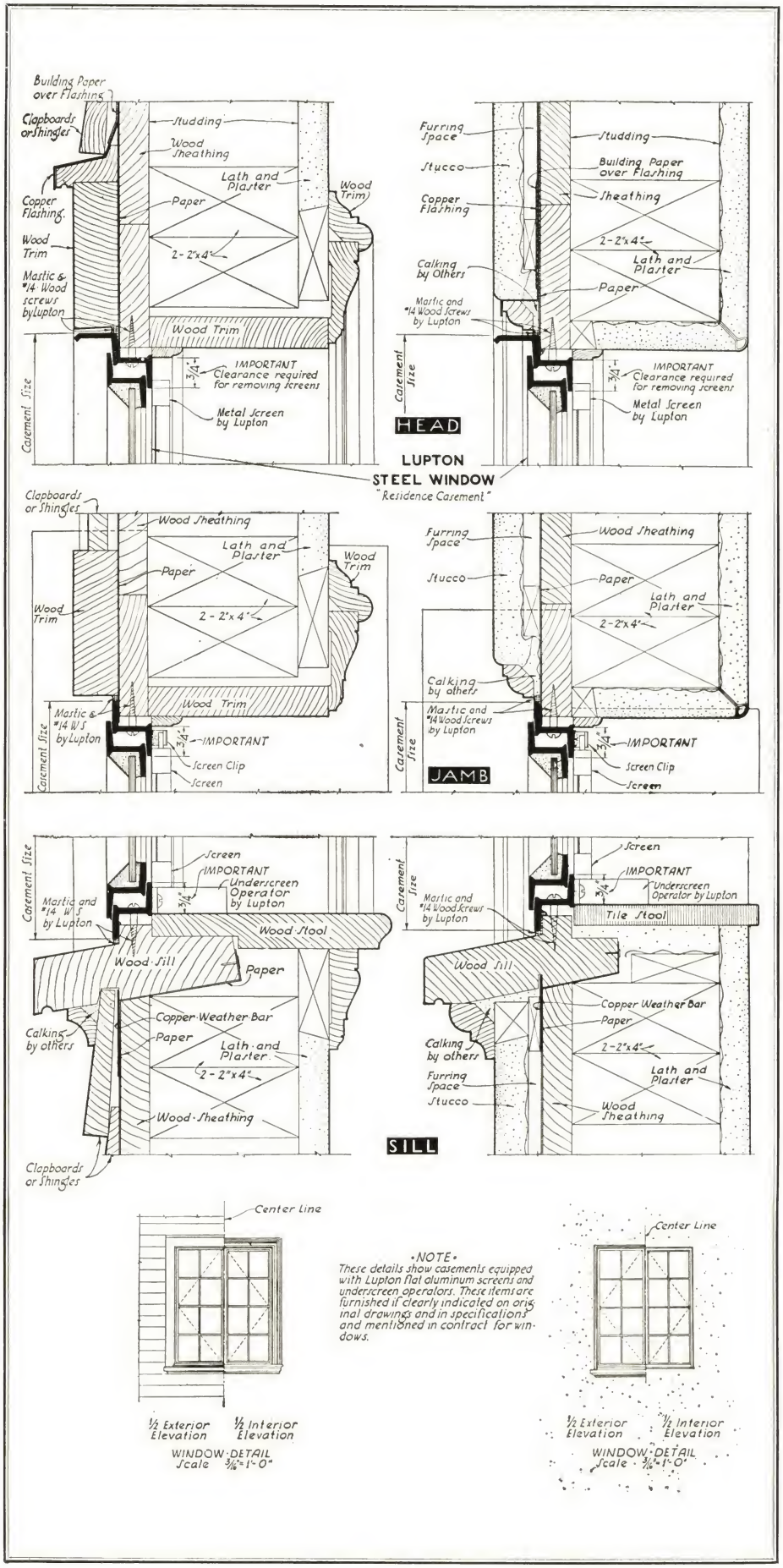


DETAIL (B) Showing Screen Brackets



PLAN of WINDOW
Scale 1½" = 1'-0"

Page references—For specifications see page 39, installation details pages 42 and 43, full size sections page 45, hardware page 31. Alternate type underscreen operation page 44



RESIDENCE CASEMENTS

DETAILS FOR CASEMENTS SET IN FRAME CONSTRUCTION*

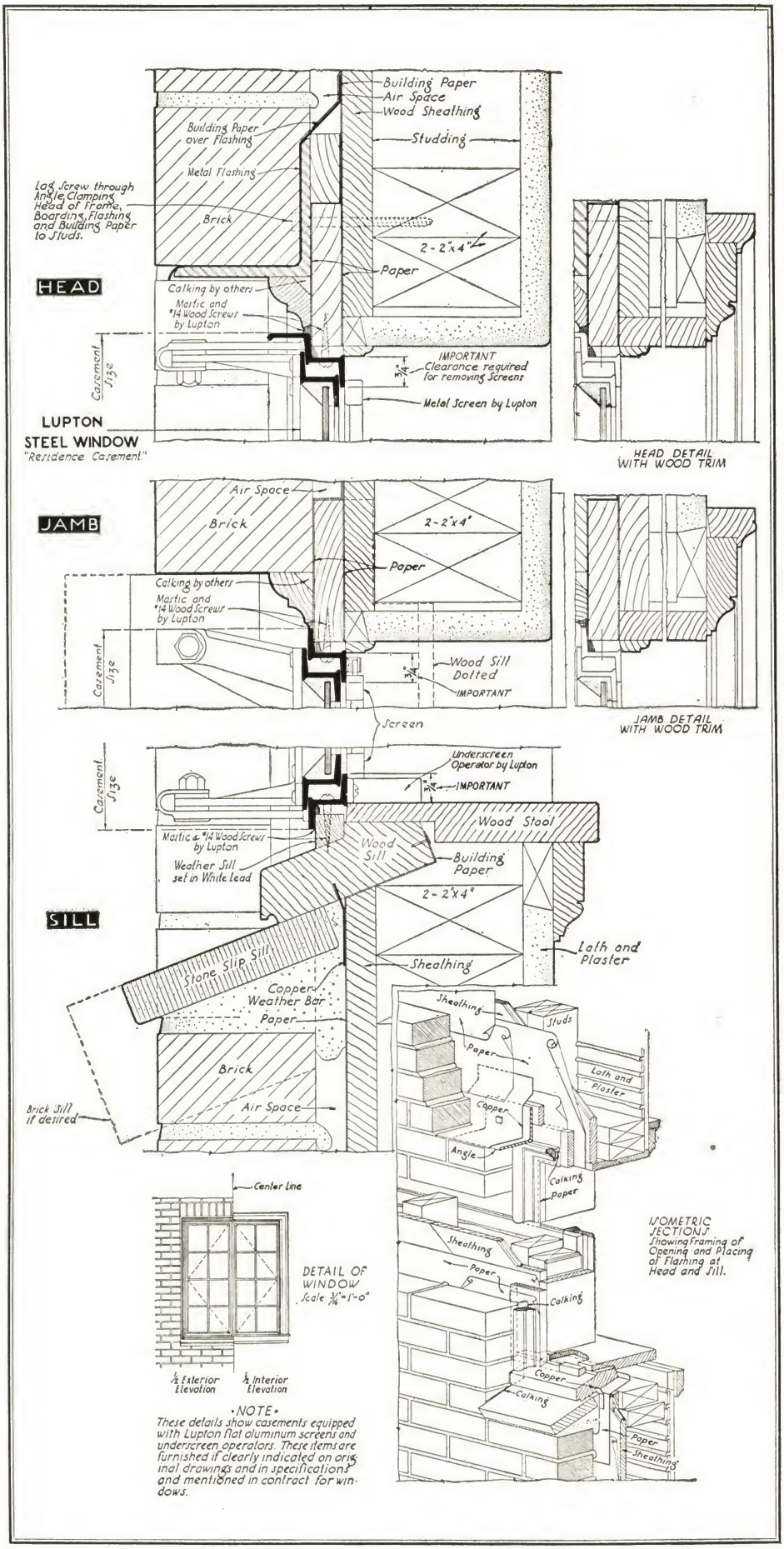
Scale for Details
3"=1'0"

**Details on this and facing page are reproduced from two of a complete series of approved installation details which may be obtained in blue print form, full size scale, through Lupton sales representatives. All the usual types of surrounding construction are included in series.*

RESIDENCE CASEMENTS

DETAILS FOR CASEMENTS SET IN BRICK VENEER WALL*

Scale for Details
3" = 1'0"

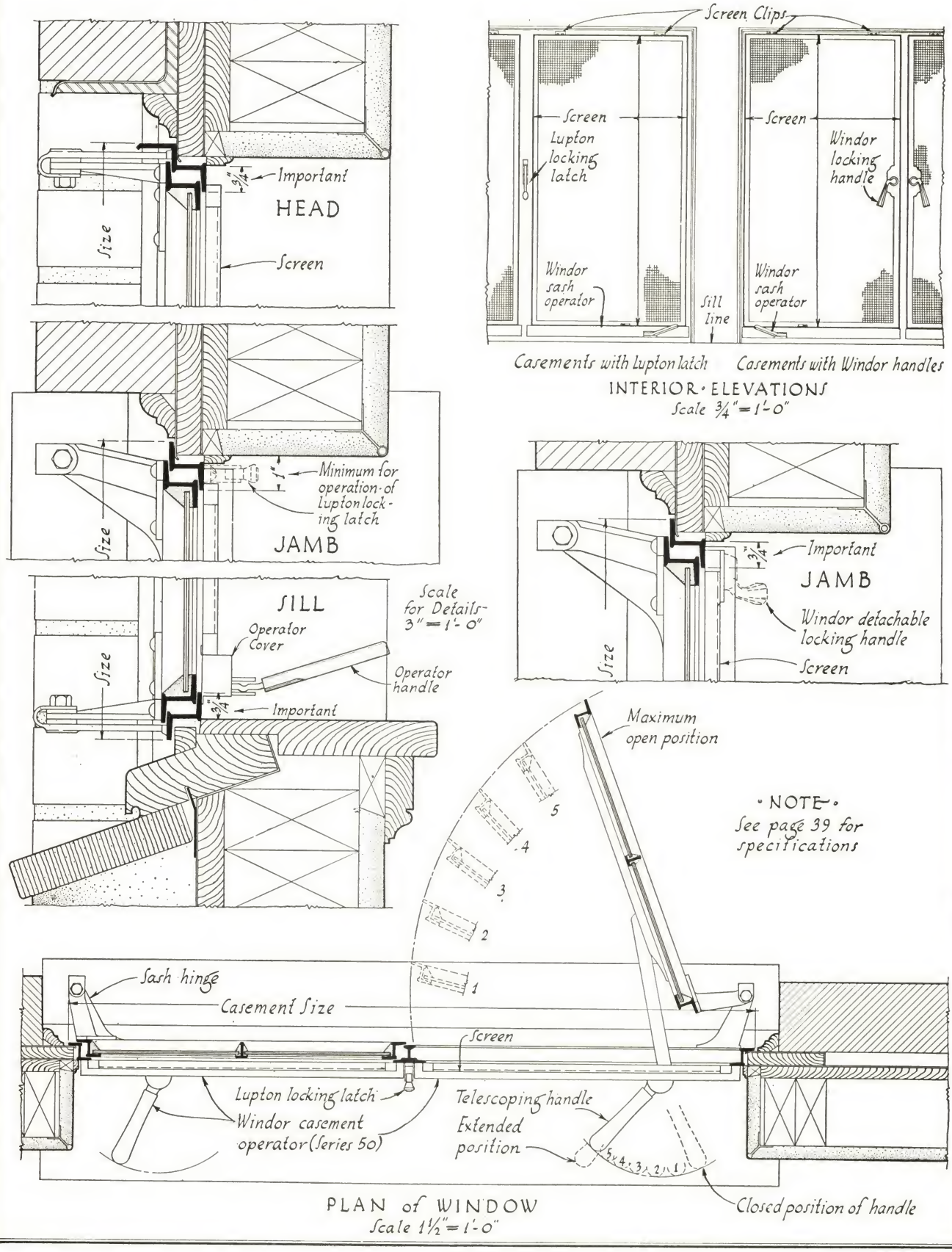


•NOTE•
These details show casements equipped with Lupton flat aluminum screens and underscreen operators. These items are furnished if clearly indicated on original drawings and in specifications and mentioned in contract for windows.

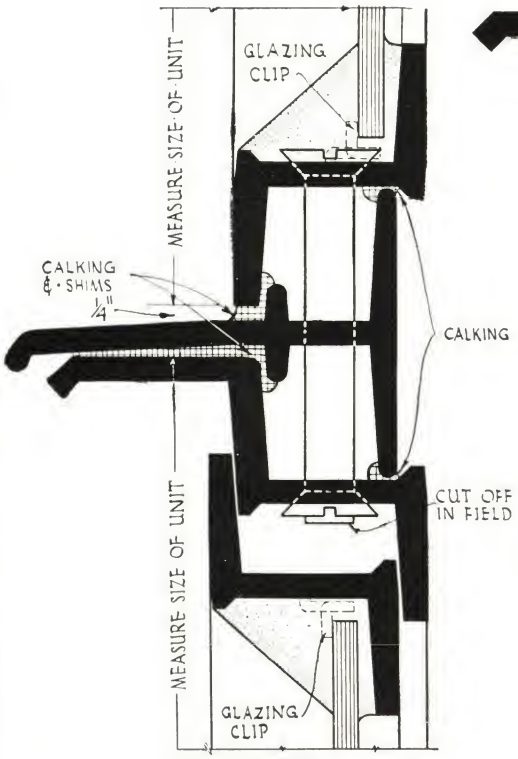
Page References: For specifications see page 39, standard sizes page 40, screening details pages 41 and 44, full size details page 45. Hardware for screened casements is shown on page 31.

RESIDENCE CASEMENTS
ALTERNATE SCREENING DETAILS

Standard Underscreen operation is illustrated on pages 31 and 41

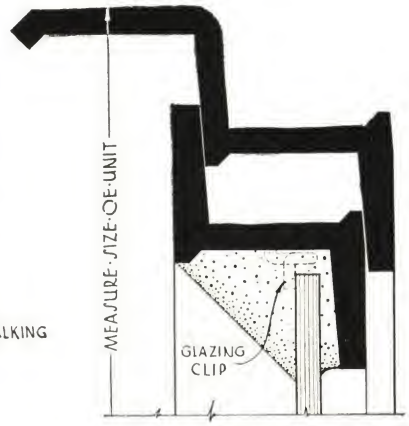


RESIDENCE CASEMENTS
FULL SIZE SECTIONS

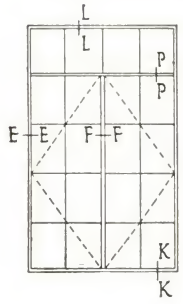


IMPOST

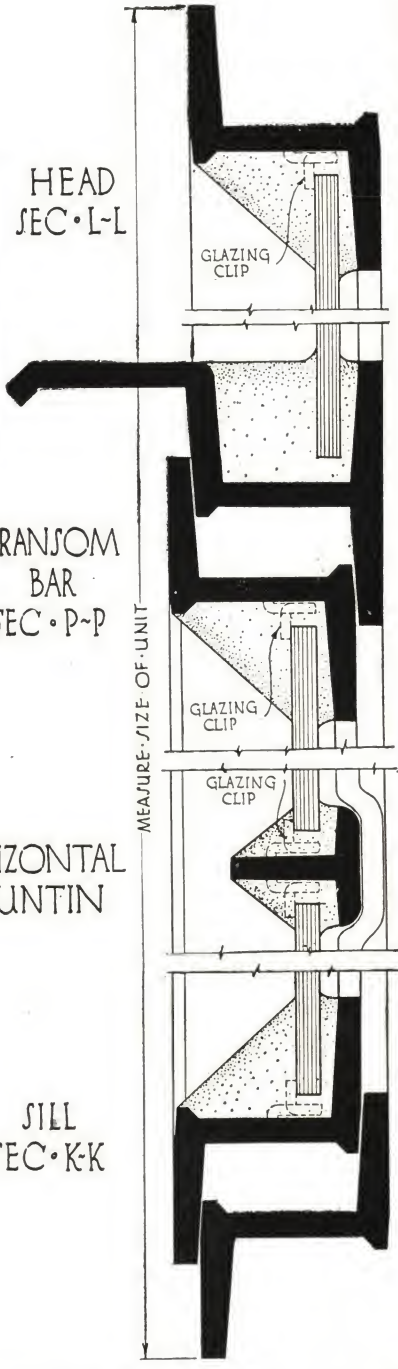
FIXED UNIT SHOWN OVER VENTILATOR UNIT
SIMILAR CONSTRUCTION USED BETWEEN TWO
FIXED UNITS OR TWO VENTILATOR UNITS.

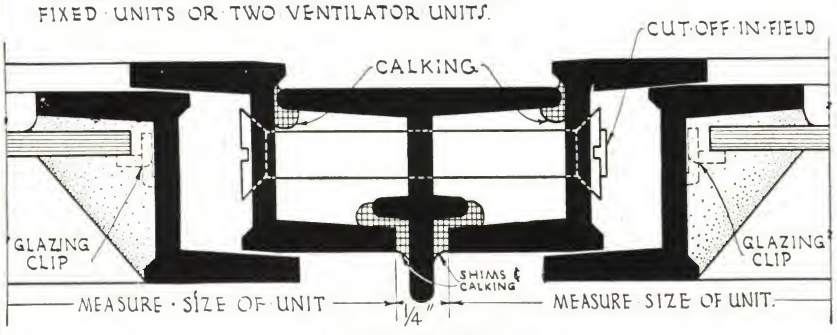


HEAD
FOR VENTILATOR UNIT



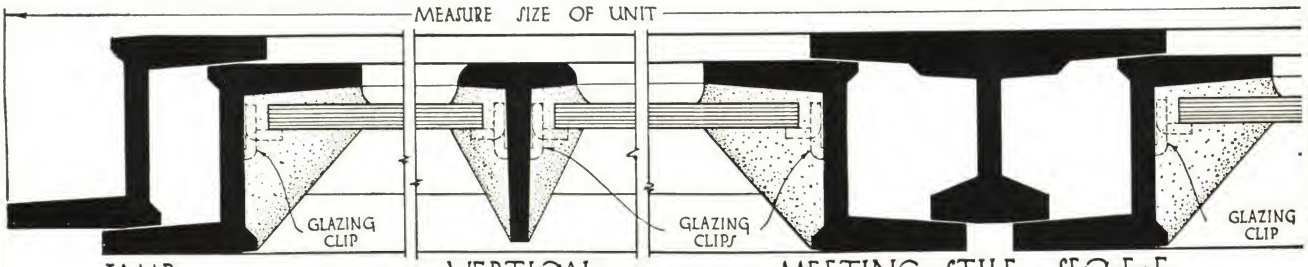
HORIZONTAL MUNTIN





·MULLION·

TWO VENTILATOR UNITS SHOWN SIDE BY SIDE
SIMILAR MULLION USED BETWEEN TWO FIXED UNITS,
OR BETWEEN A FIXED UNIT AND A VENTILATOR UNIT.



JAMB SEC·E-E

VERTICAL MUNTIN

MEETING-STILE · SEC·F-F
BETWEEN·TWO·VENTILATORS

RESIDENCE CASEMENTS
DETAILS OF SILL VENTILATORS

Scale for Details 3" = 1'0"

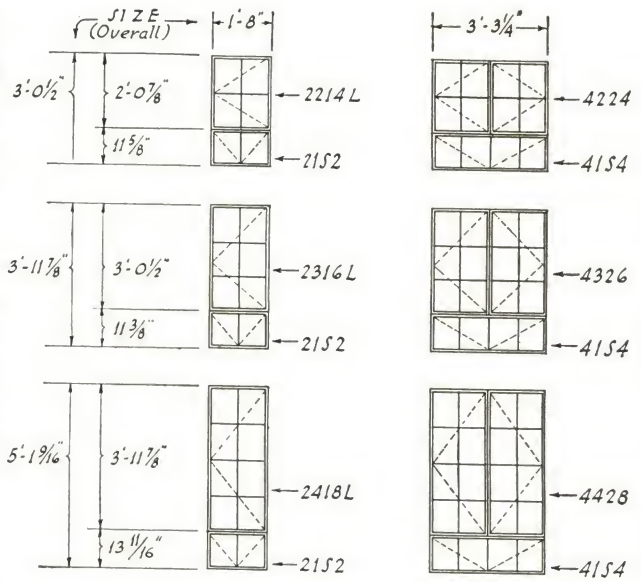
These optional ventilating units are suggested for use in rooms where a balanced outflow and inflow of air is desirable. With them a constant circulation of air can be maintained without draft at all seasons, providing in homes the same high standard of ventilation enjoyed in buildings equipped with Lupton Office Windows.

Sizes

Units as indicated in diagrams at right and on page 40 are made to fit under standard size Residence Casements and are attached before shipping. When units are required for six or eight light wide Casements or for use in composite windows with mullions, the entire window is assembled in the factory.

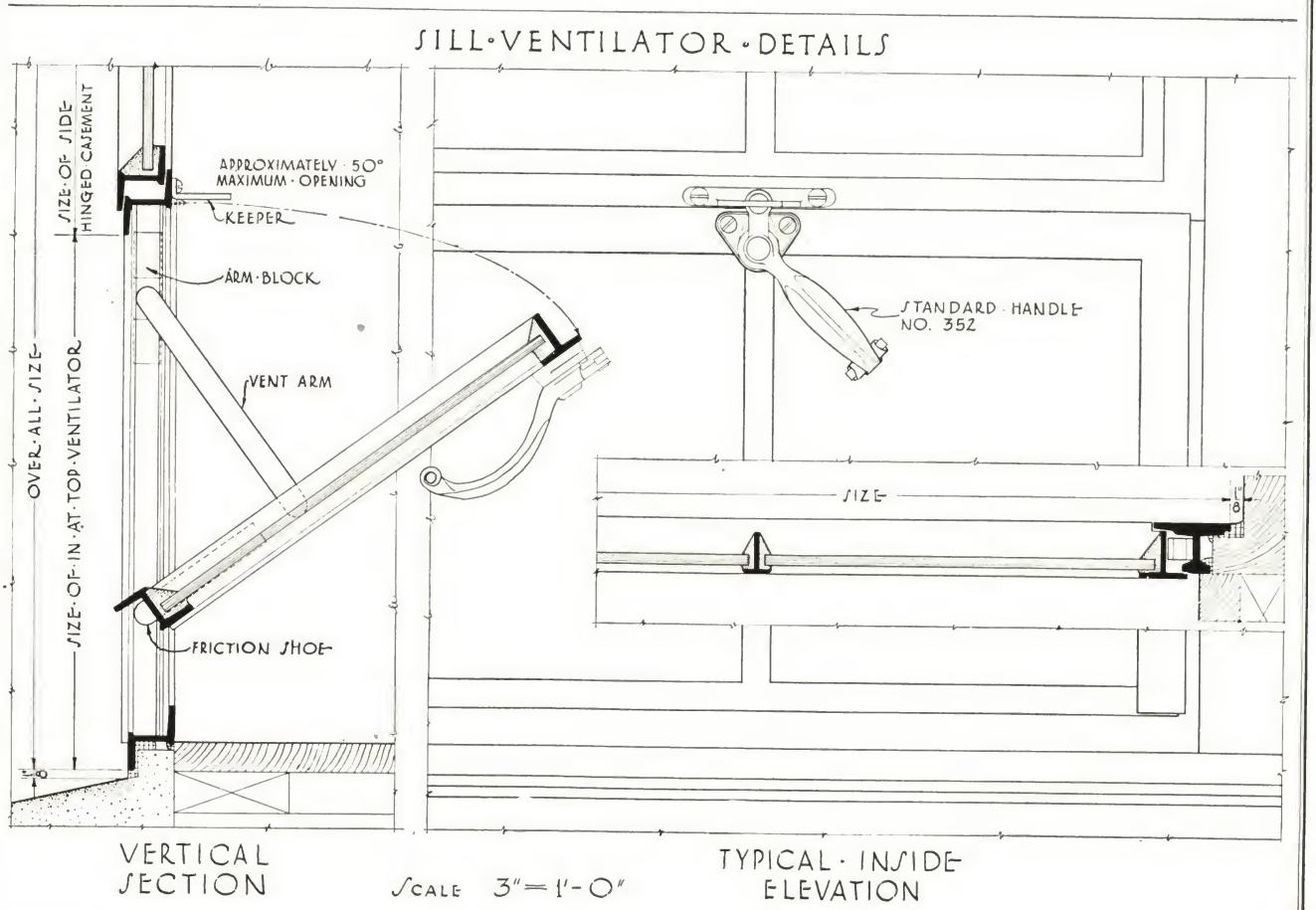
Screens

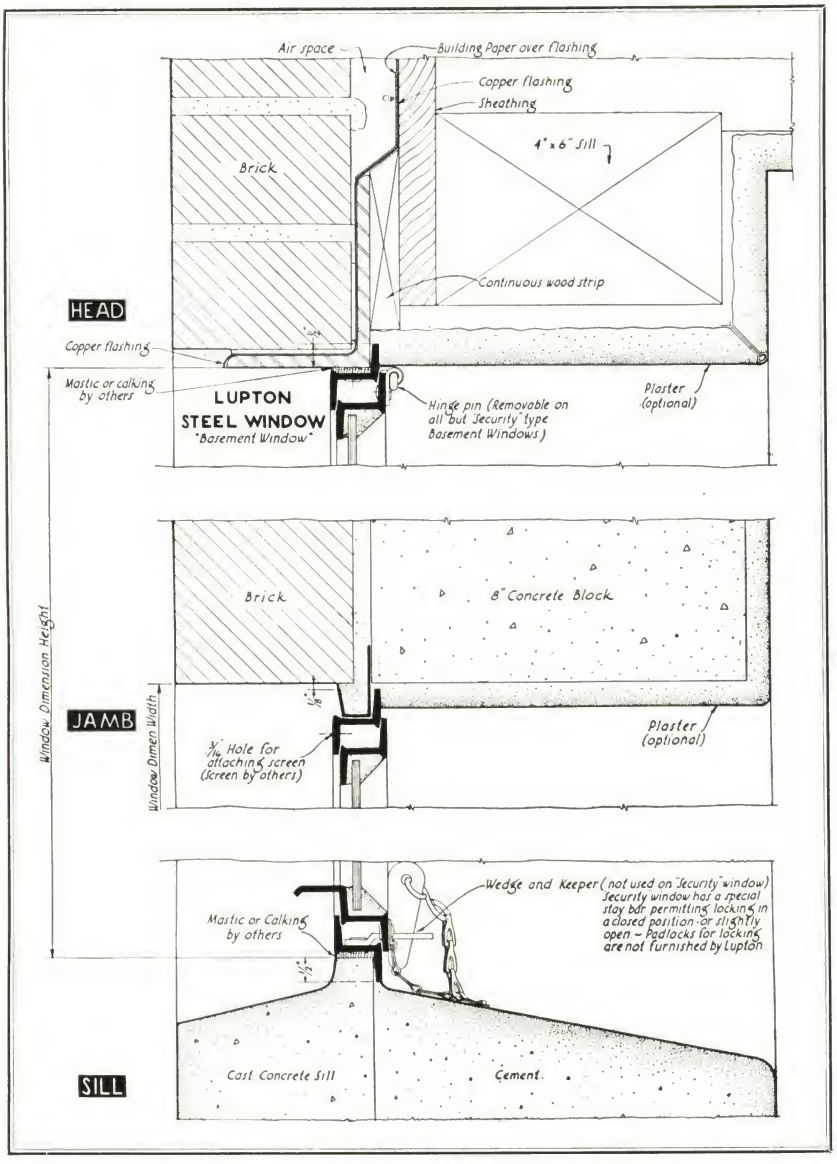
Provision is made for attaching a screen on the outside of the unit. Screen is of same construction as interior screens for casements described on page 39.



• OUTSIDE • ELEVATIONS •

Typical · Sill Ventilators shown in combination.. with typical Residence Casements. (See page 40)





BASEMENT WINDOWS

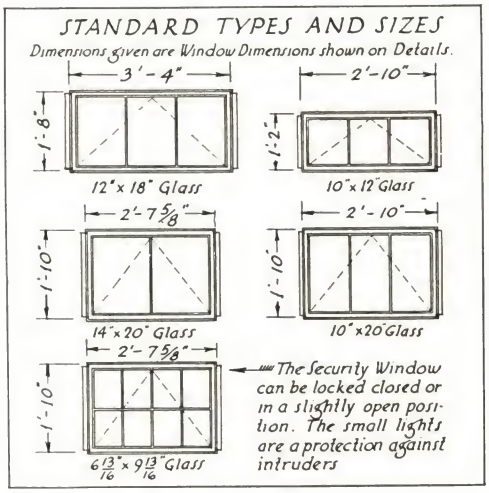
These windows give maximum light and ventilation and are carried in stock by Lupton Dealers. Made of the same steel sections as Lupton Residence Casements with welded corners and a bottom rail specially shaped to exclude moisture. Split hinge pins permit removal of ventilators from inside.

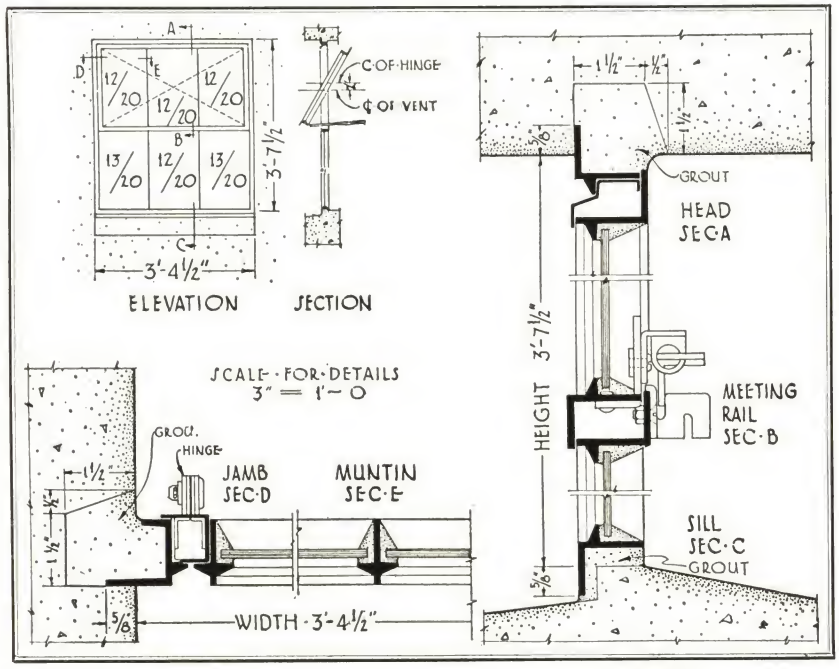
Security Type Window has small glass lights that keep out intruders. It can be locked closed or about 5 in. open. Hinge pins in Security Windows cannot be removed.

Provision is made for attaching screens.

Windows are painted gray and have steel locking pegs.

Padlocks are not furnished by Lupton.





UTILITY WINDOW

This window is designed to afford maximum light in small buildings, private garages and basements that are high above grade. The ventilator at the top of the window, swinging out at bottom and in at top, supplies fresh air without interfering with space requirements. Windows are glazed on the inside.

Ventilators are equipped with a standard angle-iron stay bar and holder (see page 73) for hand operation and are painted gray.

Angle shaped frame section permits easy installation in all types of wall construction. Illustration at left shows details of window set in a concrete wall.

GEORGIAN WINDOWS

Patent Applied For



Georgian Windows are gracefully patterned double hung, steel windows, low in cost and of universal adaptability for all types of buildings requiring double hung action windows.

The product of engineering research coupled with the assistance of experienced architects, these windows combine a high degree of mechanical perfection with a gracefulness of line and proportion reminiscent of the finely made windows of the Georgian era. Cost compares favorably with that of weatherstripped wood sash with fittings and attachment of hardware to make them comparable in completeness to the Georgian Window.

SPECIFICATIONS

Work Included

1. Furnish and install where shown on drawings steel double hung windows, "Georgian" type as manufactured by DAVID LUPTON'S SONS COMPANY, Philadelphia, Pa.

Materials

2. Frame and sash members shall be solid hot rolled steel sections. Parting strips and meeting rail weathering member shall be extruded aluminum. Sash members shall be not less than 1 in. in depth (front to back).

Construction

3. Windows shall be designed for outside putty glazing.

4. Frame and sash members shall be assembled with welded joints. Exposed welds shall be ground off flush with members.

5. Muntins shall be tenoned and riveted to sash members and shall have flush interlocking joints at intersections.

6. Windows shall be made so that when closed and locked, sash are forced into positive continuous contact with frame at head and sill, with parting strip at jambs and with each other at meeting rail. Contact at meeting rail shall be thru an aluminum strip and resilient cushion attached to the top sash. Wedge blocks shall be provided on jambs at ends of meeting rails to prevent air leakage at these points.

7. When window is closed the distance between masonry and glass sight line at head and jambs, and the distance from top of stool to sight line at sill shall not exceed 1⅛ in. Width of meeting rail between sight lines shall not exceed 1 in.

8. The sash shall be hung on spring balances (two for each sash). Balances shall be encased in housings, one housing securely riveted to each jamb and joints calked to prevent entrance of moisture when set in masonry. Balances shall be removable.

9. Attachment of spring balance tapes to sash shall be at bottom rail, by means of specially designed tape staples and sash clips, and in such manner that tape (including tape staple) hangs vertically. Clips shall be securely attached to bottom rails with screws easily accessible.

10. Strap anchors shall be furnished for head, jambs and sill.

Hardware

11. Spring balances shall be provided, fitted with bronze tapes not less than .016 inches thick and tape staples for attaching to sash. Staples shall have a hole for attaching a guide wire.

12. Tension in balances shall be adjustable without removing balances.

13. Malleable iron pull down hooks shall be attached to bottom rail of top sash and a malleable iron cam lock shall be attached at meeting rail.

14. A pair of extruded aluminum sash lifts shall be provided for each window, shipped unattached.

Continued on next page.

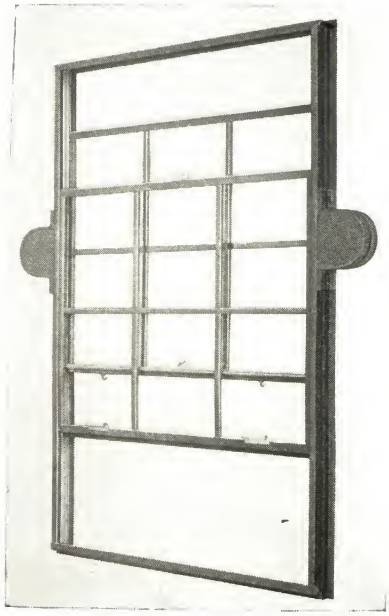


←*At Left*

Finger-tip lightness in operation is achieved by the use of high-grade spring balances and by the unique Lupton system of factory-established clearances between the sash and the frame. Note also the extraordinary clear light opening, narrow meeting rail, and inconspicuous frame members, resulting from the use of special rolled sections. These windows reproduce with extraordinary fidelity the architectural character of the fine original windows of the Georgian era.

At Right→

Georgian Windows are shipped complete and ready to install. Metal wedges firmly hold upper and lower sash in positions indicated. All four rails act as rigid braces, strengthening frame in shipment and handling.



Continued from preceding page.

SPECIFICATIONS

Erection

Note:—The Georgian Window is shipped assembled with jamb members braced at four points between head and sill to prevent bending. Bracing should remain in place until time for glazing.

Windows should be firmly braced in position and the walls built around them enclosing the anchors and balance housings. In frame construction the bucks must be set far enough apart to clear the housings. See details on pages 51 and 52.

15. Windows shall be set in place securely braced plumb and level. In building the walls, proper clearances shall be maintained as shown on window installation details.

16. After glazing sash, lifts shall be attached and spring balances adjusted.

Calking

Note:—Calking is not done by Lupton, but when specified and mentioned in window contract non-staining elastic calking cement will be furnished. See page 3.

Painting

17. Windows shall receive one shop coat of window manufacturer's standard gray paint, oven dried.

Glass and Glazing

Note:—(See also page 3.) Specify glass and glazing under proper heading elsewhere in specifications.

(a) Do not specify single thickness glass. Specify double thick or ⅛" plate glass. Heavier glass is not recommended as the total weight may exceed the capacity of the spring balances.

(b) Specify high grade steel window putty (ordinary wood sash putty must not be used).

(c) Specify that Lupton Georgian Windows shall be glazed from the outside. The glass set in a bed of putty and held by Lupton standard wire glazing clips.

GEORGIAN WINDOWS

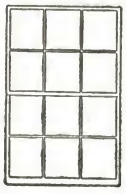
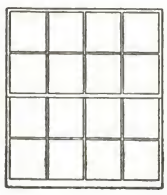
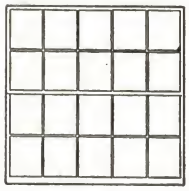
SIZES AND DESIGNS

STANDARDS

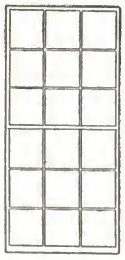
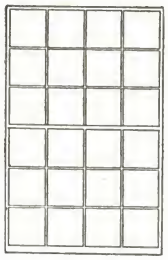
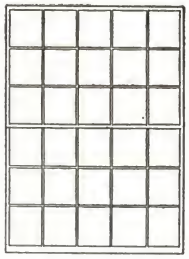
Widths → 2'-3" & 2'-6" | 2'-9", 3'-0", 3'-3" & 3'-6" | 3'-9" & 4'-0"

Heights

4'-0"
4'-6"
&
5'-0"

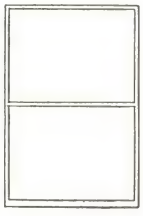
5'-6"
6'-0"
6'-6"
7'-0"
7'-6"
8'-0"

ALTERNATES

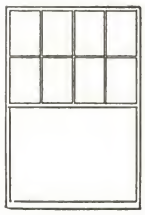
Sizes and muntin arrangements may be varied to meet special conditions Sizes, however should be limited to a maximum of 4ft. x 8ft. Diagrams below and at right indicate a few of the possible variations in design

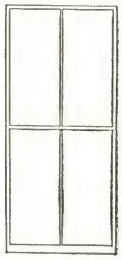
Wherever the weight of a sash (glazed) exceeds 46 lbs double balances must be used —

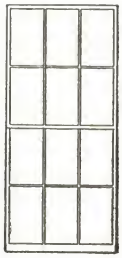
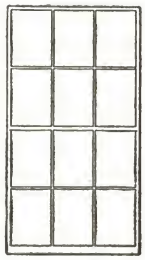


Muntins may be omitted from both sash.

Muntins may be omitted from one sash and the other sash may retain any desired muntin arrangement.



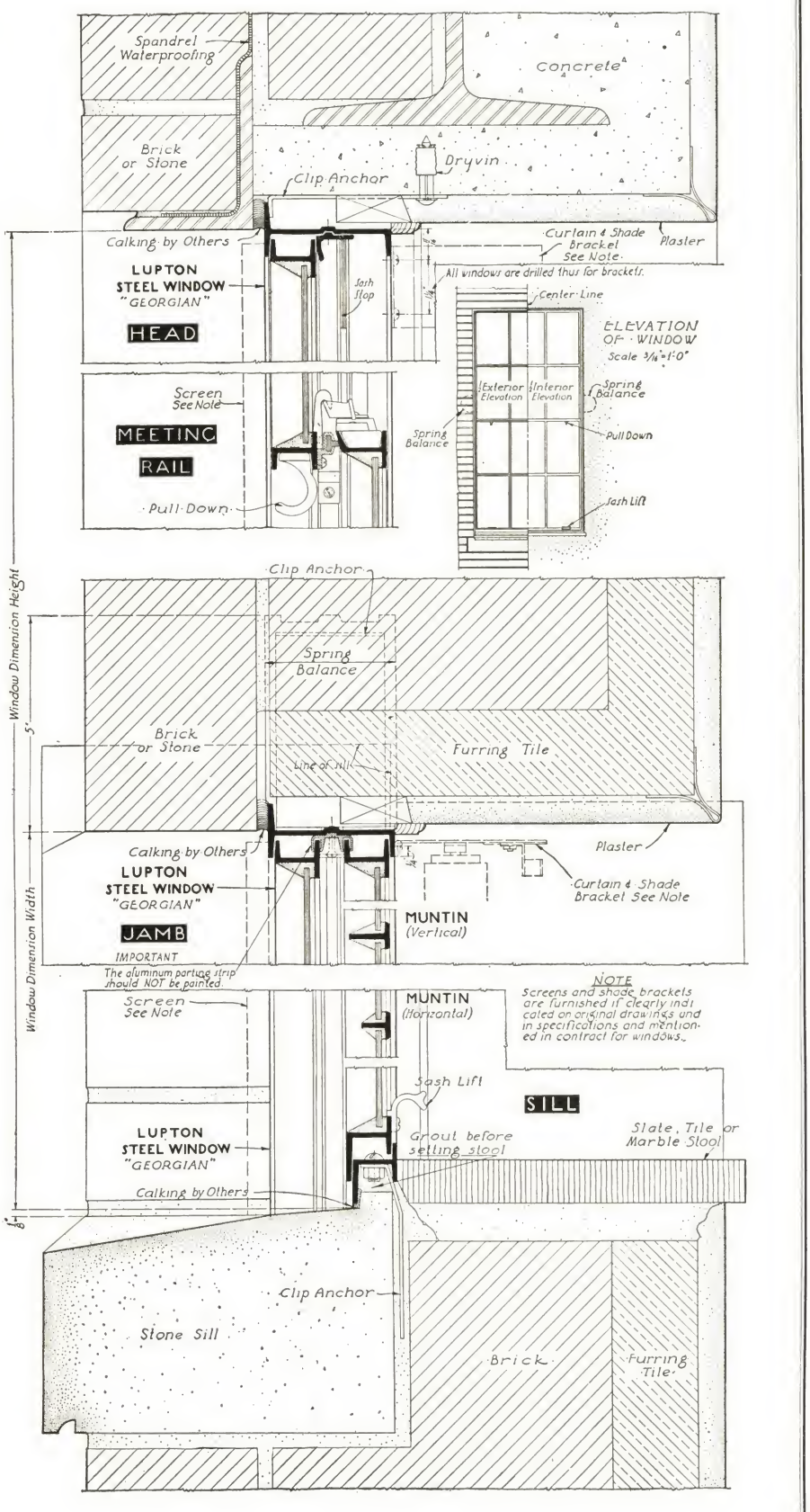


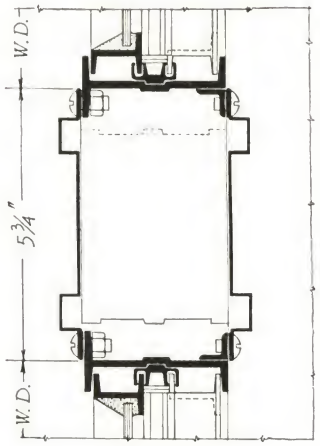




GEORGIAN WINDOWS

DETAIL OF WINDOW IN BRICK SPANDREL WALL*

Scale 3" = 1'0"





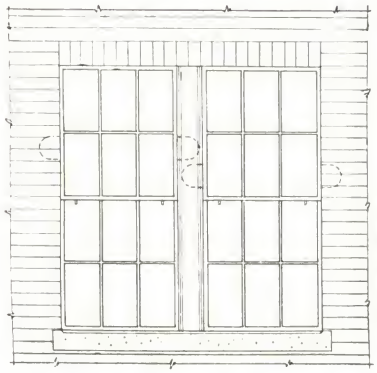
MULLION

Details on this and facing page are reproduced from two of a complete series of approved installation details which may be obtained in blue print form, full size scale, through Lupton sales representatives. All the usual types of surrounding construction are included in series.

GEORGIAN WINDOWS

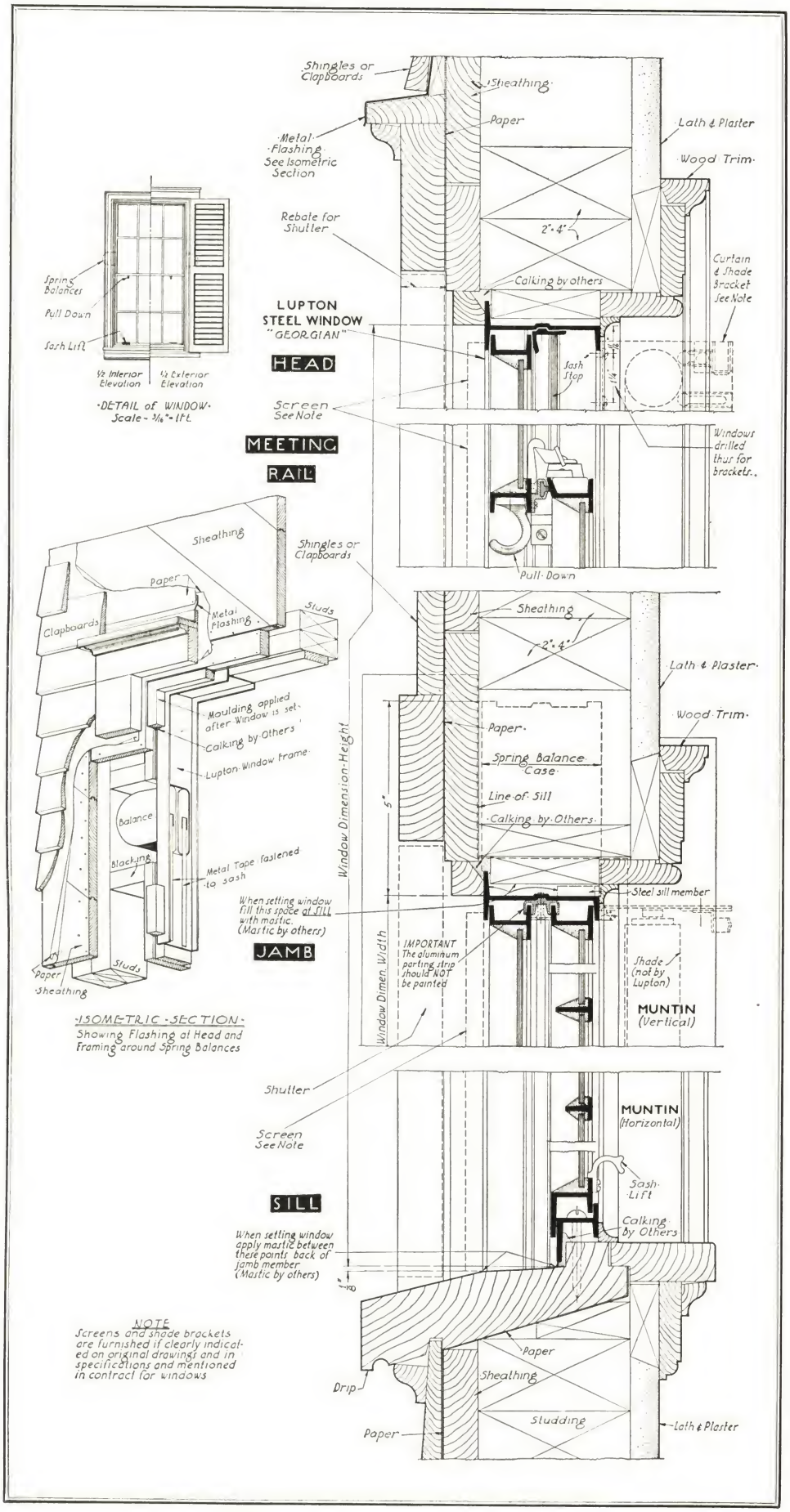
DETAIL OF WINDOW IN WOOD FRAME CONSTRUCTION*

Scale 3″ = 1′0″



Where narrow mullions are required the spring balances are located as indicated above. Section through mullion is shown on preceding page.

ELEVATION

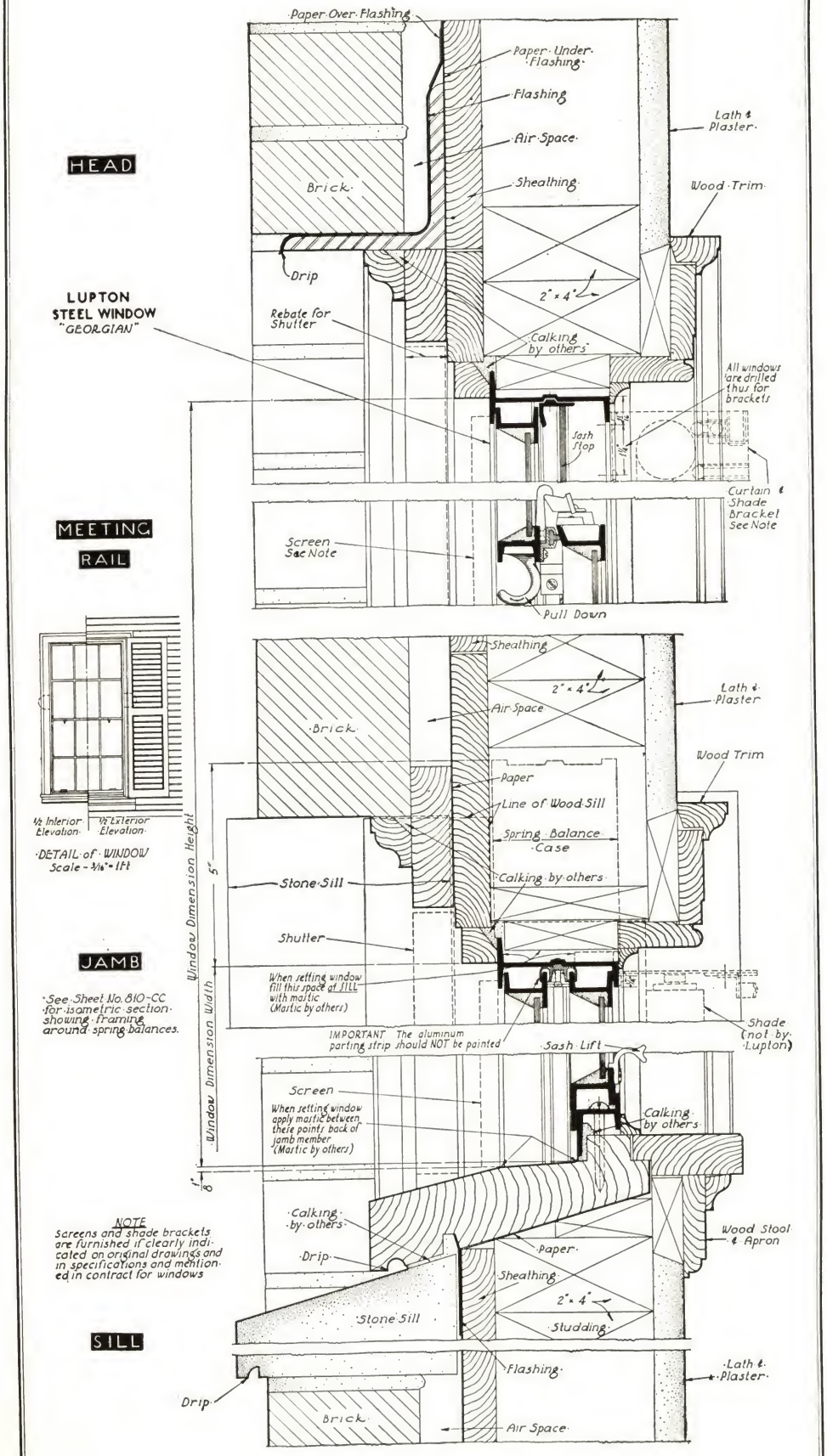


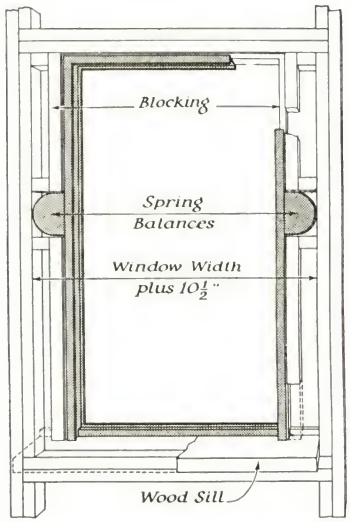
Page References: For specifications see page 48, standard sizes page 49, full size sections page 53.

GEORGIAN WINDOWS

DETAIL OF WINDOW IN BRICK VENEER CONSTRUCTION*

Scale 3" = 1'0"



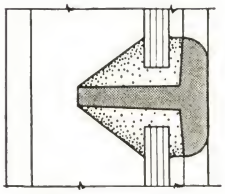


Outside elevation of Georgian Steel Window in wood construction showing blocking around spring balances. Note that sill extends full width of rough opening for maximum economy and tightness.

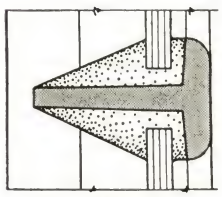
Details on this page are reproduced from one of a complete series of approved installation details which may be obtained in blue print form, full size scale, through Lupton sales representatives. All the usual types of surrounding construction are included in series.

GEORGIAN WINDOWS

FULL SIZE SECTIONS

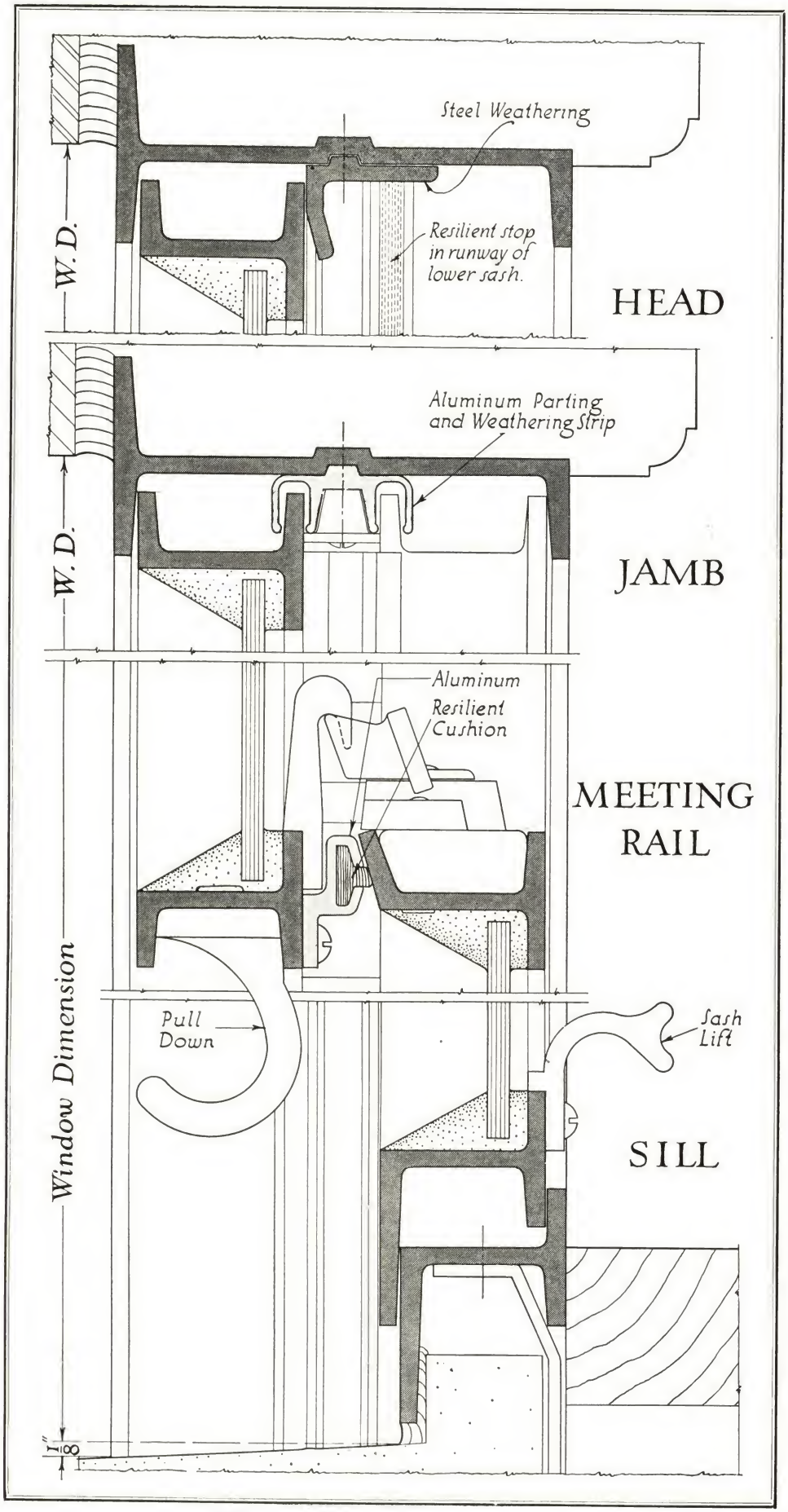


Horizontal



Vertical

MUNTINS



*Page References: For specifications see page 48, standard sizes page 49, installation details pages 50 to 52.

MASTER OFFICE WINDOWS *and* MASTER PROJECTED WINDOWS



Newly designed, high grade windows in standard sizes at moderate cost for use in offices, school class rooms, or wherever natural ventilation is desired with maximum protection from draft. Office windows combine casements and sill ventilators. Projected windows have ventilators opening in or out with bottom or top suspension.

SPECIFICATIONS

Work Included

1. Furnish and install where shown on drawings Lupton Master Office Windows (or Master Projected Windows) as manufactured by David Lupton's Sons Company, Philadelphia, Pa.

Materials

2. All bars shall be rust resisting steel.

3. Frame members shall be unequal leg sections.

4. Weight per ft. of bars shall not be less than the following: frame for fixed lights—1.8 lb. per ft., frame for ventilators 2.9 lb. per ft., ventilator member 1.4 lb. per ft., muntins .79 lb. per ft. and mullion bars 2.8 lb. per ft.

Construction

5. All windows shall be designed for outside putty glazing. Ventilators shall be side hinged or have projected movement to open in at top or out at bottom as indicated on elevations.

6. Ventilator members shall be mitered at corners and welded. Frame members shall be tenoned and riveted. Where face welding occurs, weld shall be ground flush with members.

7. All members shall be true and straight, forming a continuous, two point, flat weathering contact between ventilator and frame.

8. Horizontal and vertical muntins, where they occur, shall be continuous with flush interlocking joints at intersections and shall be tenoned and riveted to frame or ventilator members.

9. Provide Horizontal and Vertical mullion bars and bolts for attaching where indicated on drawings.

10. Provide a 16 gauge galvanized steel drip wherever a side hinged ventilator extends to the head of a unit excepting where condition necessitates the use of a horizontal mullion bar the mullion bar may be bent and used as a drip.

11. Provide anchor clips of 14 gauge steel for anchoring at head jambs and sill.

Note:—Continuous anchors of 13 gauge steel are furnished if definitely specified and indicated on drawings.

Hardware

12. All side hinged ventilators shall have extended type malleable iron friction hinges to open 90° and allow outside of glass to be washed from inside the building.

13. All ventilators opening in at top or out at bottom shall be pivoted on two steel arms attached to the jamb frame members. Ventilators shall be equipped with two bronze adjustable friction shoes sliding in the frame member so as to hold the ventilator firmly in an open position without use of fasteners or adjusters.

14. Side hinged ventilators shall have locking handles (cam action). Where ventilators are over 4 ft. in height, an auxiliary latch shall be used, connected to the locking handle by a ½ in. steel tube.

15. Open in at top and open out at bottom ventilators shall have cam action locking handles. Ring type handles shall be used on ventilators beyond reach from floor.

Note:—Hardware is available in standard painted finish or in bronze with standard coin bronze or special finishes. Specify the finish desired.

Calking Cement

16. The window manufacturer shall furnish non-staining elastic calking cement (as indicated on window manufacturer's standard details) in quantities sufficient to make head, sill, jambs, mullions and imposts weathertight. Wooden filler-strips shall be furnished and used where indicated on details. *(See page 3.)*

Erection

17. All Office and Projected Windows shall be erected in prepared openings by the window contractor (unless otherwise specified).

18. All Windows shall be set plumb and true, properly aligned and securely anchored before glazing. Mullions and imposts shall be bolted securely to frames. Calking cement and filler-strips shall be neatly applied at points indicated on window manufacturer's standard details.

Note:—Include in the masonry specifications that all masonry openings shall be accurately constructed in accordance with the installation details for Office and Projected Windows. All grouting, pointing, etc., should be done by the mason contractor after the windows are set.

Painting

19. All windows shall receive one shop coat of window manufacturer's standard dark gray paint, oven dried. *(See page 3.)*

Glass and Glazing

Note:—(See also pages 3 and 5.) Specify glass and glazing under proper heading elsewhere in specifications.

(a) Do not specify single thickness glass.

(b) Specify high grade steel window putty (ordinary wood sash putty must not be used).

(c) Specify that Lupton Master Office and Projected Windows shall be glazed from the outside. The glass set in a bed of putty and held by Lupton glazing wedges.

Screens

(Furnished if specified and mentioned in contract for windows.)

20. Master Office and Projected Windows shall be equipped with screens designed to fit tightly against window frame and prevent entrance of insects.

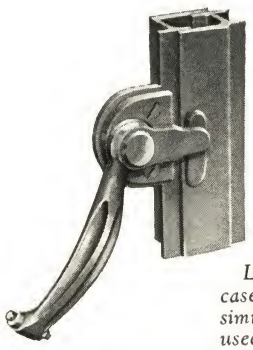
21. Screen frames shall be $\frac{7}{16}$ x $\frac{5}{8}$ in. extruded aluminum, solidly welded at corners to form a smooth seamless frame, and shall have a wire brush, satin finish. Frames shall be rewireable.

22. Wire shall be 16 mesh, 32 gauge aluminum wire cloth.

Note:—When screens are specified the following should be inserted in the above specification under "Hardware." The special hardware is similar to that used for Master Casements.

23. Screened Side Hinged Casements shall be provided with special locking hardware and underscreen operators to permit operation and locking of ventilators without opening screens.

HARDWARE



Left—locking handle for side hinged casements. A double locking device similar to the one shown on page 8 is used for casements over 5'0" high.



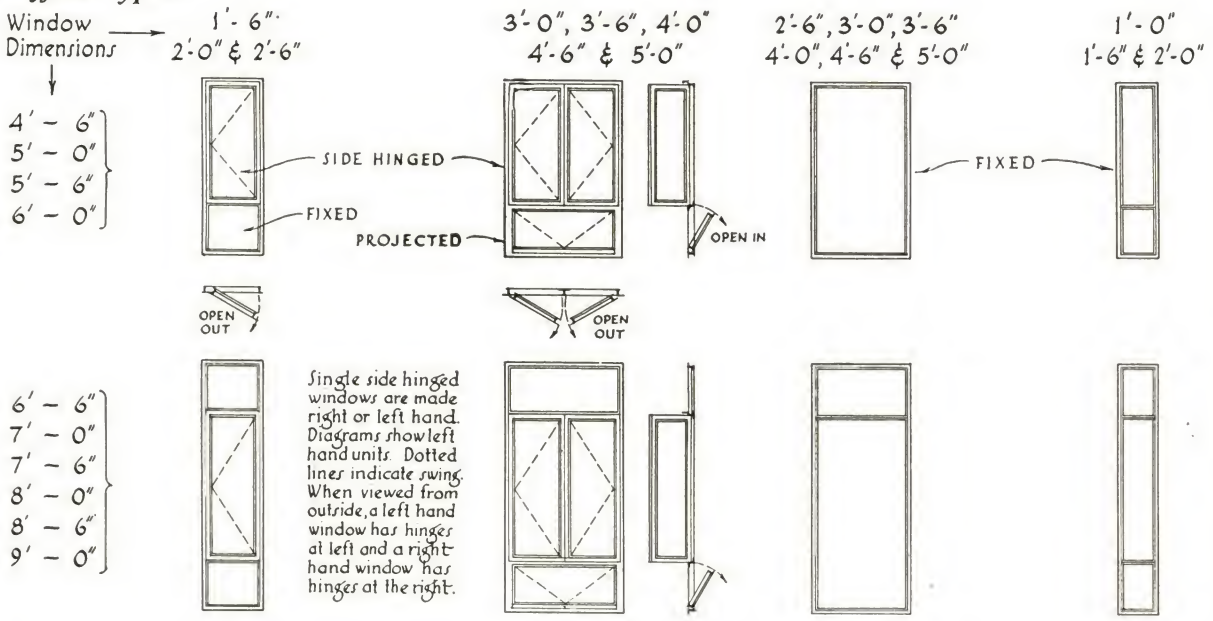


Above—locking handle for open out at bottom ventilators and (at right) locking handle for open in at top ventilators. Beyond reach from floor ring type handles are used for pole operation.

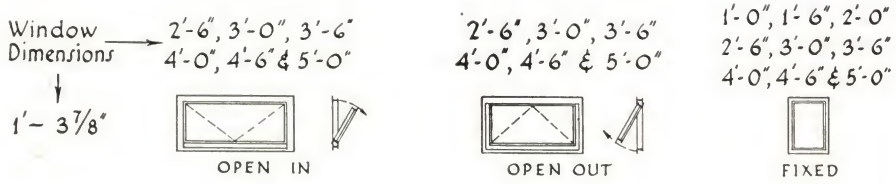
MASTER WINDOWS

STANDARD SIZES for OFFICE and PROJECTED TYPES

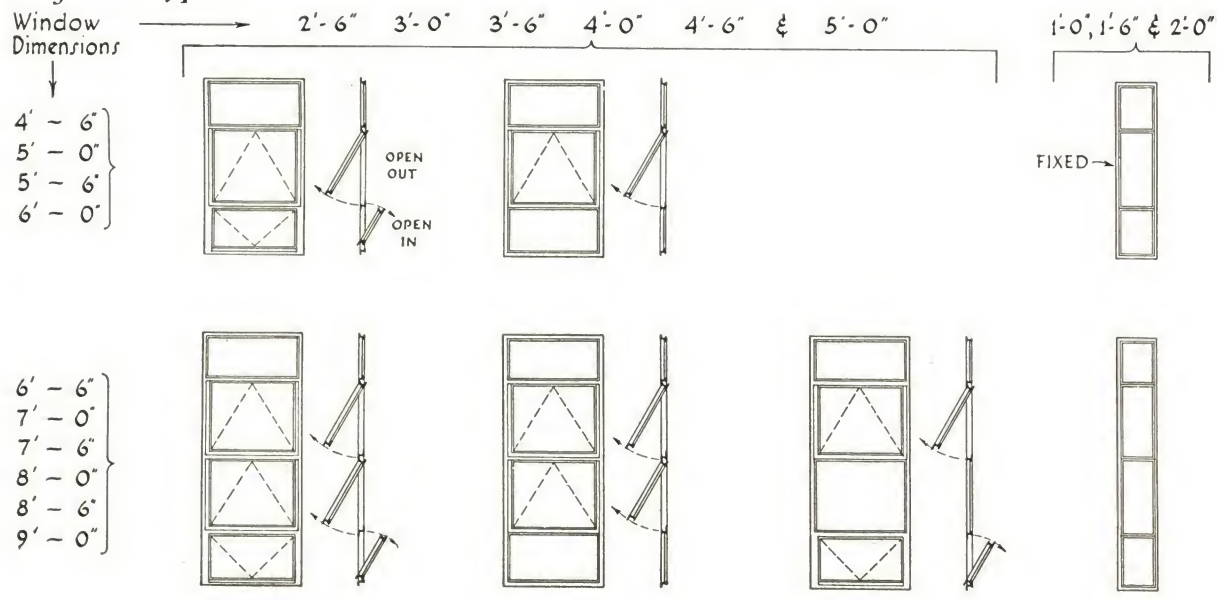
Office Types



Transom Units



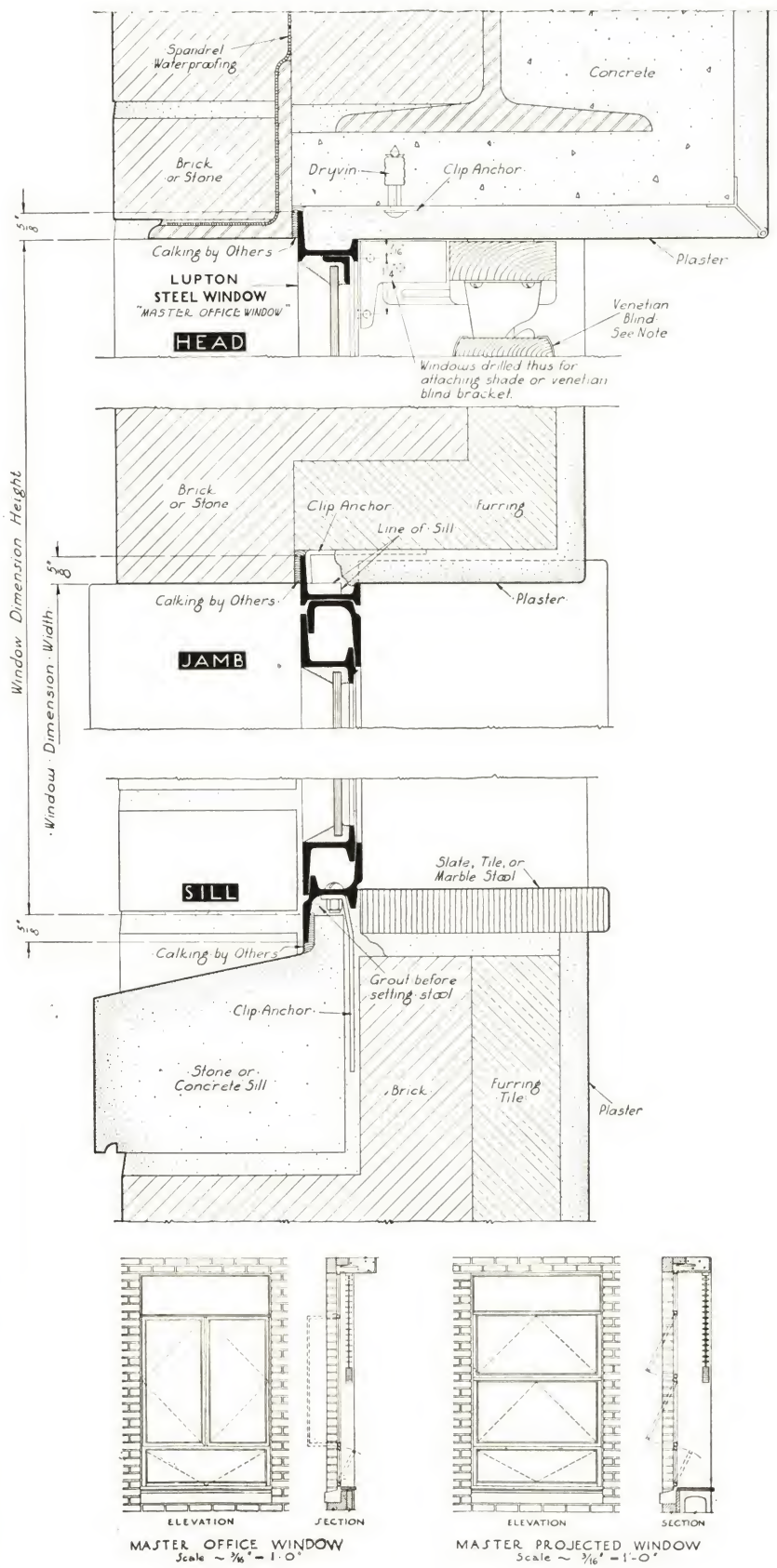
Projected Types



MASTER WINDOWS

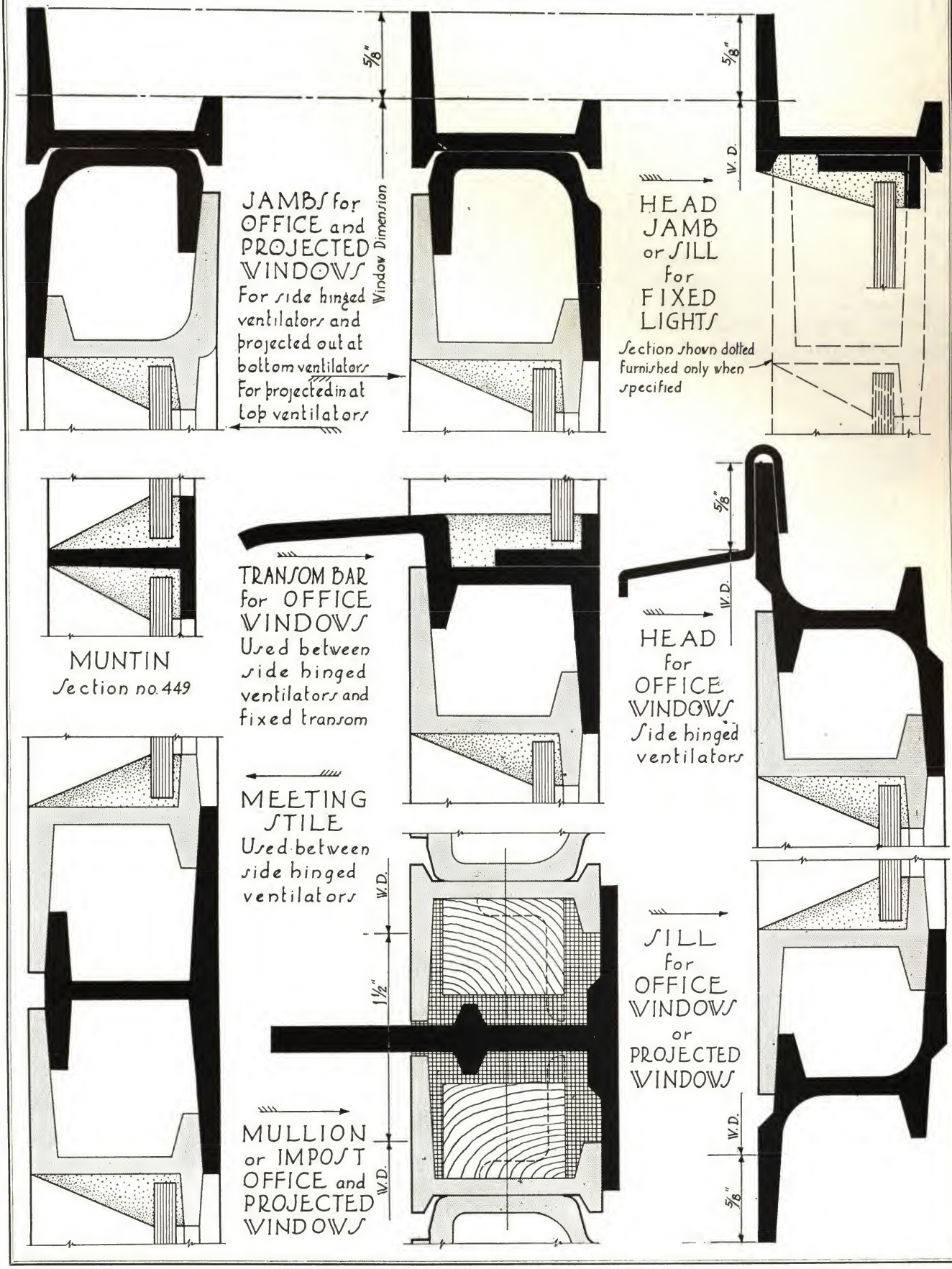
DETAIL FOR OFFICE WINDOWS OR PROJECTED WINDOWS SET IN MASONRY SPANDREL WALL

Scale 3" = 1'0"



Page References: See page 54 for specifications and hardware, page 57 for full size sections. Special hardware for screened windows opening out at side is similar to that described on page 31.

MASTER OFFICE and PROJECTED WINDOWS
FULL SIZE SECTIONS

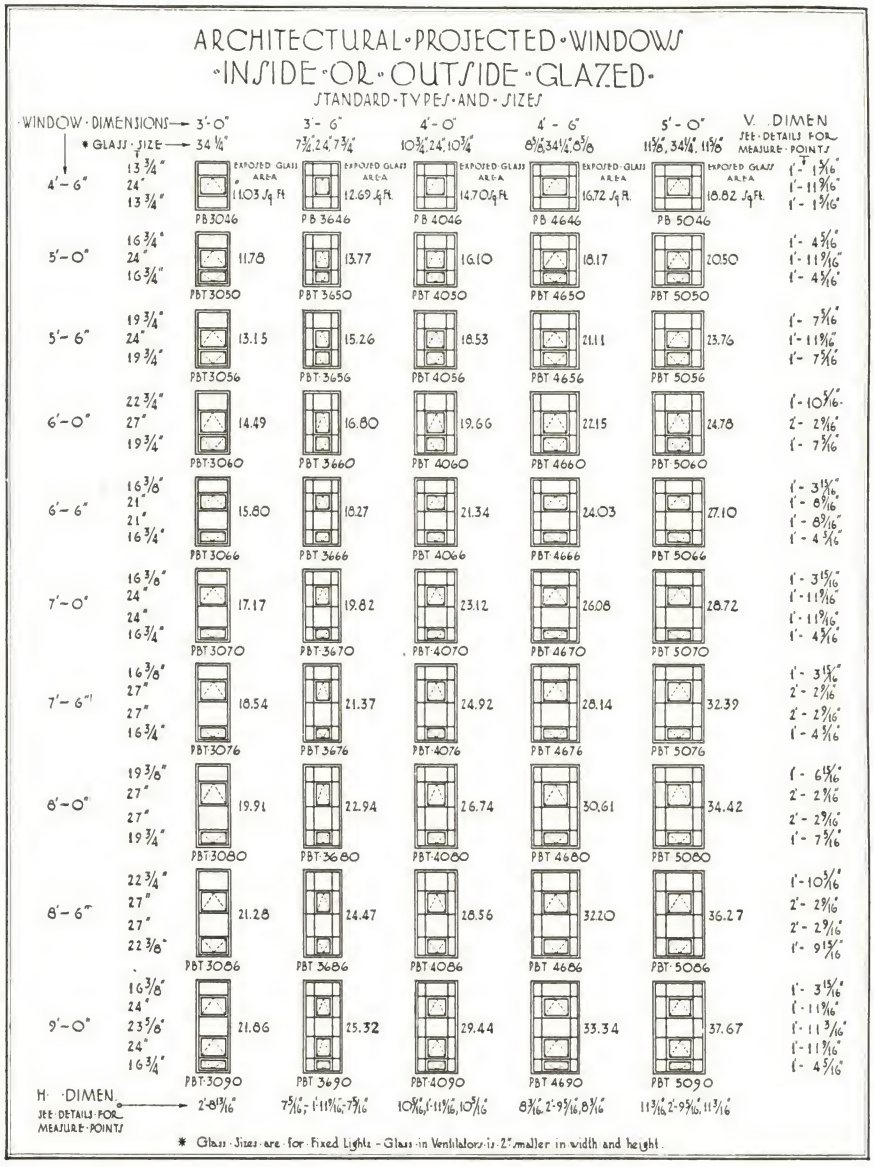


ARCHITECTURAL PROJECTED WINDOWS

Some buildings, or parts of buildings, because of limits in cost or because of other restrictions, will not permit the use of the casement windows previously described.

In such cases, Lupton Architectural Projected Windows, made of medium weight sections, will often fill the requirements of good ventilation and lighting with entire satisfaction.

Standard sizes and designs are shown in diagram at right. Window dimensions, glass sizes, and wall details are the same for both inside and outside glazed windows.



SPECIFICATIONS

Work Included

1. Furnish and install where shown on drawings, Lupton Steel Architectural Projected Windows, manufactured by David Lupton's Sons Co., Philadelphia, Pa.

Materials

2. Frame members shall be heavy, specially designed, solid steel, unequal leg channel sections.

3. Ventilator members shall be specially designed, solid steel angle sections.

4. Muntins shall be specially designed, solid steel cruciform section 1⅜ in. deep.

5. Vertical mullions shall be formed steel plate.

Note:—Structural steel members forming Imposts are not furnished by the window manufacturer.

Construction

6. Windows shall be designed for outside glazing (*or specify:* windows shall be designed for inside glazing with glazing angles).

7. Both Frames and Ventilators shall be assembled by tenoned, riveted and welded joints at the corners. Continuous, two-point flat contact weathering shall be provided between ventilators and frames.

8. Muntin Bars shall be attached to frame members by tenoned, riveted joints and shall be interlocked at their intersections.

SPECIFICATIONS

9. Vertical Mullions and bolts for attachment shall be provided where two or more windows are placed side by side in an opening.

10. Anchor Clips of 13 gauge steel for jambs, sill and head shall be furnished and applied in field.

11. Each ventilator shall be accurately pivoted on two ventilator arms of solid steel. The connections between the ventilator arms and the window frames shall be made by steel arm blocks.

12. Each ventilator shall be equipped with two brass friction shoes, sliding vertically in the ventilator jambs to guide the ventilator and prevent rattling. Each shoe shall be equipped with a rustproofed, flat steel spring attached to the ventilator to assure constant pressure at the jambs.

13. An angle clip 1 5/8 in. x 1 in., 2 in. long shall be riveted to the ventilator frame to provide for attaching locking handle.

14. All windows shall be drilled as indicated on window manufacturer's details for attaching shade brackets.

(See note at end of specification.)

Glass and Glazing

Note:—(See page 3.) Specify glass and glazing under proper heading elsewhere in specifications.

(a) Do not specify single thickness glass.

(b) Specify a high-grade steel window putty (ordinary wood sash putty must not be used).

(c) Specify that Lupton Architectural Projected Windows shall be glazed from the outside, the glass shall be set in a bed of putty, and held by Lupton standard wire glazing clips.

or (d) Specify that Lupton Architectural Projected Windows shall be glazed from the inside, the glass shall be set in a bed of putty and held by continuous glazing stops.

Note

When clearly indicated in original specifications and drawings and mentioned in contract for windows, the following items will be furnished.

(a) Screens (b) Shade brackets (c) Non-staining elastic calking cement for head, jambs and sill. (d) Application of calking cement (if windows are erected by Lupton) at time of erection.

Hardware

15. All locking handles shall be solid bronze, highly polished. *(or specify:* All locking handles shall be solid bronze with natural bronze finish.)

16. Hardware (described below) shall be shipped unattached carefully packed to prevent damage until applied.

17. Provide cam action locking handles for open in and open out ventilators within reach from floor.

Provide ring type cam action locking handles and pull down rings for open out ventilators beyond reach from floor.

Screens

See note at end of specification. If screens are desired, specify:

18. All windows shall be fitted with screens, attached to the frames of the ventilators so as to prevent entrance of insects. Screen frames shall be 7/16 in. x 1 in. formed galvanized steel tubing, reinforced and welded at corners, and shall be rewireable. Wire shall be 16 mesh bronze wire cloth. Frames shall be painted same color as windows.

Erection

19. All Architectural Projected Windows shall be erected in prepared openings by the window contractor unless otherwise specified.

(See page 3)

20. All Architectural Projected Windows shall be set plumb and true, properly aligned and securely anchored before glazing. Mullions shall be bolted securely to Frames.

Note:—Include in the masonry specification that all masonry openings shall be accurately constructed in accordance with the installation details for Architectural Projected Windows. All grouting, pointing, etc., should be done by the mason contractor after the windows are set.

Calking

(See page 3 and note at end of specification.)

Painting

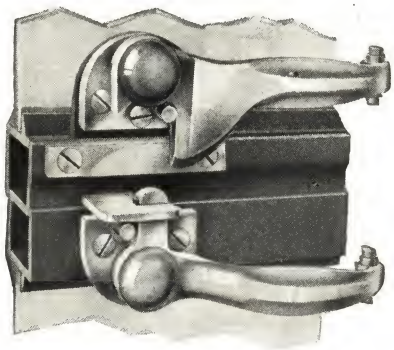
21. All Architectural Projected Windows shall receive one shop coat of window manufacturer's standard dark gray paint, oven dried.

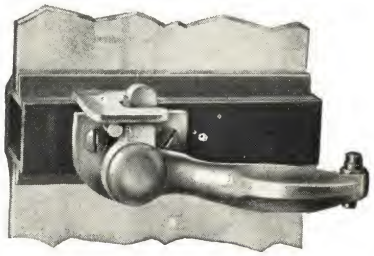
Note:—(See page 3.)

HARDWARE

Hardware is solid bronze with highly polished or natural finish as specified.

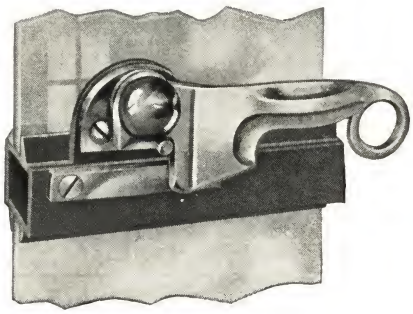
Two locking handles are shown at right mounted on the meeting rail between an open out and an open in ventilator. Upper handle, No. 268, is used on all open out at bottom ventilators within reach from floor. Lower handle is No. 266.

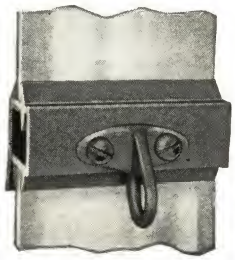




Locking handle No. 266 (shown at right) is used on ventilators opening in-at-top.

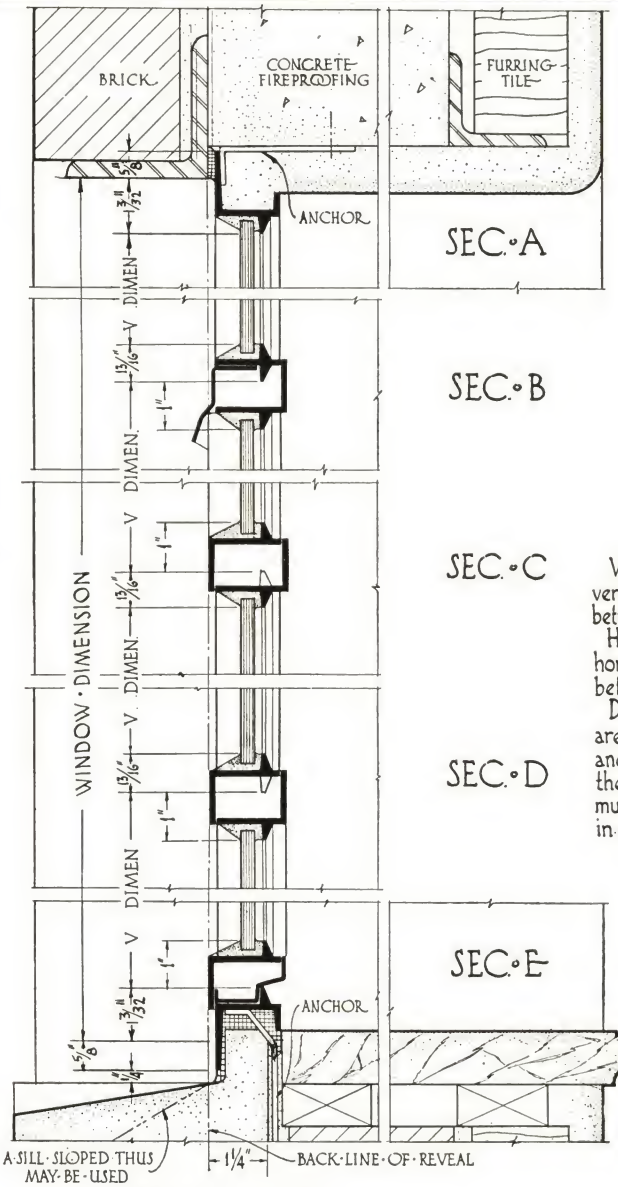
Below at right is ring type locking handle No. 328 used on open-out-at-bottom ventilators beyond reach from floor. A pull down ring No. 358 (shown below) mounted on the top rail of the ventilator is used in conjunction with this handle for pole operation.



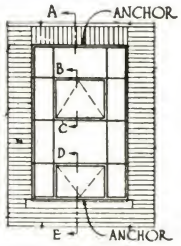


ARCHITECTURAL • PROJECTED • WINDOWS • OUTSIDE • PUTTY • GLAZED

SCALE • FOR • DETAILS – 3″ = 1′-0″



• NOTE •
Ventilators open to positions indicated by dotted lines to permit cleaning from inside the building



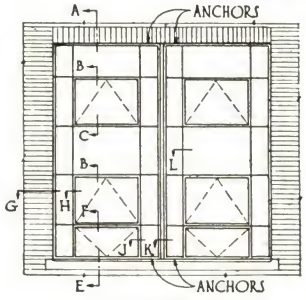
• ELEVATION •
VENTILATORS CLOSED



• SECTION •
VENTILATORS OPEN

V Dimens are the vertical distances – between sight lines.
H. Dimens are the horizontal Distances between sight lines.
Dimensions given are for fixed lights and are measured to the flanges of the muntin bars as shown in details.

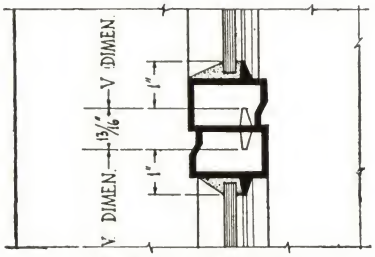
SCALE 1/8″ = 1′-0″



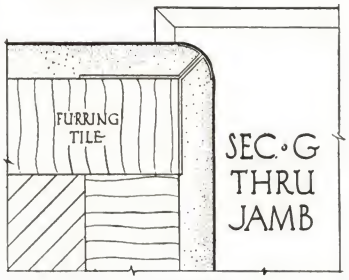
• ELEVATION •
VENTILATORS CLOSED



• SECTION •
VENTILATORS OPEN



SEC. • F • THRU MEETING • RAIL



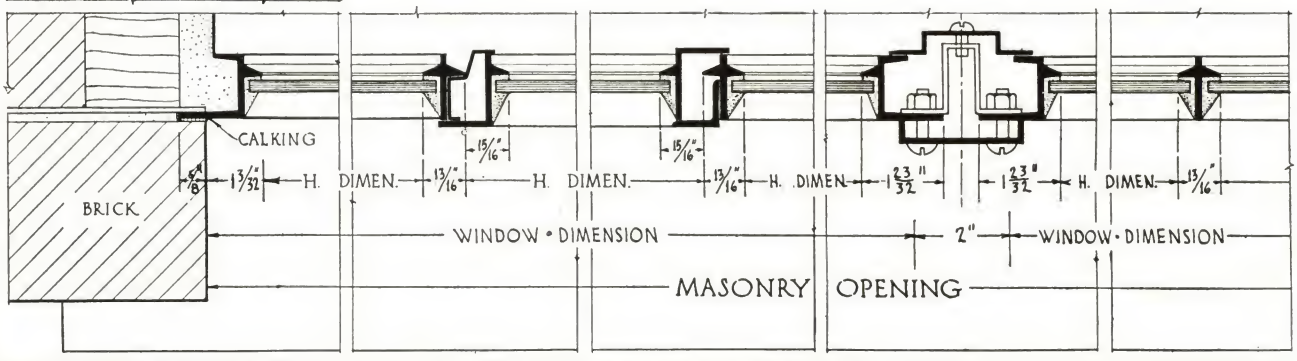
SEC. • G THRU JAMB

SEC. • H

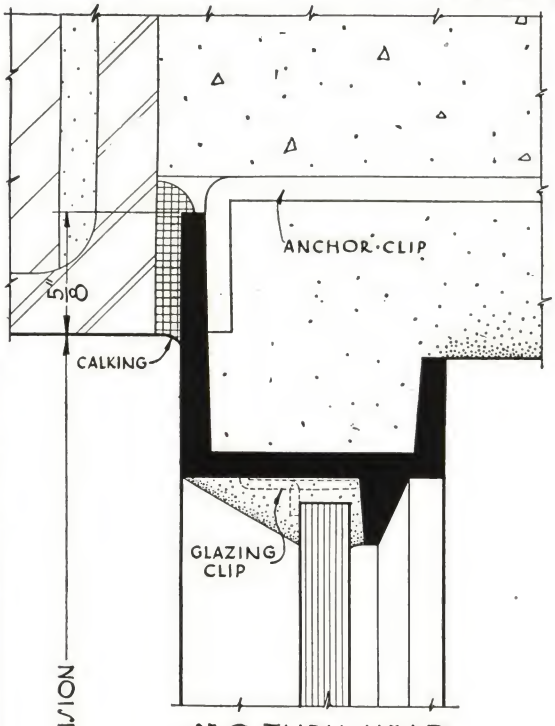
SEC. • J

SEC. • K • THRU MULLION

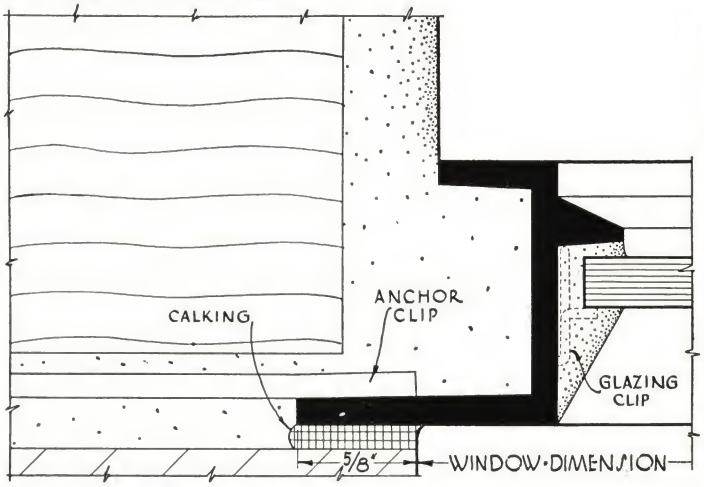
SEC. • L • THRU MUNTIN



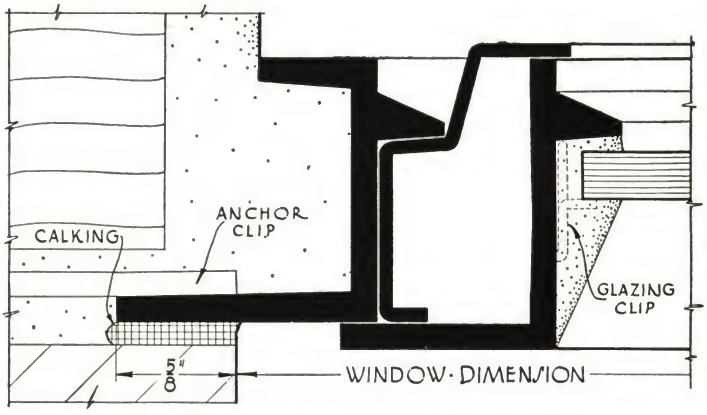
ARCHITECTURAL · PROJECTED · WINDOWS
OUTSIDE · PUTTY · GLAZED
FULL · SIZE · SECTIONS



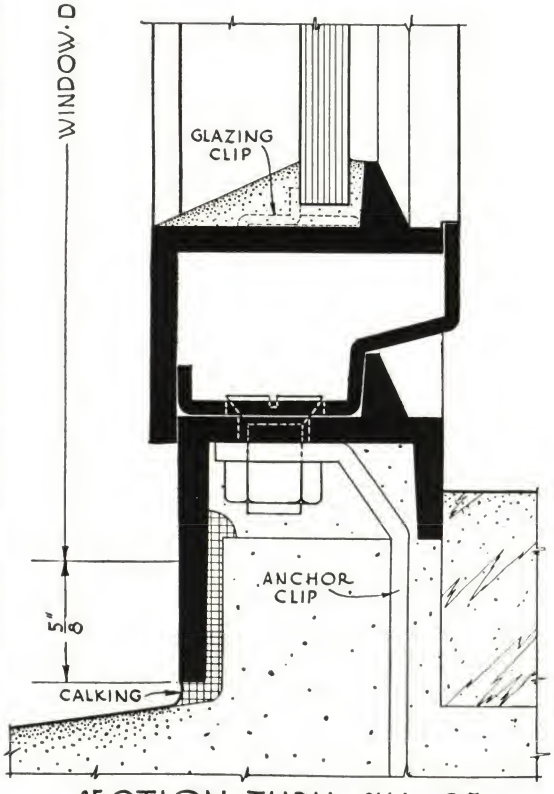
SEC · THRU · HEAD



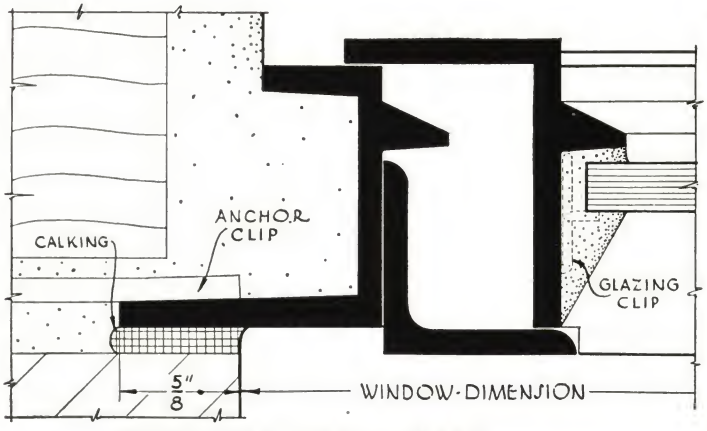
SECTION · THRU · JAMB
OF · FIXED · LIGHT



SECTION · THRU · JAMB · OF
BOTTOM · PROJECTED · OUT · VENTILATOR



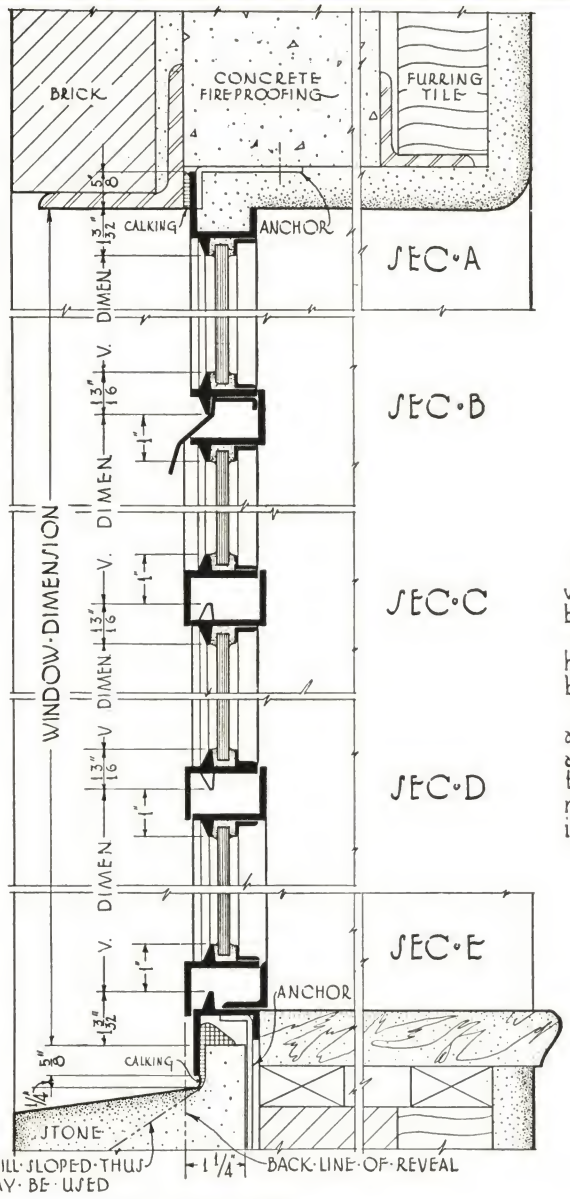
SECTION · THRU · SILL · OF ·
IN · AT · TOP · VENTILATOR



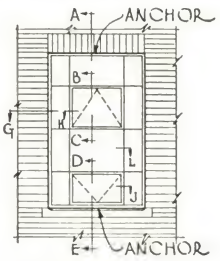
SECTION · THRU · JAMB
OF · IN · AT · TOP · VENTILATOR

ARCHITECTURAL PROJECTED WINDOWS INSIDE GLAZED

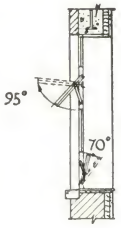
SCALE FOR DETAILS ~ 3" 1'-0"



NOTE
Ventilators open to positions indicated by dotted lines to permit cleaning from inside the building.

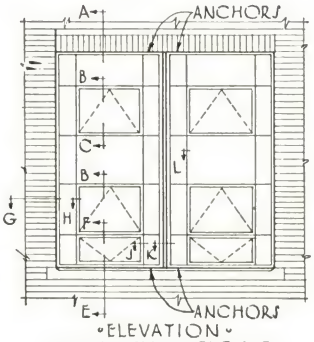


ELEVATION VENTILATORS CLOSED

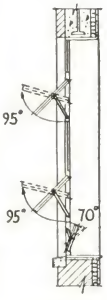


SECTION VENTS OPEN

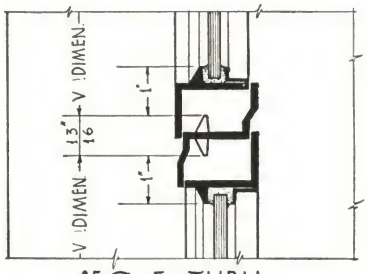
V. Dimens are the vertical distances between sight lines.
H. Dimens are the horizontal distances between sight lines.
Dimensions given are for fixed lights and are measured to the flanges of the muntin bars as shown in the details.



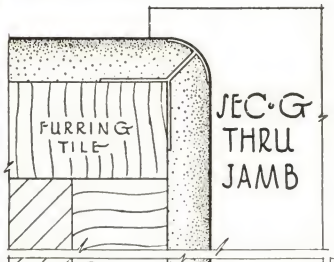
ELEVATION VENTILATORS CLOSED



SECTION VENTS OPEN



SEC F THRU MEETING RAIL



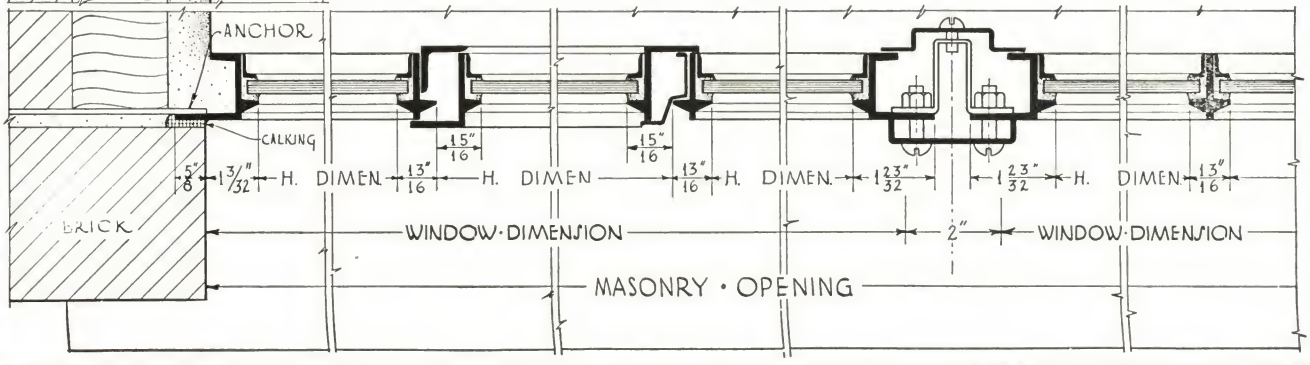
SEC G THRU JAMB

SEC H

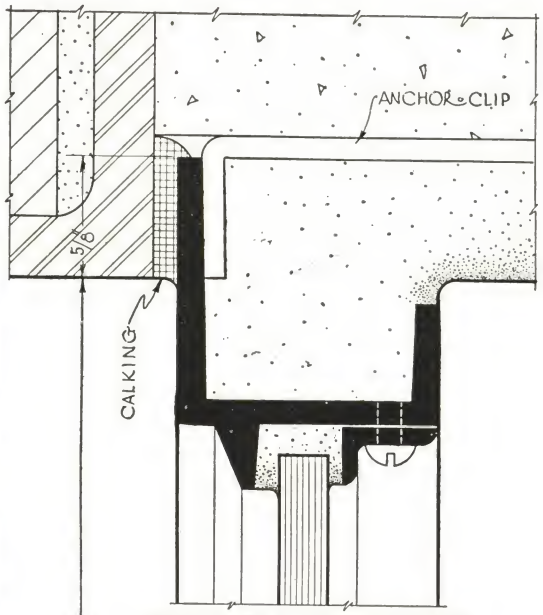
SEC J

SEC K THRU MULLION

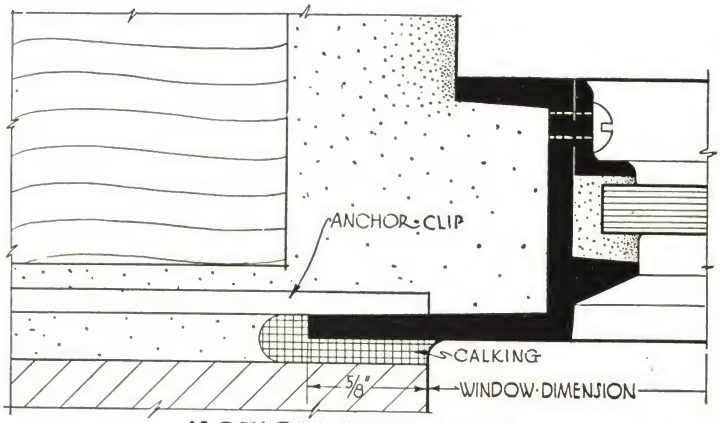
SEC L THRU MUNTIN



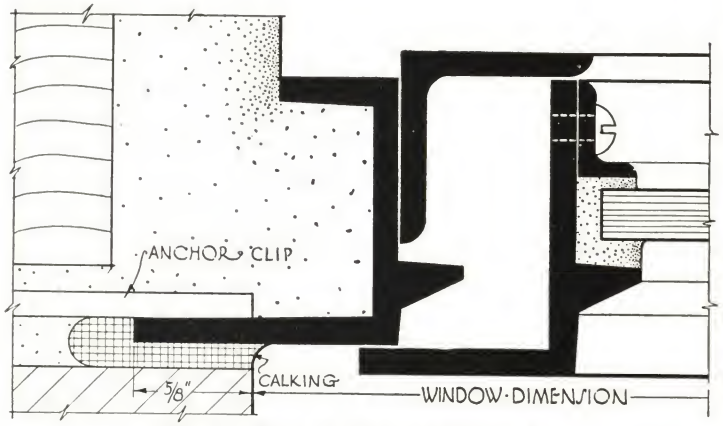
ARCHITECTURAL · PROJECTED · WINDOWS INSIDE · GLAZED · WITH · GLAZING · ANGLES FULL · SIZE · SECTIONS



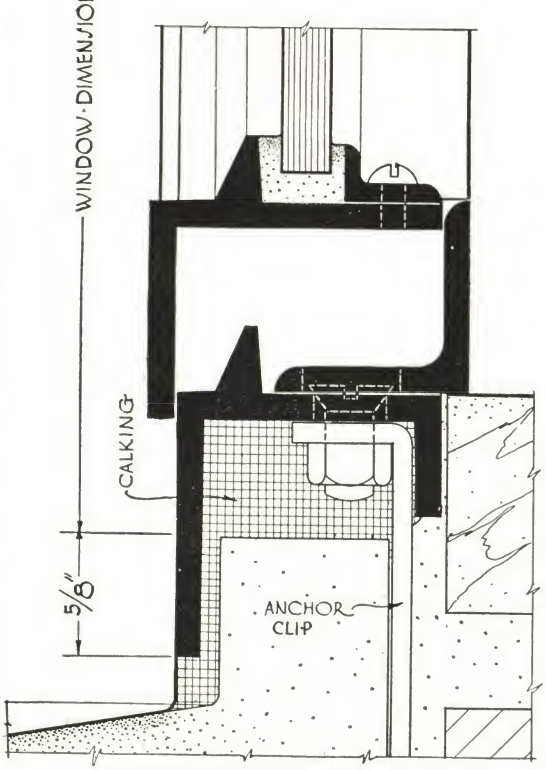
SECTION · THRU · HEAD



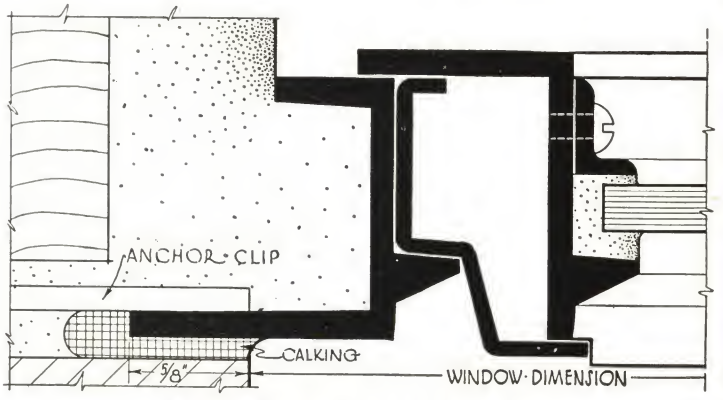
SECTION · THRU · JAMB OF · FIXED · LIGHT



SECTION · THRU · JAMB · OF PROJECTED · OUT · AT · BOTTOM · VENTILATOR



SECTION · THRU · SILL · OF PROJECTED · IN · AT · TOP · VENTILATOR



SECTION · THRU · JAMB · OF PROJECTED · IN · AT · TOP · VENTILATOR

DOUBLE HUNG WINDOWS « TYPES G *and* H

Patent Number 1,802,717

A double hung action window with a fundamentally new principle in design eliminating the usual disadvantages of plate type metal double hung windows. There can be no lateral movement or side play, yet the sash are unbelievably easy to operate due to the use of ball bearing rollers.

Infiltration is reduced by an improved weight box and by weatherstripping on all sides and at meeting rail. Windows are made in fifty standard sizes ranging from 3 ft. 0 in. x 4 ft. 6 in. to 5 ft. 0 in. x 9 ft. 0 in., the same as the Double Hung Windows Types E and F described on page 66.

SPECIFICATIONS

Work Included

1. Furnish and install where shown on drawings, Lupton Steel Double Hung Windows (Type G or H as desired) manufactured by DAVID LUPTON'S SONS CO., Philadelphia, Pa.

Materials

2. Sash members shall be cold galvanized strip steel. Frame members shall be hot galvanized dull coated sheet steel.

3. Members shall be of the following thickness:

Frame members for Type G, head and head cover 20 gauge, sill 16 gauge, jamb 20 gauge and 16 gauge combined.

Frame members for Type H, head 16 gauge, head cover 20 gauge, sill 13 gauge, jamb 16 gauge and 14 gauge combined.

Sash members (for G and H types) 14 gauge (12 gauge for windows over 4 ft. wide), muntin 16 gauge, glazing strips 14 gauge (12 gauge for bottom rail of lower sash).

Construction

4. Windows shall be designed for inside glazing with glazing strips.

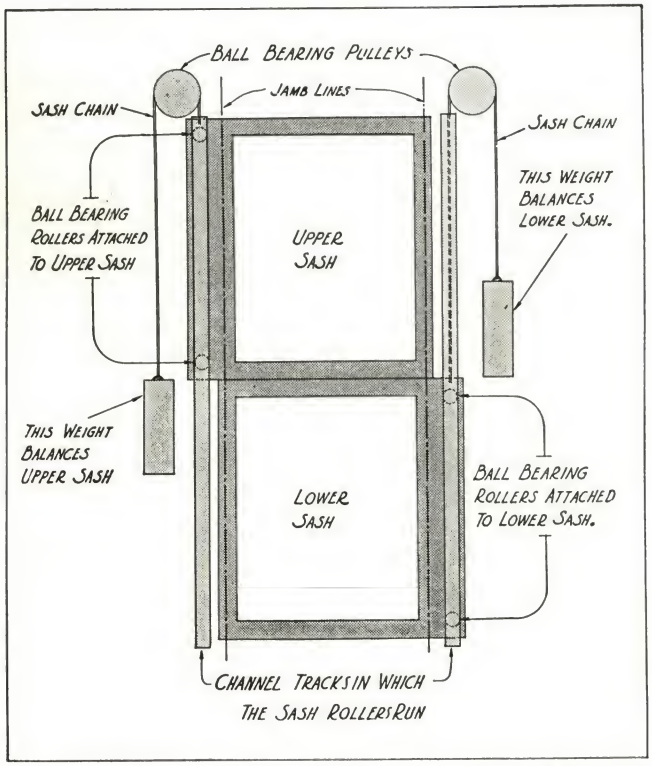


Diagram elevation of window illustrating method of balancing each sash with a single weight attached at one side. Sideplay is prevented by the ball bearing sash rollers which run in a steel channel track.

5. Sash members shall be mitered and arc welded at corners. Muntins shall be spot welded to sash members and at intersections. Frame members shall be arc welded at corners.

6. Sash shall have flanges to enter grooves at head and jambs and to make wide, overlapping contact at sill.

7. Each sash shall be balanced by a weight attached to one side of the sash with a galvanized steel sash chain (No. 113 American Chain Co., 1000 lbs. ultimate strength in tension) passing over a ball bearing steel pulley.

8. Each sash shall be equipped with two ball bearing rollers mounted one at the top and one at the bottom of the flange on the side to which the sash weight is attached. A 13-gauge steel channel track shall be fastened inside the weight box. The rollers shall run smoothly in this track so as to eliminate binding and sideplay or lateral movement of the sash.

9. The flange on the side of the sash opposite the rollers shall be guided by a groove in the face of, but having no opening into the interior of, the weight box.

10. Sash shall be equipped with safety stop to prevent dropping of sash if weight is detached.

11. Weather stripping of nickel silver shall be furnished for meeting rail, sill and jambs. Felt weather stripping shall be furnished at head.

Note:—Where specified, nickel silver will be substituted for felt weathering at the head. See note B, next page.

Hardware

12. Meeting rail lock and pull-down grip of malleable iron, cold galvanized shall be furnished, shipped unattached. Stamped steel pull-down socket for pole operation shall be welded to sash rail. Glazing strips of lower sash shall be formed with a flange to serve as a sash lift.

Note:—If specified the following can be furnished: Pull down handle (substituted for pull down grip) bronze sash lift grips, drop forged pull down socket, bar type lift handles for lower sash, hardware of polished solid bronze. (See note B, next page.)

Erection and Painting

Note:—See page 3 for general information on calking, painting and erection. See also note B, next page. Lupton Double Hung Windows (Types G and H) are shipped assembled. The chain is fastened inside the weight box, and the sash weights are shipped unattached.

13. All windows shall be erected in prepared openings by the window contractor. They shall be set plumb and true, securely fastened in place and counterweighting properly adjusted after glazing.

Note:—Include in the masonry specification that all masonry openings shall be accurately constructed in accordance with the installation details for Lupton Double Hung Windows (Types G and H) and that all mortar, grouting, pointing, etc., shall be performed under other specifications after windows have been erected.

14. All windows shall receive one coat of window manufacturer's standard gray galvanized metal primer before leaving factory.

Glass and Glazing

Note:—(See page 3.) Specify glass and glazing under proper heading elsewhere in specifications.

(a) Do not specify single thickness glass.

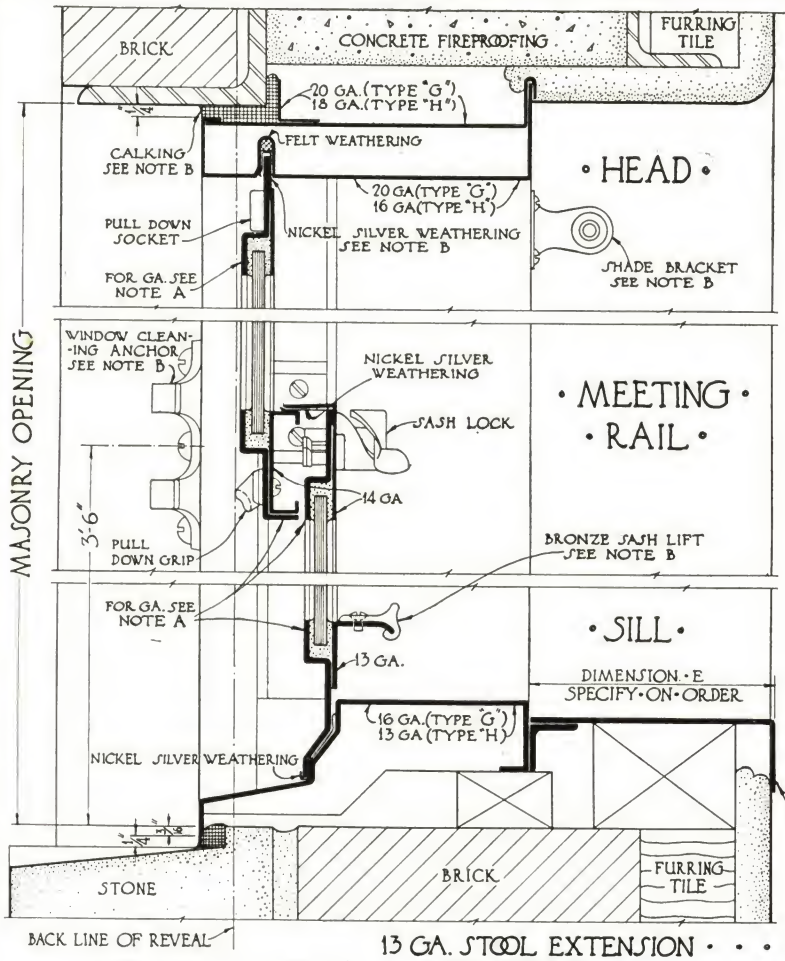
(b) Specify high-grade steel window putty (ordinary wood sash putty should not be used).

(c) Specify that all Lupton Steel Double Hung Windows shall be glazed from the inside; that all glass shall be set in a bed of putty and held by glazing strips.

DOUBLE·HUNG·WINDOW

DETAILS·FOR·TYPES "G"AND"H"

Scale for Details·3'=1'-0"



·NOTES·

A-Sash rails are 14 Ga. on windows up to and including those 4'-0" wide.
Sash rails are 12 Ga. on windows over 4'-0" wide.

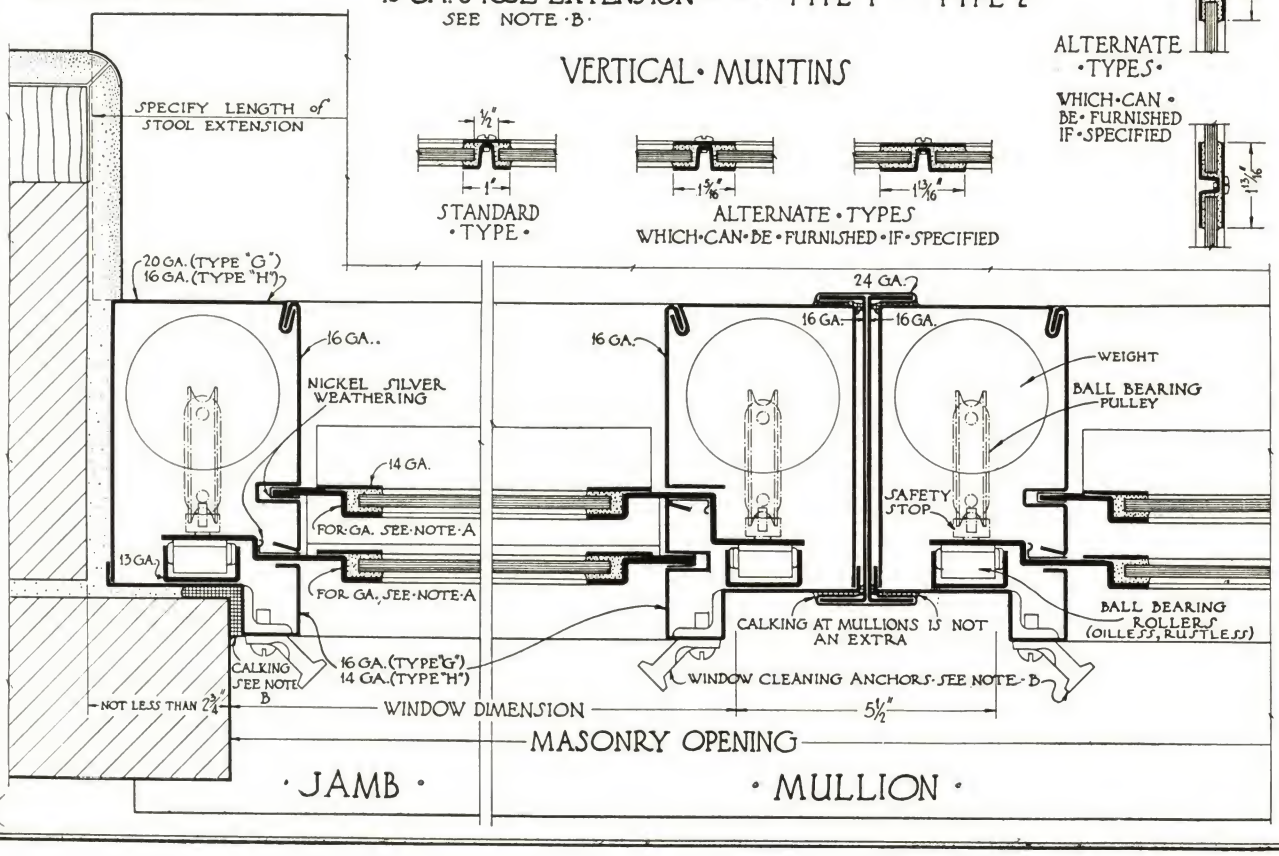
B-Following items are furnished when clearly indicated in original specifications & drawings and mentioned in contract for windows.

1-Nickel silver weathering at head instead of felt
2-Solid bronze hardware Lupton #34 finish polished and lacquered.
3-Pull down handle (instead of pull down grip.
4-Bronze sash lift grip.
5-Bar type lift handles
6-13 Ga. stool extension.
7-Non staining elastic calking cement at head sill and jambs.
8-Muntins
9-Dickey No. 16 D cleaning anchors.
10-Columbia shade roller bracket (nickel finish).

HORIZONTAL MUNTINS



VERTICAL·MUNTINS



DOUBLE HUNG WINDOWS « TYPES E *and* F

Double hung window types E and F described here are designed to meet the underwriters' requirements and are recommended for use in locations where a labelled window is needed. Where it is not necessary to have labelled windows, the Georgian Window (described on pages 48 to 53) or the Types G and H Window (described on pages 64 and 65) are recommended.

Types E and F double hung windows are similar in construction, but type F is made of slightly heavier materials. Both types may receive underwriters' labels subject to the following limitations. Maximum size of unit is 6 ft. wide and 10 ft. high. Mullions must be anchored at head and sill. Maximum exposed glass area is 720 sq. in. and not over 48 in. wide or 54 in. high. Sash locks must be malleable iron. Weather-stripping is optional.

When ordering labelled windows it is important to state the number and sizes of units in each masonry opening, and show the wall details at head, jamb and sill, as this information is required before the windows can be labelled.

SPECIFICATIONS

Work Included

1. Furnish and install where shown on drawings, Lupton Steel Double Hung Windows manufactured by David Lupton's Sons Co., Philadelphia, Pa.

Materials

2. Sash members and parting strips shall be cold galvanized strip steel. Frame members shall be hot galvanized, dull coated sheet steel.

3. Members shall be of the following thicknesses: Sash members 14 gauge (12 gauge for windows over 4 ft. wide), muntins 16 gauge, glazing strips 14 gauge (12 gauge for bottom rail of lower sash), parting strips 16 gauge, frame members for type E—20 gauge, except sill which shall be 16 gauge, frame members for type F—head 16 gauge, head cover 18 gauge, jamb box 14 gauge, removable piece 16 gauge, sill 13 gauge.

Construction

4. Windows shall be designed for inside glazing. Glazing strips shall be provided, attached with low round head machine screws.

5. Sash members shall be mitered and arc welded at corners. Muntins shall be spot welded to frame members and at intersections. Frame members shall be arc welded at corners.

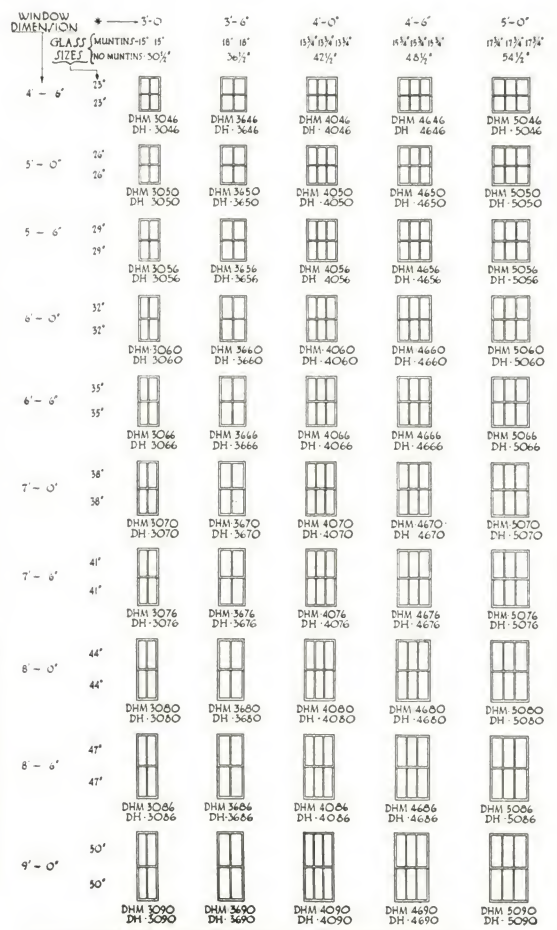
6. Sash shall be designed with a flange to enter grooves at head and jamb and to make double contact with sill member. Head (exclusive of cover) and sill shall each be made of one piece. Jamb shall be designed with a removable piece for access to weights. Weights shall be separated by a division strip.

7. Weather stripping of 22 gauge steel, galvanized, shall be furnished for the jambs and a sponge-rubber weather-strip shall be furnished at sill.

Note:—Additional spring bronze weathering can be furnished (see note B next page).

SIZES AND TYPES

Note: Diagram shows windows with muntins. In writing the catalogue numbers DHM indicates windows with muntins, DH indicates windows without muntins. Windows without muntins are standard. See note B, next page.



* Window Dimension equals the Masonry Opening required for one unit.

Hardware

8. Pulleys shall be machined from cold rolled steel and shall have oilless bearings. They shall be supported by a 13 gauge steel pulley pan. Sash shall be hung on galvanized steel sash chain (American Chain Co. No. 130).

9. The glazing strip for the lower rail of bottom sash shall be formed to serve as a sash lift.

10. Meeting rail lock, pull down handle and pull down socket of malleable iron, cold galvanized, shall be furnished, shipped unattached.

Erection and Painting

Note:—See page 3 for general information on calking, painting and erection. See also Note B, next page. Lupton Double Hung Windows (Types E and F) are shipped assembled. The chain is wired tight inside the jamb box, and the sash weights are shipped unattached.

11. All Lupton Double Hung Windows shall be erected in prepared openings by the window contractor. They shall be set plumb and true, securely fastened in place and properly adjusted before glazing.

Note:—Include in the masonry specification that all masonry openings shall be accurately constructed in accordance with the installation details for Lupton Double Hung Windows, and that all mortar, grouting, pointing, etc., shall be done by the mason contractor after windows have been erected.

12. All windows shall receive one coat of window manufacturer's standard gray galvanized metal primer before leaving the factory.

Glass and Glazing

Note:—(See page 3.) Specify glass and glazing under proper heading elsewhere in specifications.

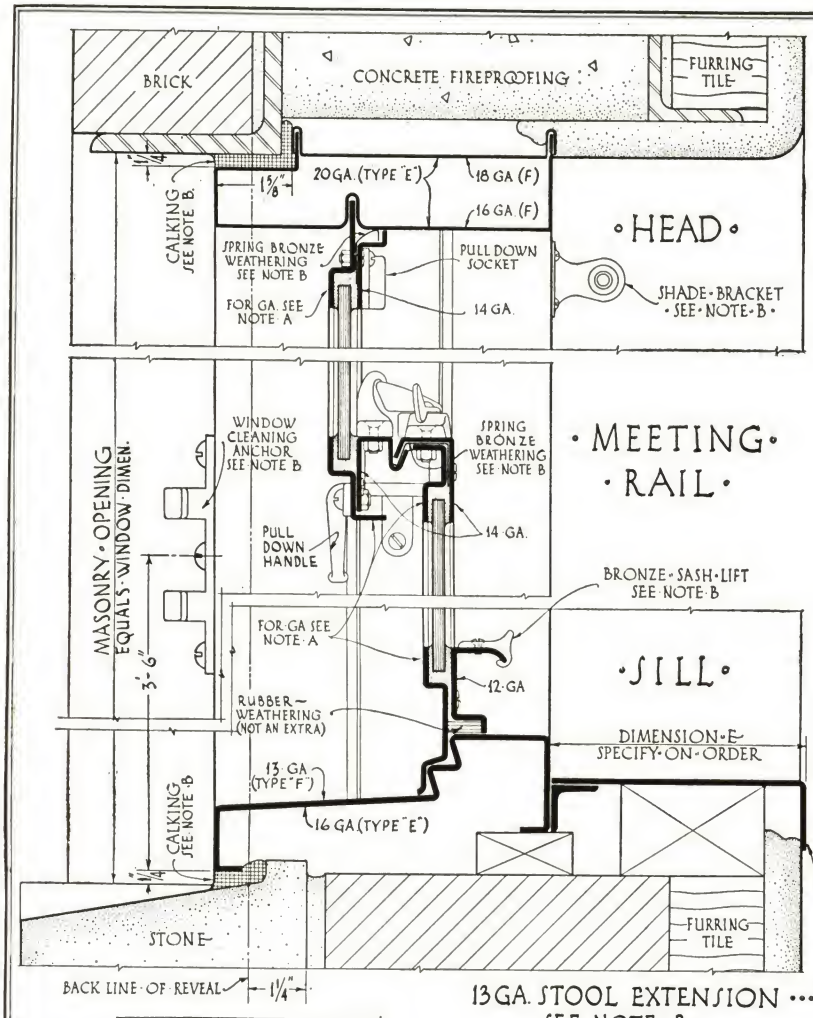
(a) Do not specify single thickness glass.

(b) Specify high-grade steel window putty (ordinary wood sash putty must not be used).

(c) Specify that all Lupton Steel Double Hung Windows shall be glazed from the inside; that all glass shall be set in a bed of putty and held by glazing strips attached with low round-head machine screws.

DOUBLE·HUNG·WINDOW DETAILS···TYPES·E·&·F

SCALE·FOR·DETAILS 3"=1'-0"



13GA. STOOL EXTENSION ··· TYPE·1 · TYPE·2
SEE NOTE·B·

NOTES·

A·Sash rails are 14 Ga. on windows up to and including those 4'-0" wide.
Sash rails are 12 Ga. on windows over 4'-0" wide.

B·Following items are furnished when clearly indicated in original specifications and drawings and mentioned in contract for windows.

1·Solid bronze hardware· Lupton*34 finish· polished and lacquered.
2·Spring bronze weathering at head and meeting rail.
3·Solid bronze sash lift.
4·13 Ga. Stool Extension.
5·Non staining, elastic calking cement at head jambs and sill.
6·Muntins.
7·Dickey No. 16 D. cleaning anchors.
8·Columbia shade roller bracket (nickel finish).
9·Underwriters Label — Requirements for Labeled Windows are listed on Lupton page 66.

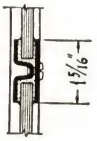
HORIZONTAL MUNTINS

STANDARD · TYPE ·



UNDERWRITERS' · TYPES ·

FOR·EXPOSED GLASS·AREAS UP·TO·225·SQ·INS.



VERTICAL·MUNTINS

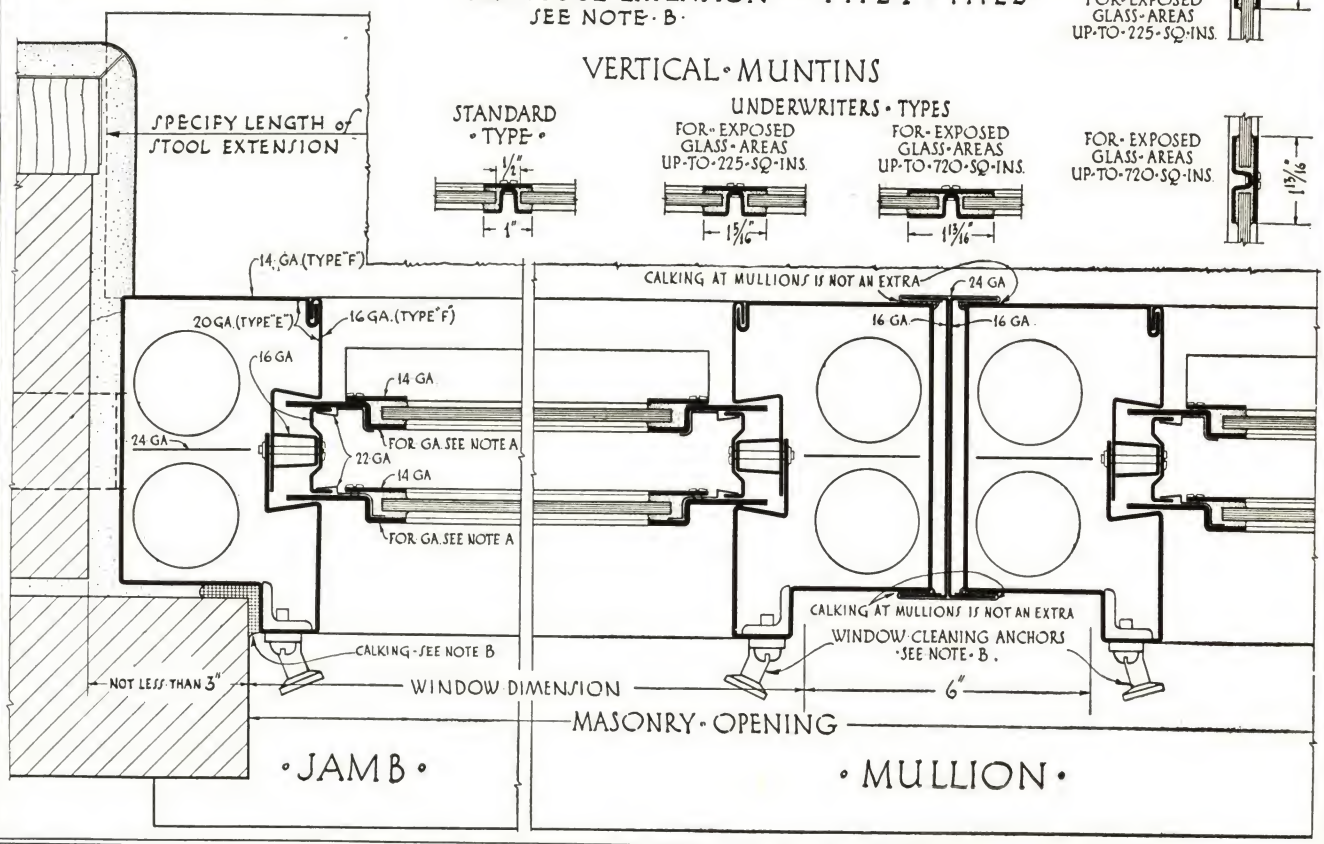
STANDARD · TYPE ·

UNDERWRITERS · TYPES

FOR· EXPOSED GLASS·AREAS UP·TO·225·SQ·INS.

FOR·EXPOSED GLASS·AREAS UP·TO·720·SQ·INS.

FOR· EXPOSED GLASS·AREAS UP·TO·720·SQ·INS.



DETENTION « WINDOWS



Windows for detention purposes are designed and manufactured by Lupton in several types to suit the varying conditions under which they are used. Because of the wide range of applicability and the unique features of the double hung type detention window, it has been selected for special treatment in these pages. If requested, Lupton will give additional information on this or other special types of Detention Windows.

Suggested by Dr. Simon Goldwalter, Mt. Sinai Hospital, New York, and developed by the Construction Division of the Veterans' Bureau assisted by DAVID LUPTON'S SONS CO. This type of window was designed to confine insane and neuropsychiatric patients without resorting to the usual jail-like bars. The thought was kept in mind that the window should be simple in operation and require no instructions to inmates for easy control, and therefore the double hung window was selected as being the most familiar type.

The Lupton Double Hung Detention Window, as a result of this development, combines the following features:

1. *Secure Detention.* All openings are limited to 6 in. or less. Lights of glass are small. Glazing is done from outside.

2. *No loose parts.* No parts are removable except with key or special tool. All working parts are concealed.

3. *Pleasing in appearance.* No bars are used except those in the ornamental grille on the outer part of the window.

4. *Maximum opening.* Without sacrificing the detention features, 50% opening (the maximum possible with double hung windows) can be obtained.

5. *Easily operated.* This familiar type of operation requires no explanation to inmates who may be permitted to control ventilation to suit individual desires.

6. *Locking.* Sash can be locked in open, intermediate or closed positions by means of a special key if desired, although locking is not necessary for detention purposes.

7. *Weatherstripped.* Aluminum combination parting strip and weatherstripping provides continuous non-rattling contact at jambs.

8. *All metal construction.* All sash and frame members are of solid rolled steel sections, welded at corners.

9. *Screening.* Easily screened with double sliding screens.

Types of Grilles

The details given here indicate but one type of grille, the type which is hinged to swing out at the side when unlocked. If desired, a grille of another type (developed under direction of Dr. White of St. Elizabeth's Hospital, Washington, D. C.) may be used which opens downward and forms a platform for window cleaners.

Auxiliary Windows

In parts of buildings where the detention features are not needed, the Georgian Window described on pages 48 to 53 or Lupton Standard Counterbalanced Windows may be used.

SPECIFICATIONS

Work Included

1. Furnish and install where shown on drawings steel double sliding windows of Detention Type as manufactured by DAVID LUPTON'S SONS CO., Philadelphia, Pa.

Materials

2. Frame and sash members shall be hot rolled steel sections. Parting strips shall be extruded aluminum. Outside frame shall be of 14 ga. steel plate.

Weights of sections shall be not less than the following:

"I" shaped jamb member	4.5	lbs. per ft.
"H" shaped head member	2.2	lbs. per ft.
Special channel shaped sill member	2.3	lbs. per ft.
Channel shaped sash member	2.06	lbs. per ft.
Combined meeting rail members	3.65	lbs. per ft.

Construction

3. Windows shall be designed for outside putty glazing.

4. Frame and sash members shall be assembled with welded joints. Exposed welds shall be ground off flush with members.

5. Muntins shall be tenoned and riveted to sash members and shall have flush interlocking joints at intersections.

6. Outside plate frames shall be of details and dimensions shown and securely attached to frame members.

Note:—Dimensions may vary to meet screen conditions and surrounding construction.

Note:—Inside plaster mould when desired should be furnished under another specification.

7. Strap anchors 1¾x$\frac{3}{16}$ in. shall be welded, three to each jamb and shall extend no less than 8 in. from back of jamb member.

8. The sash shall be hung on spring balances (two for each sash). Balances shall be enclosed in housings, one housing securely riveted to each jamb and joints calked to prevent entrance of moisture when set in masonry. Balances shall be removable.

9. Attachment of spring balance tapes to sash shall be at bottom rail, by means of specially designed tape staples and sash clips, and in such manner that tape (including tape staple) hangs vertically. Clips shall be securely attached to bottom rails with interrupted slot screws.

10. Sash shall make double contact with head and sill and shall interlock at meeting rail. At jambs, aluminum parting strip shall be designed to serve as a weatherstrip.

Balances

11. Type "D" Caldwell Spring Balances (manufactured by Caldwell Manufacturing Co., Rochester, N. Y.) shall be furnished fitted with bronze tapes not less than .016 in. thick and tape staples for attaching to sash. Staples shall have a hole for attaching guide wire.

12. Provisions shall be made for relieving tension and for adjusting tension without necessity of removing balances.

Sash Stops and Tape Cover

13. Windows shall have sash stops and tape covers so located that neither the spring balances nor the tapes are exposed when sash are operated within detention limits.

Continued on next page

SPECIFICATIONS

Continued from preceding page

14. Tape cover shall be 14 ga. steel channel set in the runway of the lower sash and extending from a point 1 in. below meeting rail, to a point not more than 6 in. below the head frame member. Lower end of cover shall be bent out to fill approximately the space between the sash member and the jamb.

15. To the upper end of the tape cover shall be welded a piece of 1½-in. channel filling the space between the end of the tape cover and the head frame member. This channel shall form a stop for the lower sash.

16. Stops and tape covers shall be attached with ¼-in. countersunk head interrupted slot screws.

17. Upper sash shall have one stop at each jamb limiting the opening to 6 in. Stops shall consist of specially designed steel bars extending from the outside face of the window through the frame and into the sash runway. The grille (described in other specifications) when closed must hold stops securely in place. Stops must be designed so that when the grille is opened they may be withdrawn, but not removed, permitting sash to be lowered to the sill.

Grilles and Grille Clips

Note:—Grilles, grille locks and hinges shall be furnished under another contract. Grilles shall be designed to allow not more than 4½ in. between bottom rail and sill, nor more than 5½ in. between top of grille and nearest point on lower rail of lower sash when sash is raised to its upper limit.

18. Four grille clips shall be furnished welded to the backs of the jamb frame members and extending through the face of the outside frames. The joint between the outside frame and the clip shall be sealed watertight. Two clips on one jamb shall be notched to act as keepers for grille locks. The two clips on the opposite jamb shall be drilled and tapped for attaching grille hinges.

Hardware

19. An approved method of locking the Spring Balanced Detention Windows in the closed, limited open and intermediate positions shall be provided. Four removable keys shall be supplied.

20. Special light malleable iron bar lifts shall be provided on the bottom rail of the lower sash of all Spring Balanced Detention Windows.

Erection and Painting

Note:—Setting the window frames may be done by the general contractor, but in such case the window manufacturer shall attach all hardware, and after the glazing and painting has been completed, shall carefully adjust the tension on all balances to assure proper balance for each sash. For painting see page 3.

Glass and Glazing

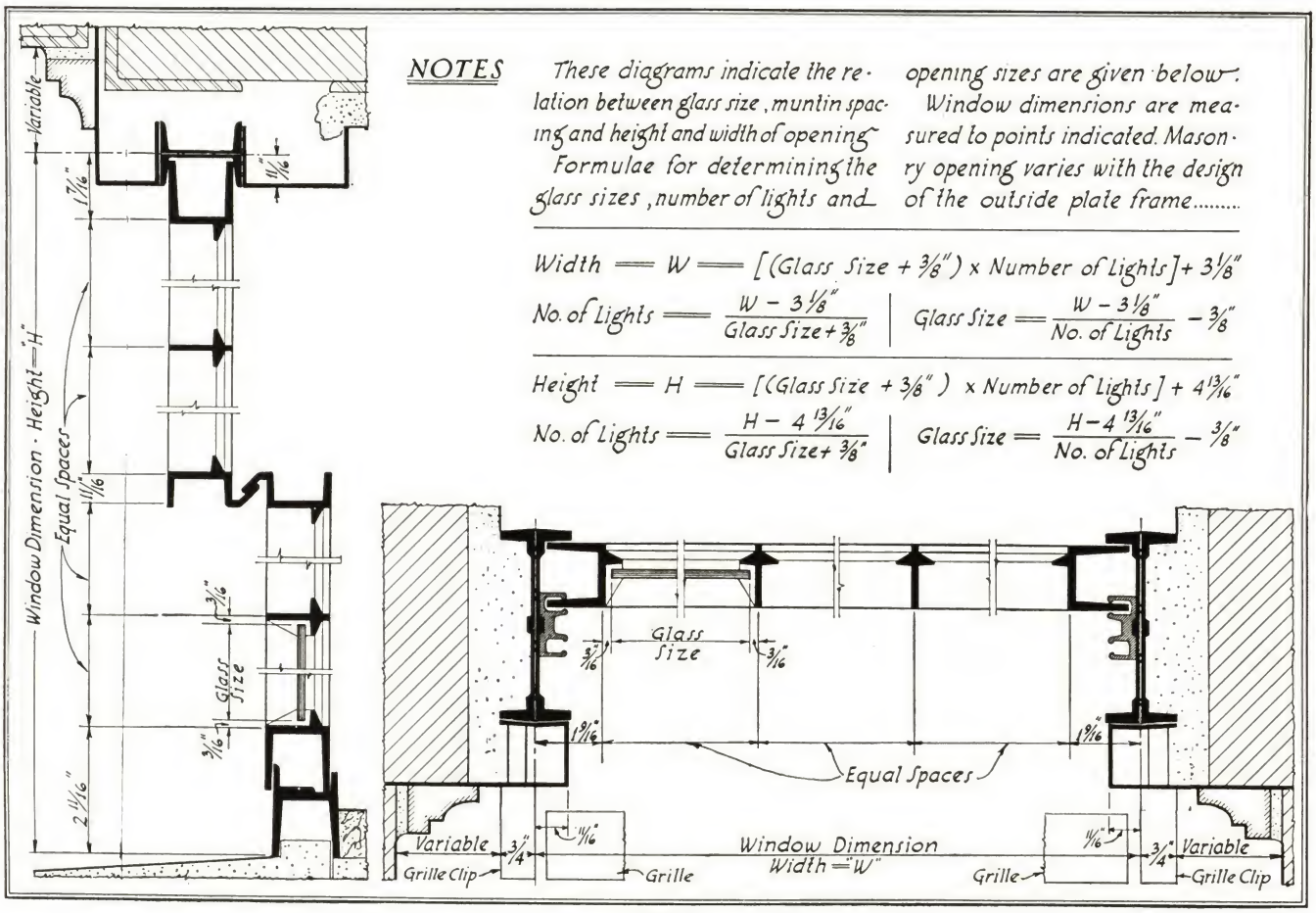
Note:—(See page 3.) Specify glass and glazing under proper heading elsewhere in specifications.

(a) Do not specify single thickness glass.

(b) Specify high-grade steel window putty (ordinary wood sash putty should not be used).

(c) Specify that all Spring Balanced Detention Windows shall be glazed from the outside; that all glass shall be set in a bed of putty and held by wire glazing clips, four to each light.

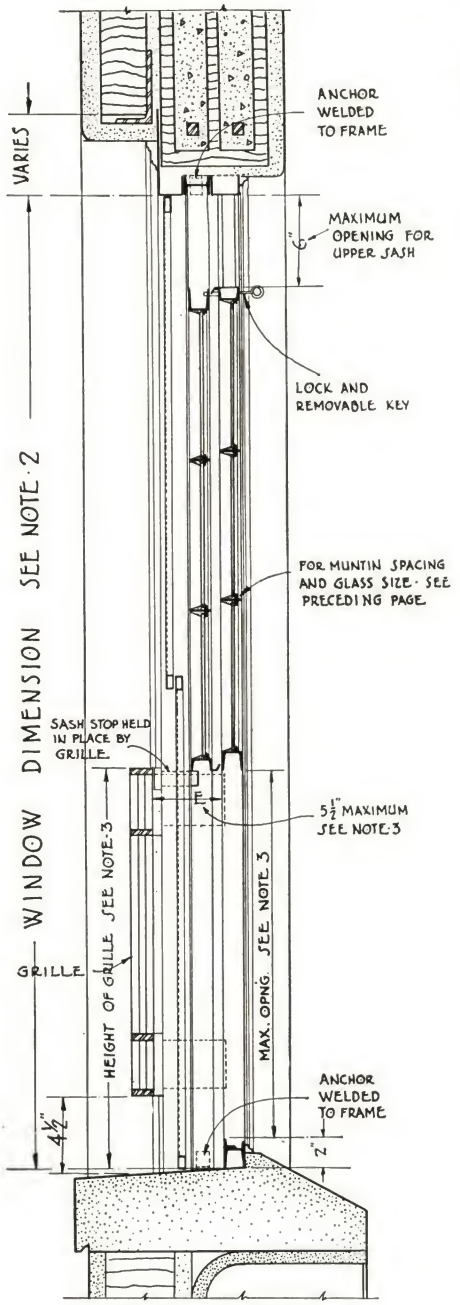
GLASS SIZES AND MUNTIN SPACING



DETENSION WINDOWS -

DETAILS OF DOUBLE SLIDE TYPE DETENTION WINDOWS - WITH GRILLE TO SWING OUT-AT-SIDE

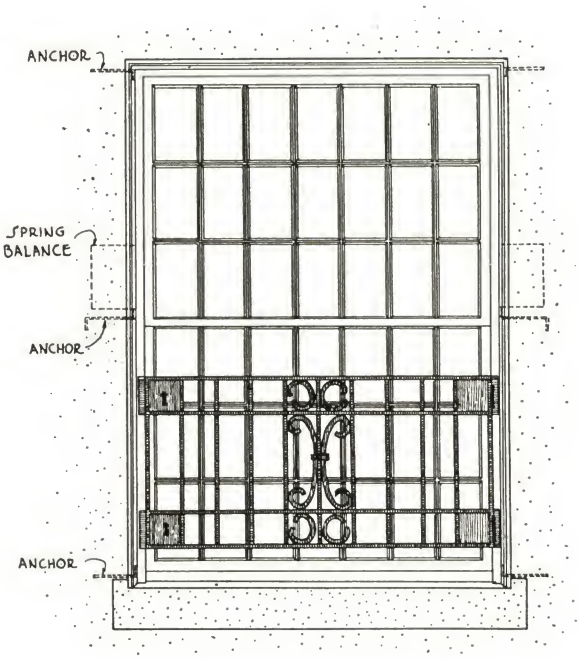
SCALE FOR DETAILS 1" = 1'-0"



VERTICAL SECTION

WITH SASH SHOWN IN MAXIMUM OPEN POSITION

SCALE 1" = 1'-0"



TYPICAL ELEVATION

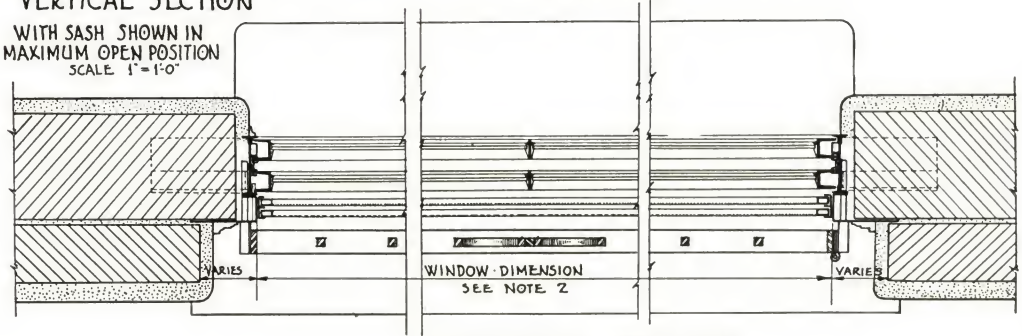
SCALE ½" = 1'-0"

NOTES

1 GRILLES - GRILLES, GRILLELOCKS, AND GRILLE HINGES ARE NOT FURNISHED BY LUPTON - SEE SPECIFICATIONS ON PRECEDING PAGE.

2 WINDOW DIMENSIONS - WINDOW DIMENSIONS ARE MEASURED TO POINTS INDICATED - MASONRY OPENINGS MAY VARY. - SEE DETAIL ON PRECEDING PAGE.

3 HEIGHT OF GRILLE - HEIGHT OF GRILLE, DEPENDS UPON MAXIMUM OPENING OF LOWER SASH. GRILLE SHOULD BE OF SUFFICIENT HEIGHT AND PLACED CLOSE TO THE WINDOW SO THAT DIM. "E" DOES NOT EXCEED 5½"



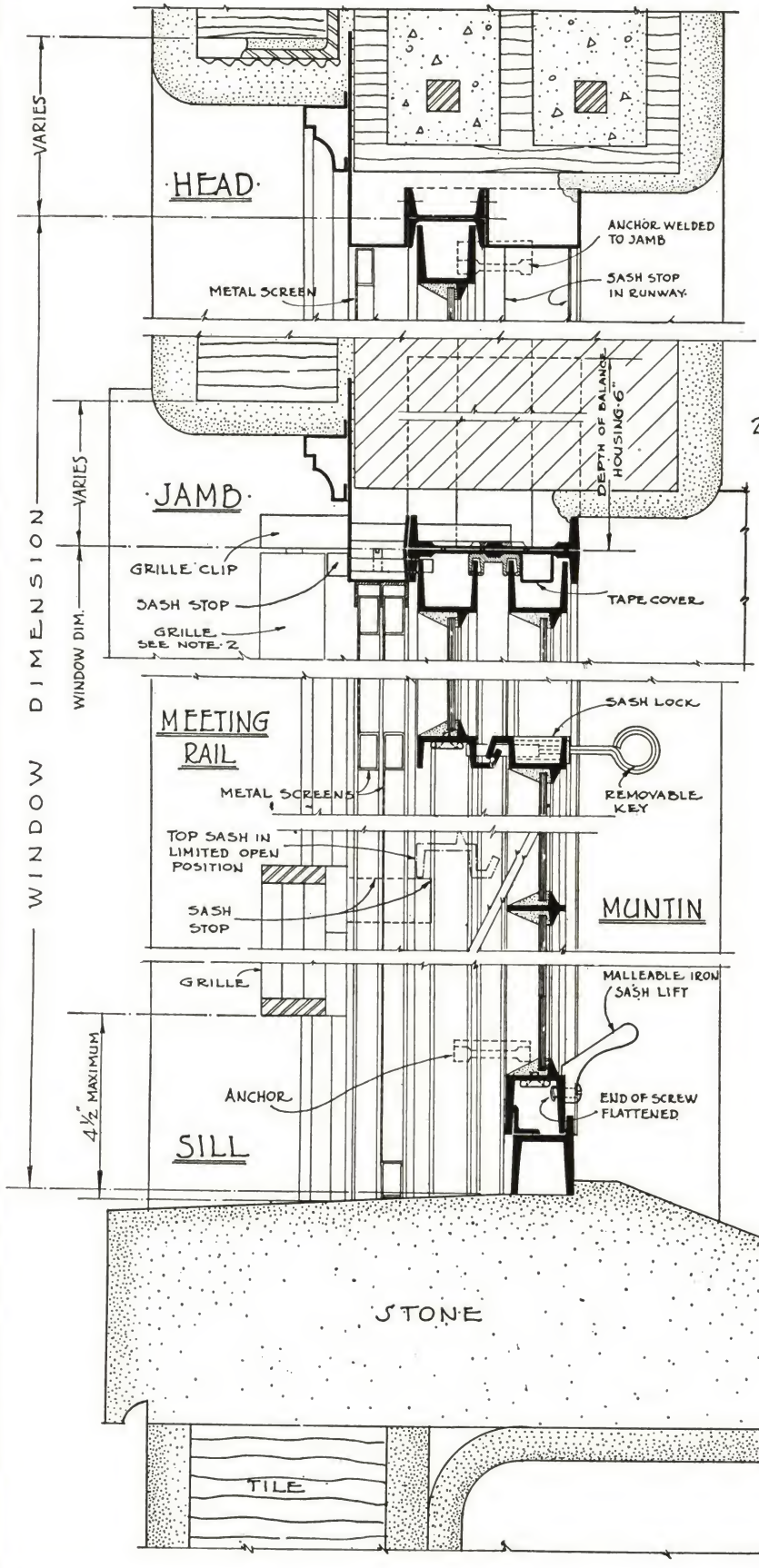
HORIZONTAL SECTION

SCALE 1" = 1'-0"

DETENTION WINDOWS

DETAILS OF DOUBLE SLIDE TYPE DETENTION WINDOWS WITH GRILLE TO SWING OUT AT SIDE

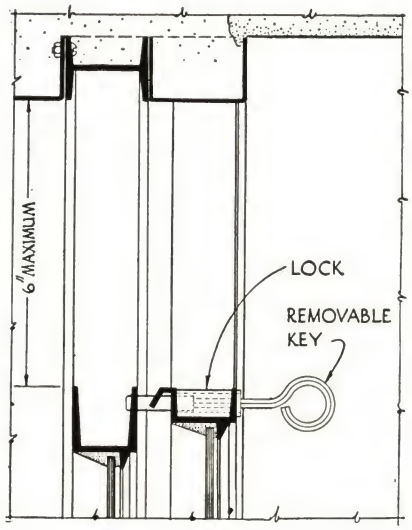
SCALE FOR DETAILS 3"=1'-0"



NOTES

WINDOW DIMENSIONS - WINDOW DIMENSIONS ARE MEASURED TO POINTS INDICATED. MASONRY OPENINGS MAY VARY. METHOD OF DETERMINING GLASS SIZES, MUNTIN SPACING AND WINDOW DIMENSIONS ARE SHOWN ON PAGE 69.

2. GRILLES – GRILLES, GRILL LOCKS AND GRILL HINGES ARE NOT FURNISHED BY LUPTON SEE SPECIFICATIONS ON PAGE 68.



SECTION THRU HEAD SHOWING SASH LOCKED IN OPEN POSITION.....

COMMERCIAL PROJECTED AND PIVOTED WINDOWS



These two types of windows are almost identical in construction, the difference is in the operation (or hanging) of the movable portion or ventilator.

Both types have a wide range of application though mostly used for industrial buildings and buildings of like character. Both types can be screened and are available in aluminum sections. All windows are drilled for attaching shade brackets.

SPECIFICATIONS

Work Included

1. Furnish where shown on drawings Lupton Steel Commercial Projected Windows (or Lupton Steel Pivoted Windows) as manufactured by DAVID LUPTON'S SONS CO., Philadelphia, Pa.

Materials

2. Ventilator and frame members, muntins and mullions shall be of hot rolled steel.

3. Frame member shall be special angle section, muntins shall be cruciform section 1⅜ in. deep, and mullions shall be T bars.

Note:—Structural steel members forming imposts are not furnished by the window manufacturer.

Construction

4. All Commercial Projected (or Pivoted) Windows shall be designed for inside glazing.

5. Both frames and ventilators shall be assembled by tenoned, riveted joints at corners. (Commercial Projected Ventilators shall have corners welded in addition to riveting.) Continuous two point, flat weathering contact shall be provided between frame and ventilator.

6. All muntins shall be continuous thru, and interlocked at, their intersections. They shall be attached to frame or ventilator members by tenoning and riveting.

7. Vertical mullions shall be provided where two or more units are to be placed side by side in one opening.

Note:—For Jamb plates see note at end of specifications.

8. Where windows are anchored to steel structure, furnish clips of types to suit conditions.

9. Furnish anchor clips at sill, at least one clip for each two lights in the width of a unit.

10. Where hardware is to be attached to bottom rail of ventilator, a clip for this purpose shall be riveted to ventilator.

11. *Commercial Projected Windows* shall have ventilators accurately pivoted at sides on two steel arms attached to window frames by steel arm blocks. Each ventilator shall be equipped with two rustproofed flat, steel springs and two brass friction shoes. Friction shoes shall slide vertically in the channels formed by the side weathering of the ventilators with sufficient friction to hold the ventilators in any open position up to the limit of their movement and to prevent rattling.

12. *Pivoted Windows* shall have ventilators horizontally pivoted as follows:

(Specify one of the following as desired.)

(a) *(Standard)* Pivots shall be located two inches above center line of ventilator.* Pivot plates shall be integral with the side weathering. Pivot pins shall be $\frac{5}{16}$-in. iron rivets fastened with cotter pins.

Or (b) *(Friction Pivots for Unscreened Pivoted Windows.*)* Pivots shall be located two inches above center line of ventilator. Pivot plates shall be integral with side weathering and shall be clamped with bronze friction plates in a malleable iron yoke by a cadmium plated bolt. Friction shall be adjustable to hold ventilator at various degrees of opening without stay bar.

Or (c) *(Pivots for Screened Pivoted Windows.* See screens.)* Pivots shall be located on center line of ventilator. Pivot plates shall be malleable iron castings. The pivot pin shall have a bronze bushing. Friction shall be adjustable from inside and shall be sufficient to hold ventilator at various degrees of opening.

Hardware

13. All hardware shall be shipped unattached, carefully packed.

14. *Commercial Projected Windows* shall have the following malleable iron hardware:

For open out ventilators—Ring handle and pull down ring.
For open in ventilators within reach—Locking handle.
For open in ventilators beyond reach—Spring catch.

15. *Pivoted Windows* shall have the following hardware:

(a) *(Standard)*—Provide stay bar and clip for ventilators within reach from floor, provide spring catch, chain, chain roller guide and clip for vents beyond reach from floor.

(b) *(Alternate—Used with friction pivots.*)* Provide ventilators with ring type locking handles. Where vents are beyond reach from floor provide pull-down rings in addition to handles.

(c) *(Alternate—For Screened Pivoted Windows.*)* Provide malleable iron locking handle where top rail of ventilator is within reach from floor and malleable iron spring catch for pole operation where beyond reach from floor.

Erection

16. All Commercial Projected (or Pivoted) Windows shall be erected by the window contractor (or state by whom) in prepared openings.

Note:—Setting in prepared openings is the recommended practice. Include in the masonry specifications that all masonry openings shall be accurately constructed in accordance with the installation details for Lupton Commercial Projected (or Pivoted) Windows. All grouting, pointing, etc., should be done by the mason contractor after the windows are set. *Note:—See page 3.*

17. Windows shall be set plumb and true, properly aligned and securely anchored and all ventilators properly adjusted before glazing.

18. All hardware shall be applied under window manufacturer's directions.

Painting

19. All windows shall receive one shop coat of window manufacturer's standard, dark gray paint, oven-dried.

Glass and Glazing

20. Furnish standard wire glazing clips, four to each light.

Note:—(See page 3) Specify glass and glazing under proper heading elsewhere in specifications.

(a) Do not specify single thickness glass.

(b) Specify high-grade steel window putty (ordinary wood sash putty must not be used).

(c) Specify that Lupton Commercial Projected (or Pivoted) Windows shall be glazed from the inside; the glass set in a bed of putty and held by Lupton standard wire glazing clips.

Continued at top of next page.

COMMERCIAL PROJECTED and PIVOTED WINDOWS

Specifications continued from preceding page.

Or specify that Lupton Commercial Projected (or Pivoted) Windows shall be glazed from the inside; the glass set in a bed of putty and held by steel glazing angles fastened with udylited round head machine screws.*

*Screens**

21. All Commercial Projected (or Pivoted) Windows shall be equipped with flat screens. Screens shall fit closely so as to prevent entrance of insects.

22. Screen frames shall be rectangular steel tubing 1x$\frac{7}{16}$ in. galvanized, reinforced at corners and painted one coat of gray paint to match the windows. They shall be rewireable. Wire shall be 16 mesh bronze wire cloth.

23. "Projected in" ventilators shall have screens on outside; "projected out" ventilators shall have screens on the inside.

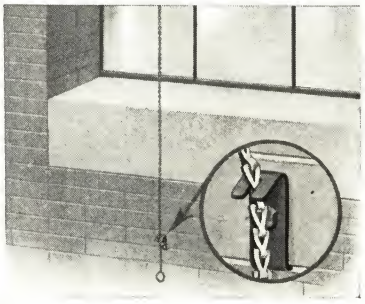
24. Each pivoted ventilator shall have two flat screens, one on the outside of the upper half of the vent and one on the inside of the lower half. The bottom of the upper screen and the top of the lower screen shall bear at all times against curved plates attached to the vent at the center line so as to prevent entrance of insects.

**Note*

The following items are furnished when clearly indicated in original specifications or on drawings and mentioned in contract for windows.

1. Pivoted Windows with pivots located elsewhere than 2 in. above center of ventilator.
2. Friction pivots without screens.
3. Screens. See pages 77 and 78.
4. Continuous glazing angles (These are required on underwriters' labeled windows).
5. Underwriters' labels, see page 79.
6. Jamb plates, see page 78.
7. Bronze hardware.
8. Mechanical operators, see page 81.
9. Window cleaners' anchors.
10. Mullion covers, see page 75.





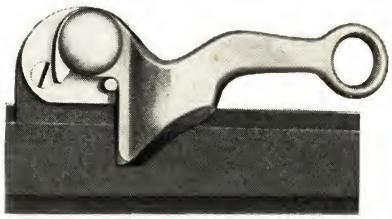
HARDWARE

See note at end of Specifications.

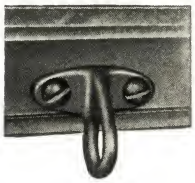
At right. Locking Handle No. 511. Malleable iron painted. Used within reach from floor on Projected in at top and Screened Pivoted Ventilators. Spring Catch No. 509, also malleable iron, is used beyond reach.



At right. Locking Handle No. 141. Malleable iron painted. Used on Projected out at bottom Ventilators and unscreened Pivoted Ventilators with friction pivots.



*At left. Two Ventilators in a Unit. Standard units have upper ventilator equipped with Spring Catch 3130, Chain roller guide 3102 and 12 ft. of chain. Lower ventilator is equipped with stay bar 3115.**



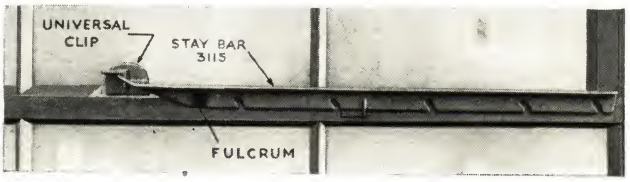
At left. Pull Down Ring No. 4881. Malleable iron painted. Used on Projected out at bottom Ventilators and unscreened Pivoted Ventilators with friction pivots.



At left. Steel Clip No. 3018 attached to window holds either stay bar or chain.

Below. Steel Angle Stay Bar No. 3115. This bar in addition to holding the ventilator open will draw the ventilator tightly shut and lock it when inserted in clip No. 3018 provided for the purpose.

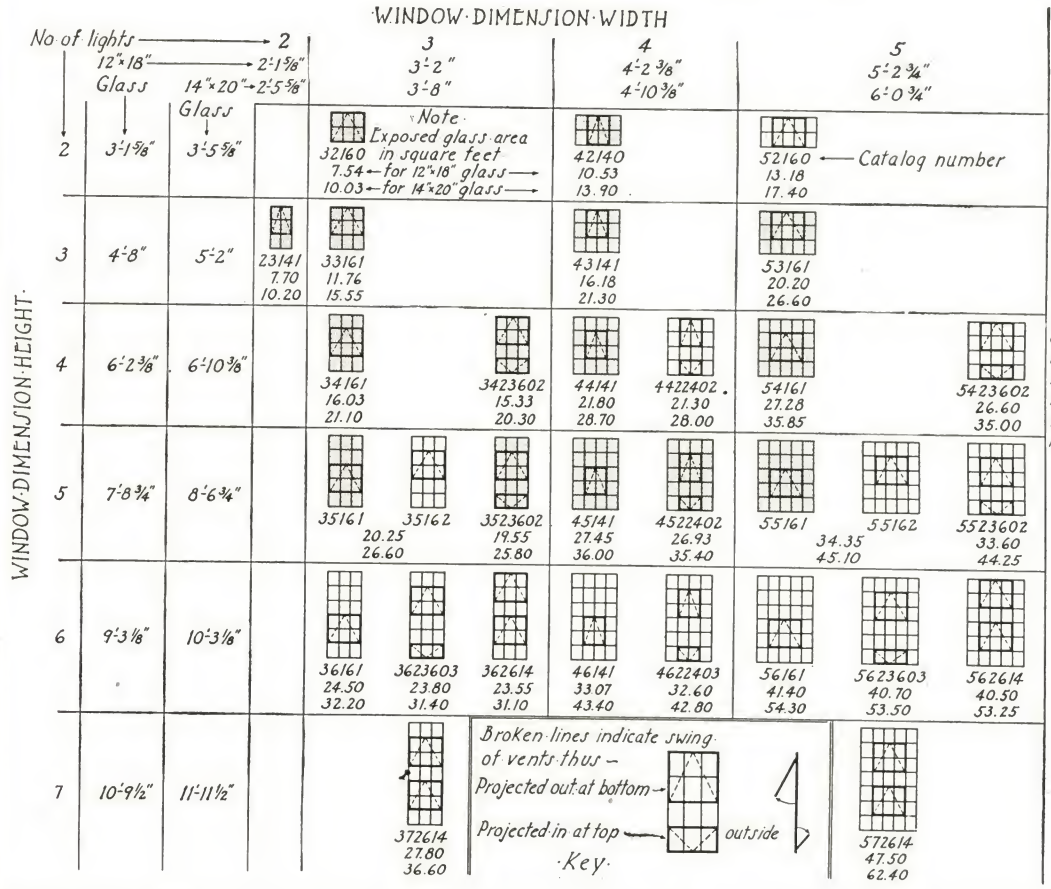
At left. Steel Clip No. 2365. Used to fasten chain when sill is beyond reach from floor.



**Where sill height is given on order, spring catch, chain, etc., is furnished on all vents having bottom edges over 6 ft. above floor, and clips No. 2365 are furnished where required.*

STANDARD TYPES and SIZES

Commercial Projected Windows



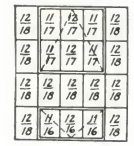
NOTES

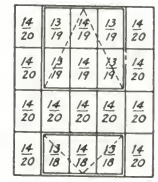
Shaded units are dealer stock windows.

Dimensions – The window dimension of a unit is the same as the masonry or structural opening required for that unit.

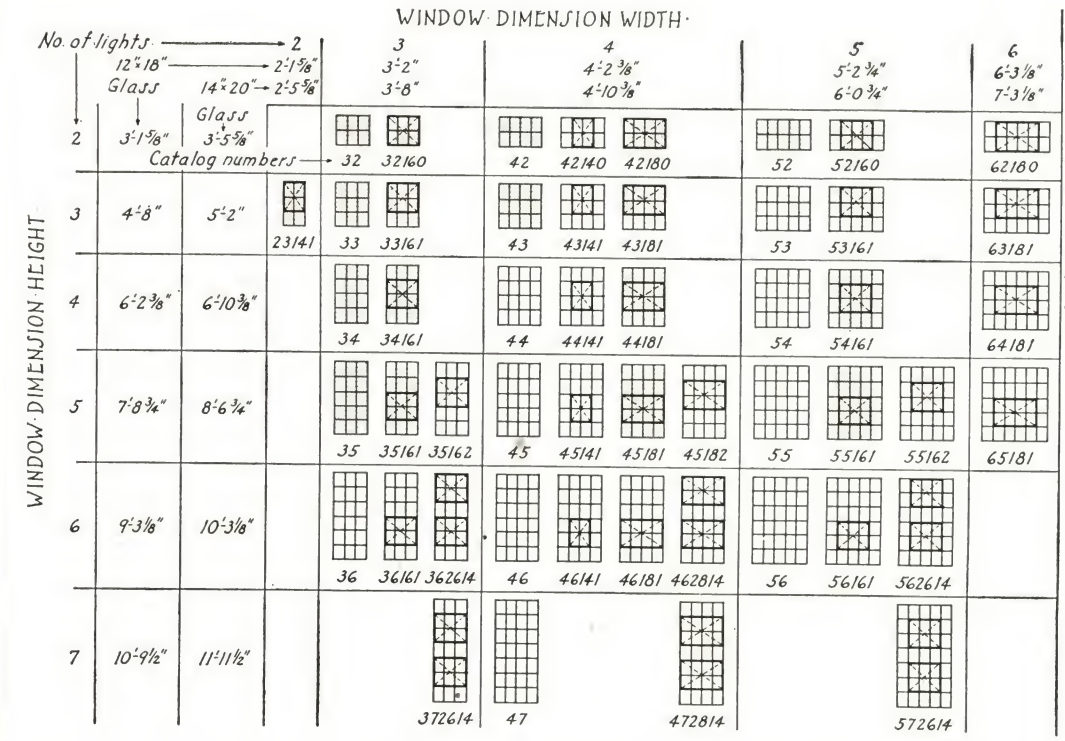
Glass – Glass in fixed lights is full 14×20 or 12×18 inch in size. Border lights in ventilators are reduced as shown in diagrams below to allow 1 inch for weathering.

Special Glass Sizes – Window dimensions of units with special size glass are obtained as follows: Add ⅜ inch to glass size for fixed lights (width or height as required), multiply by the number of lights and add ⅞ inch.





Pivoted Windows



NOTES

Shaded units are dealer stock windows.

Dimensions – The window dimension of a unit is the same as the masonry or structural opening required for that unit.

Glass – Glass in fixed lights is full 14×20 or 12×18 inch in size. Border lights in ventilators are reduced as shown in diagrams below to allow 1 inch for weathering.

Special Glass Sizes – See note at top of this page.



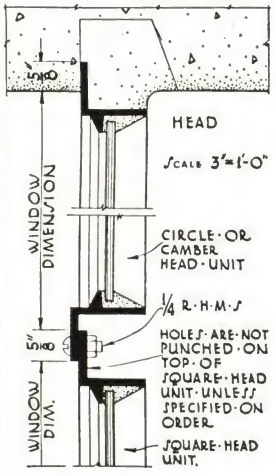


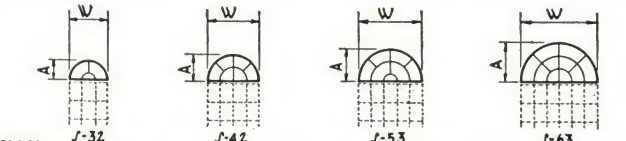
COMMERCIAL PROJECTED and PIVOTED WINDOWS

Standard and stock size and designs are shown on this page and page 74. Sizes and designs other than standard must be detailed specially and consequently take more time for delivery and cost more. However, where special glass sizes are necessary window dimensions may be determined as follows: Add 3/8 in. to glass size for fixed lights (width or height as required), multiply by the number of lights and add 7/8 in.

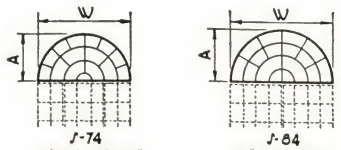
In listing windows always give the glass size followed by the symbol number of the unit.

SIZES AND ATTACHMENT DETAILS FOR CAMBER AND CIRCLE HEAD UNITS





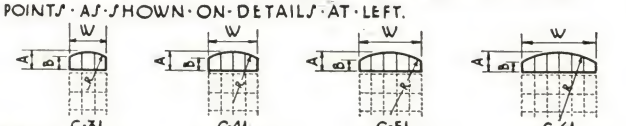
GLASS SIZES	12"x18"	14"x20"
S-32 W →	3'-2"	3'-8"
S-32 A →	1'-7"	1'-10"
S-42 W →	4'-2 3/8"	4'-10 3/8"
S-42 A →	2'-1 3/16"	2'-5 3/16"
S-53 W →	5'-2 3/4"	6'-0 3/4"
S-53 A →	2'-7 3/8"	3'-0 3/8"
S-63 W →	6'-3 1/8"	7'-3 1/8"
S-63 A →	3'-1 9/16"	3'-7 9/16"



	12"x18"	14"x20"
S-74 W →	7'-9 1/4"	8'-11 1/4"
S-74 A →	3'-10 5/8"	4'-5 5/8"
S-84 W →	8'-6 3/4"	9'-10 3/4"
S-84 A →	4'-3 3/8"	4'-11 3/8"

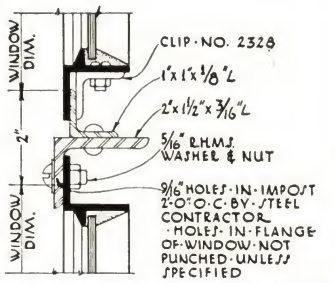
ALL DIMENSIONS ARE MEASURED TO WINDOW DIMENSION POINTS AS SHOWN ON DETAILS AT LEFT.

NOTE—SEMICIRCULAR UNITS S-74 & S-84 ARE USED OVER COMBINATIONS OF SQUARE HEAD UNITS SHOWN ABOVE BY DASH LINES



GLASS SIZES	12"x18"	14"x20"
C-31 W →	3'-2"	3'-8"
C-31 A →	1'-6 1/8"	1'-8 1/8"
C-31 B →	1'-1"	1'-2 1/4"
C-31 R →	3'-2"	3'-8"
C-41 W →	4'-2 3/8"	4'-10 3/8"
C-41 A →	1'-6 1/8"	1'-8 1/8"
C-41 B →	0'-11 5/16"	1'-0 5/16"
C-41 R →	4'-2 3/8"	4'-10 3/8"
C-51 W →	5'-2 3/4"	6'-0 3/4"
C-51 A →	1'-6 1/8"	1'-8 1/8"
C-51 B →	0'-9 1/16"	0'-10 3/16"
C-51 R →	5'-2 3/4"	6'-0 3/4"
C-61 W →	6'-3 1/8"	7'-3 1/8"
C-61 A →	1'-6 1/8"	1'-8 1/8"
C-61 B →	0'-8 1/16"	0'-8 7/16"
C-61 R →	6'-3 1/8"	7'-3 1/8"

CAMBER OR CIRCLE HEAD UNITS NOT OVER 6 LIGHTS WIDE ARE BOLTED DIRECTLY TO SQUARE HEAD UNIT BELOW.



IMPOST TYPE 1
FOR USE WITH S-74 & S-84

WIDTHS OF STANDARD OPENINGS*

PROJECTED WINDOWS Widths of openings 12" x 18" glass	PROJECTED WINDOWS Widths of openings 14" x 20" glass	Total number of units	Number of lights per unit. Position of each number indicates position of unit in opening	Total number of lights	Total number of mullions	PIVOTED WINDOWS Widths of openings 12" x 18" glass	PIVOTED WINDOWS Widths of openings 14" x 20 glass
2' 1 5/8"	2' 5 5/8"	1	2	2	None	2' 1 5/8"	2' 5 5/8"
3' 2"	3' 8"	1	3	3	None	3' 2"	3' 8"
4' 2 3/8"	4' 10 3/8"	1	4	4	None	4' 2 3/8"	4' 10 3/8"
5' 2 3/4"	6' 0 3/4"	1	5	5	None	5' 2 3/4"	6' 0 3/4"
		1	6	6	None	6' 3 1/8"	7' 3 1/8"
6' 6"	7' 6"	2	3, 3	6	1	6' 6"	7' 6"
8' 6 3/4"	9' 10 3/4"	2	4, 4	8	1	8' 6 3/4"	9' 10 3/4"
9' 10"	11' 4"	3	3, 3, 3	9	2	9' 10"	11' 4"
10' 7 1/2"	12' 3 1/2"	2	5, 5	10	1	10' 7 1/2"	12' 3 1/2"
10' 10 3/8"	12' 6 3/8"	3	3, 4, 3	10	2	10' 10 3/8"	12' 6 3/8"
11' 10 3/4"	13' 8 3/4"	3	3, 5, 3	11	2	11' 10 3/4"	13' 8 3/4"
11' 10 3/4"	13' 8 3/4"	3	4, 3, 4	11	2	11' 10 3/4"	13' 8 3/4"
		2	6, 6	12	1	12' 8 1/4"	14' 8 1/4"
12' 11 1/8"	14' 11 1/8"	3	4, 4, 4	12	2	12' 11 1/8"	14' 11 1/8"
13' 2"	15' 2"	4	3, 3, 3, 3	12	3	13' 2"	15' 2"
13' 11 1/2"	16' 1 1/2"	3	4, 5, 4	13	2	13' 11 1/2"	16' 1 1/2"
13' 11 1/2"	16' 1 1/2"	3	5, 3, 5	13	2	13' 11 1/2"	16' 1 1/2"
		3	4, 6, 4	14	2	14' 11 7/8"	17' 3 7/8"
14' 11 7/8"	17' 3 7/8"	3	5, 4, 5	14	2	14' 11 7/8"	17' 3 7/8"
15' 2 3/4"	17' 6 3/4"	4	3, 4, 4, 3	14	3	15' 2 3/4"	17' 6 3/4"
16' 0 1/4"	18' 6 1/4"	3	5, 5, 5	15	2	16' 0 1/4"	18' 6 1/4"
		3	6, 3, 6	15	2	16' 0 1/4"	18' 6 1/4"
		3	5, 6, 5	16	2	17' 0 5/8"	19' 8 5/8"
		3	6, 4, 6	16	2	17' 0 5/8"	19' 8 5/8"
17' 3 1/2"	19' 11 1/2"	4	4, 4, 4, 4	16	3	17' 3 1/2"	19' 11 1/2"
		3	6, 5, 6	17	2	18' 1"	20' 11"
18' 6 3/4"	21' 4 3/4"	5	3, 3, 5, 3, 3	17	4	18' 6 3/4"	21' 4 3/4"
		3	6, 6, 6	18	2	19' 1 3/8"	22' 1 3/8"
		4	3, 6, 6, 3	18	3	19' 4 1/4"	22' 4 1/4"
19' 4 1/4"	22' 4 1/4"	4	4, 5, 5, 4	18	3	19' 4 1/4"	22' 4 1/4"
20' 7 1/2"	23' 9 1/2"	5	5, 3, 3, 3, 5	19	4	20' 7 1/2"	23' 9 1/2"
21' 5"	24' 9"	4	5, 5, 5, 5	20	3	21' 5"	24' 9"
		4	4, 6, 6, 4	20	3	21' 5"	24' 9"
21' 7 7/8"	24' 11 7/8"	5	4, 4, 4, 4, 4	20	4	21' 7 7/8"	24' 11 7/8"
22' 8 1/4"	26' 2 1/4"	5	4, 4, 5, 4, 4	21	4	22' 8 1/4"	26' 2 1/4"
22' 8 1/4"	26' 2 1/4"	5	3, 5, 5, 5, 3	21	4	22' 8 1/4"	26' 2 1/4"
		4	5, 6, 6, 5	22	3	23' 5 3/4"	27' 1 3/4"
23' 8 5/8"	27' 4 5/8"	5	5, 4, 4, 4, 5	22	4	23' 8 5/8"	27' 4 5/8"
23' 11 1/2"	27' 7 1/2"	6	3, 4, 4, 4, 4, 3	22	5	23' 11 1/2"	27' 7 1/2"
24' 9"	28' 7"	5	4, 5, 5, 5, 4	23	4	24' 9"	28' 7"
		4	6, 6, 6, 6	24	3	25' 6 1/2"	29' 6 1/2"
		5	3, 6, 6, 6, 3	24	4	25' 9 3/8"	29' 9 3/8"
26' 0 1/4"	30' 0 1/4"	6	4, 4, 4, 4, 4, 4	24	5	26' 0 1/4"	30' 0 1/4"
26' 9 3/4"	30' 11 3/4"	5	5, 5, 5, 5, 5	25	4	26' 9 3/4"	30' 11 3/4"
		5	5, 5, 6, 5, 5	26	4	27' 10 1/8"	32' 2 1/8"
28' 1"	32' 5"	6	5, 4, 4, 4, 4, 5	26	5	28' 1"	32' 5"
28' 1"	32' 5"	6	3, 5, 5, 5, 5, 3	26	5	28' 1"	32' 5"
29' 4 1/4"	33' 10 1/4"	7	3, 3, 5, 5, 5, 3, 3	27	6	29' 4 1/4"	33' 10 1/4"
30' 1 3/4"	34' 9 3/4"	6	4, 5, 5, 5, 5, 4	28	5	30' 1 3/4"	34' 9 3/4"
31' 5"	36' 3"	7	3, 5, 5, 3, 5, 5, 3	29	6	31' 5"	36' 3"

HEIGHTS OF STD. UNITS*

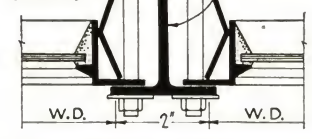
Number of lights	12" x 18" glass	14" x 20" glass
1	1' 7 1/4"	1' 9 1/4"
2	3' 1 5/8"	3' 5 5/8"
3	4' 8"	5' 2"
4	6' 2 3/8"	6' 10 3/8"
5	7' 8 3/4"	8' 6 3/4"
6	9' 3 1/8"	10' 3 1/8"
7	10' 9 1/2"	11' 11 1/2"

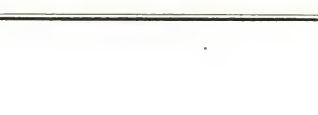
*DIMENSIONS

Dimensions in tables are taken to measure points indicated in detail on next page.

MULLION COVERS

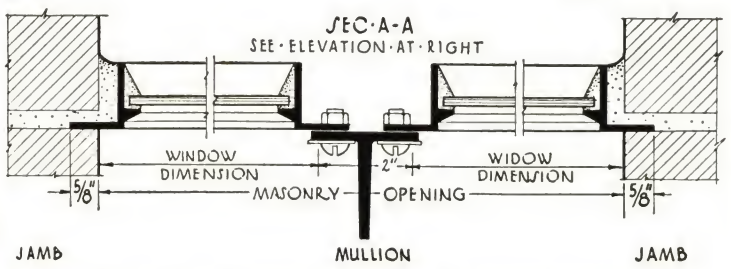
Mullion Covers of 13 ga. steel can be furnished as shown below. See note at end of specification, page 73.



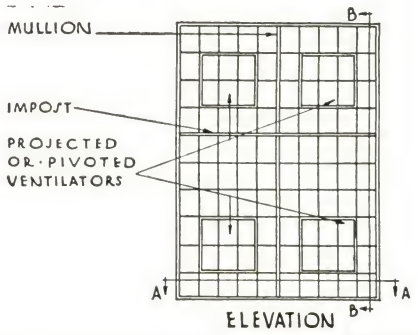


COMMERCIAL PROJECTED and PIVOTED WINDOWS
DETAILS of MULLIONS and IMPOSTS

Scale 3" = 1'0"

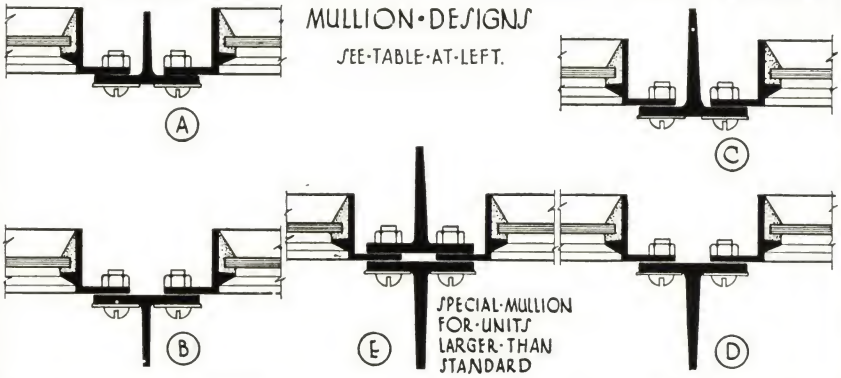


IN·MULTIPLE·UNIT·OPENINGS — EACH·MULLION·ADDS·2" TO·THE·SUM·OF·THE·WINDOW·DIMENSIONS



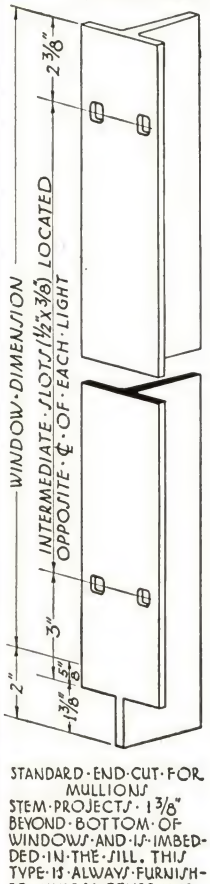
TABLE·SHOWING·LIMITS·OF·MULLION·DESIGN

LIGHTS HIGH / LIGHTS WIDE	12"x18" GLASS 3	4	5	6	14"x20" GLASS 3	4	5	6
2	A	A	A	A	A	A	A	A
3	A	A	A	A	A	A	A	A
4	A	A	A	A	A	A	A	B
5	B	B	B	B	B	B	B	C
6	C	C	C	C	D	D	D	D
7	D	D	D	D	D	D	D	E

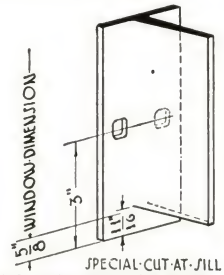


MULLION·DESIGNS
SEE·TABLE·AT·LEFT.

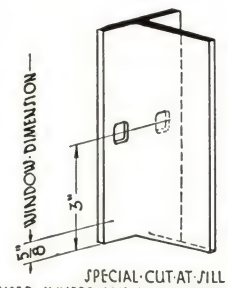
MULLION·CUTS
STANDARD·AND·SPECIAL



STANDARD·END·CUT·FOR MULLIONS
STEM·PROJECTS·1 3/8" BEYOND·BOTTOM·OF WINDOWS·AND·IS·IMBEDDED·IN·THE·SILL. THIS TYPE·IS·ALWAYS·FURNISHED·UNLESS·OTHERWISE SPECIFIED.



SPECIAL·CUT·AT·SILL
USED·WHERE·MULLION·STEM TURNS·IN.
1·AT·IMPOSTS – TYPES·2,3,4,5&6 (SEE·TABLE·AT·RIGHT)
2 AT·CUT·STONE·SILLS·OR WOOD·SILLS·WHEN·NOTCHING OF·SILLS·IS·UNDESIRABLE FURNISHED·ONLY·WHEN SPECIFIED.

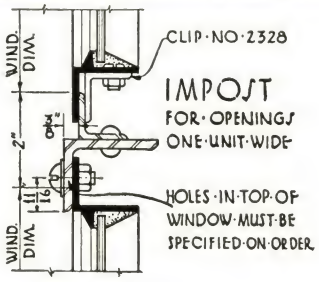


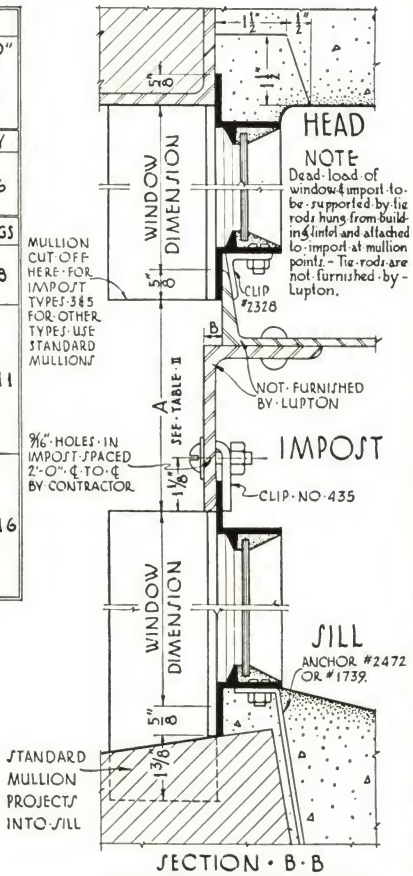
SPECIAL·CUT·AT·SILL
USED·WHERE·MULLION·STEM TURNS·OUT.
1- AT·IMPOSTS· TYPES·3&5 (SEE·TABLE·AT·RIGHT)
2- AT·CUT·STONE·SILLS·OR WOOD·SILLS·WHERE NOTCHING·OF·SILLS·IS UNDESIRABLE. FURNISHED·ONLY·WHEN SPECIFIED.

IMPOST·DESIGNS
SCALE·FOR·DETAILS 3"=1'-0"

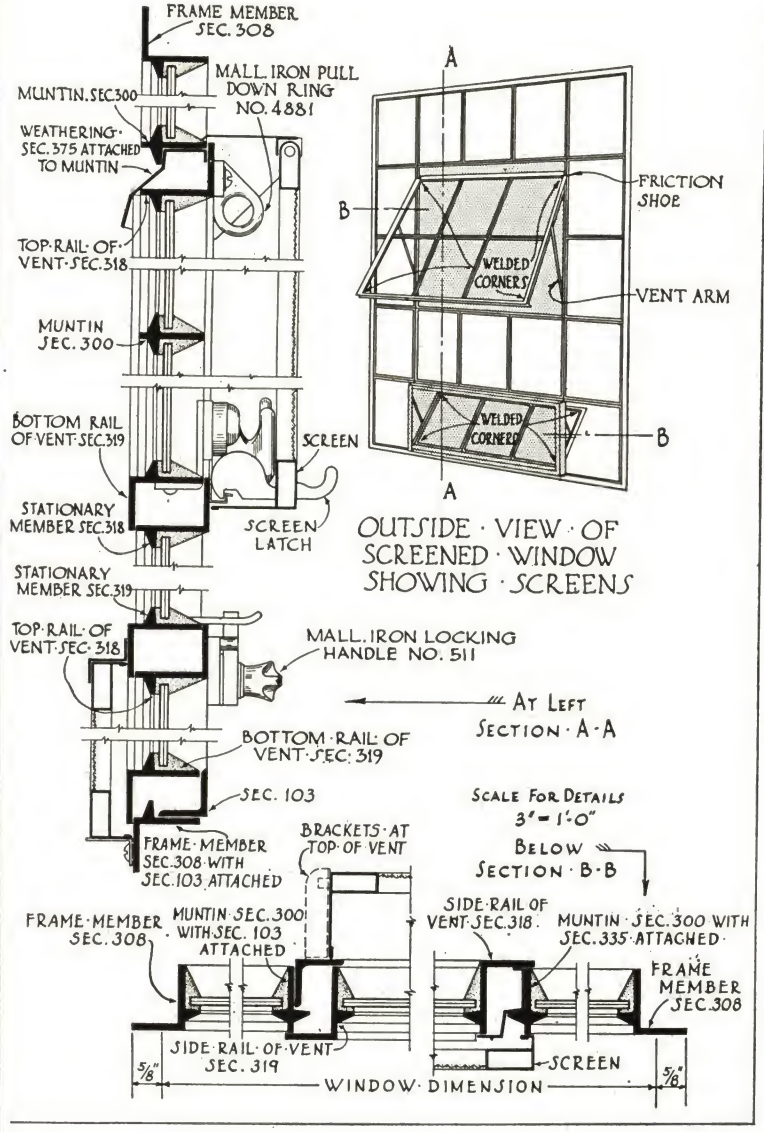
TABLE·II

TYPE	12"x18" GLASS NO. OF LIGHTS WIDE	DESIGN OF IMPOST	A DIM	B DIM	14"x20" GLASS NO. OF LIGHTS WIDE
	USED·FOR·SINGLE·UNIT·OPENINGS·ONLY				
1	3·TO·6	TWO·ANGLES ONE·2½"x1½"x3/16" ONE·1"x1"x1/8"	2"	3/8"	3·TO·6
	USED FOR BOTH·SINGLE·AND·MULTIPLE·UNIT·OPN'GS				
2	3·TO·9	TWO·ANGLES 2½"x2½"x3/16"	5"	3/8"	3·TO·8
3	10·TO·13	TWO·ANGLES 2½"x2½"x3/16" ONE·6"x¼"PLATE	5¼"	3/8"	9·TO·11
4		—OR— ONE·4"CHANNEL ONE·ANGLE 3½"x2½"x¼"	5¼"	½"	
5	14·TO·18	TWO·ANGLES 3"x3"x5/16" ONE·6"x¼"PLATE	6⅛"	½"	12·TO·16
6		—OR— ONE·6"CHANNEL ONE·ANGLE 4"x3"x5/16"	6⅛"	½"	





COMMERCIAL PROJECTED WINDOWS
SCREENING DETAILS and FULL SIZE SECTIONS

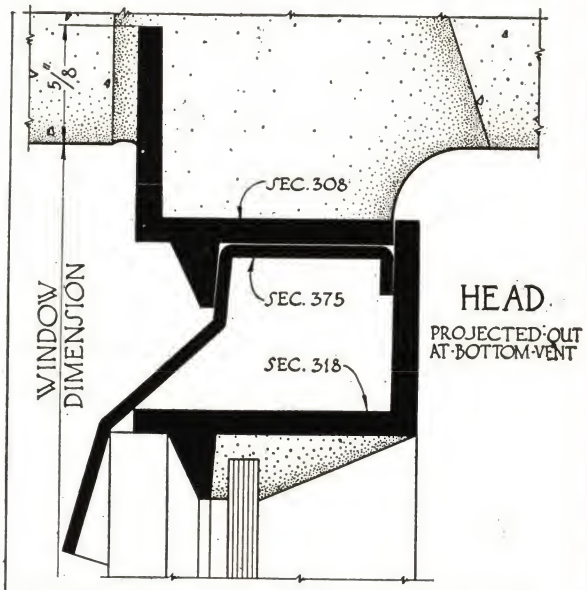


OUTSIDE VIEW OF SCREENED WINDOW SHOWING SCREENS

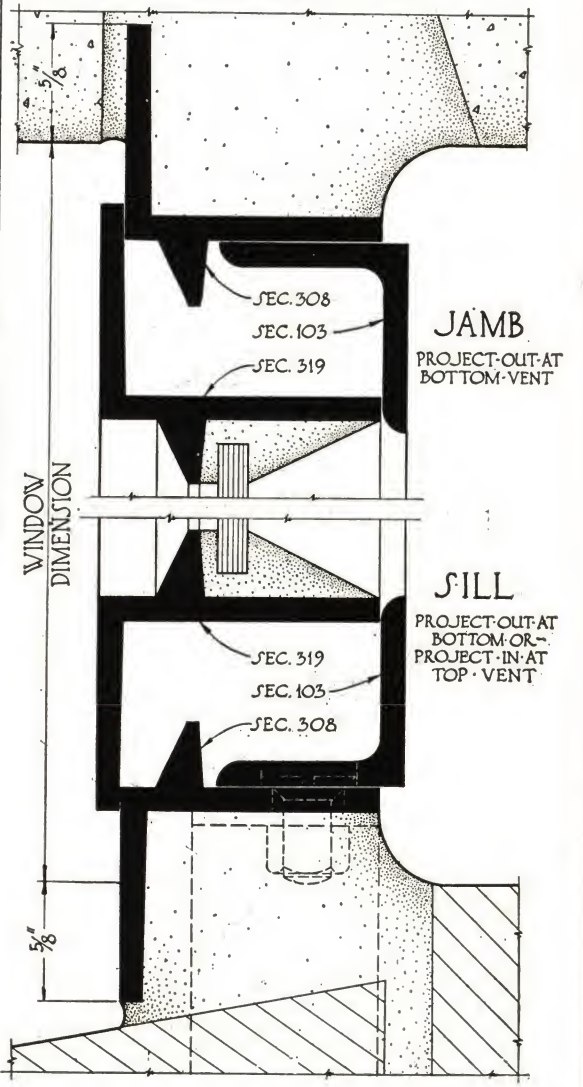
AT LEFT SECTION A-A

SCALE FOR DETAILS 3" = 1'-0"

BELOW SECTION B-B

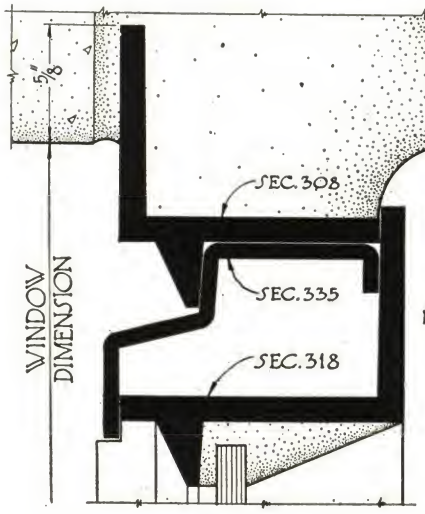


HEAD
PROJECTED OUT AT BOTTOM VENT



JAMB
PROJECT OUT AT BOTTOM VENT

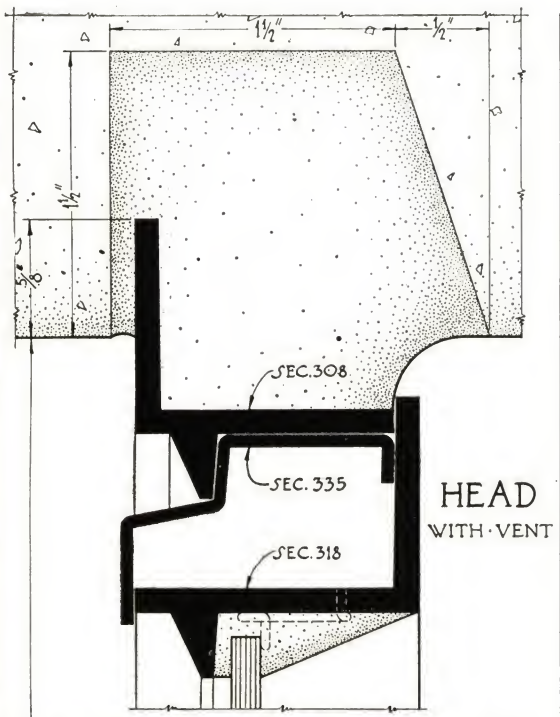
SILL
PROJECT OUT AT BOTTOM OR PROJECT IN AT TOP VENT



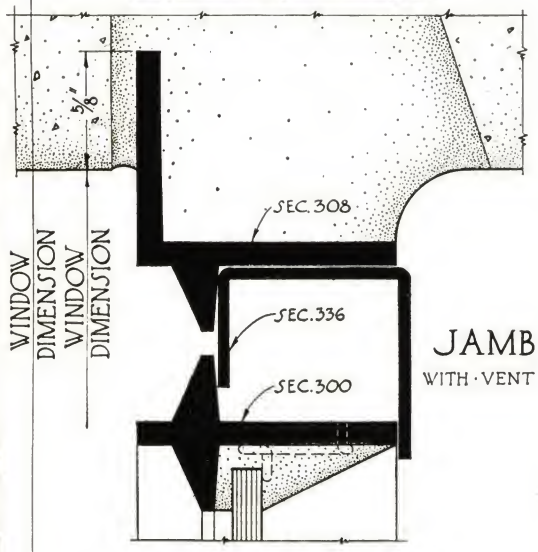
JAMB
PROJECT IN AT TOP VENT

PIVOTED WINDOWS

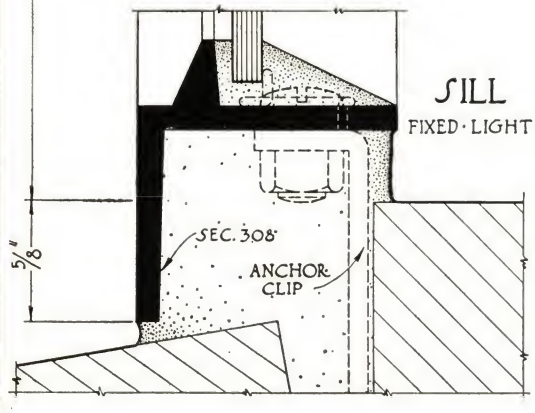
SCREENING DETAILS and FULL SIZE SECTIONS



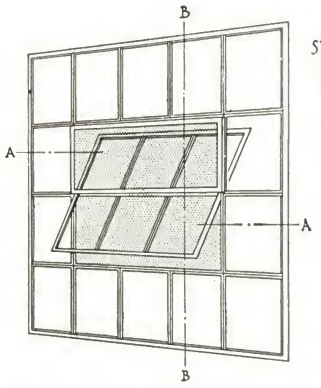
HEAD
WITH · VENT



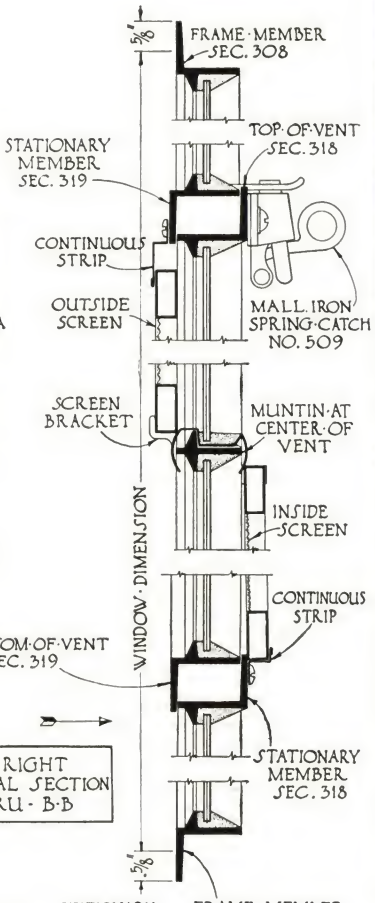
JAMB
WITH · VENT



SILL
FIXED · LIGHT

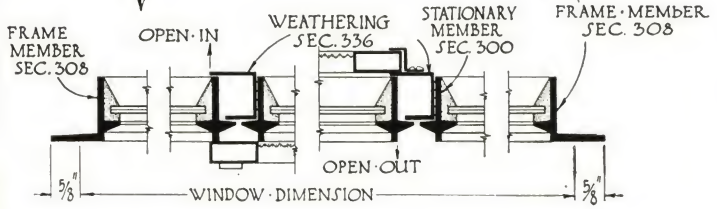


OUTSIDE · VIEW · OF · SCREENED · WINDOW · SHOWING · SCREENS ·



AT BOTTOM HORIZONTAL · SECTION THRU · A · A

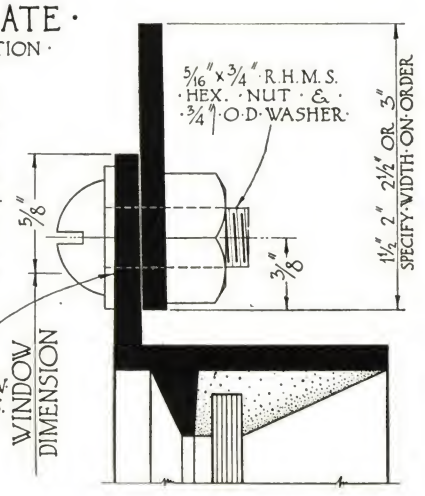
AT RIGHT VERTICAL SECTION THRU · B · B



· JAMB · PLATE ·

· FULL · SIZE · SECTION ·

Jamb · plates · are · furnished · for · projected · and · pivoted · windows · when · specified · and · mentioned · in · contract · for · windows. They · are · shipped · unattached · and · are · bolted · to · windows · at · the · time · of · installation.



COMMERCIAL PROJECTED and PIVOTED WINDOWS UNDERWRITERS' TYPE

Wherever wire glass is to be used for fire protection it is advisable to specify Labeled Windows. Below in condensed form are the underwriters' specifications as they apply to Projected and Pivoted Windows. Standard Windows of these types are readily converted to meet the requirements for labels.

Underwriters' Labeled Windows are furnished only when clearly indicated on original drawing and in specifications and mentioned in contract for windows.

UNDERWRITERS' REQUIREMENTS

Before the windows can be labeled the underwriters' inspector must be informed as to the number and size of units in each masonry opening and the details at head, jambs and sill. The latter is required so that the proper anchoring connections may be furnished.

Opening Sizes

1. Single Unit openings may not exceed 84 sq. ft. area. Neither width nor height may exceed 12 ft.

2. Multiple unit openings may not exceed 12 ft. in height. Opening width is not limited, but no unit may exceed 7 ft. in width.

Glass Sizes

3. Maximum exposed glass area of single light is 350 sq. in. Maximum dimensions measured tip to tip of glazing angles are 48 ins. horizontally, 54 ins. vertically.

Note:—Glass in standard units is less than this.

Ventilators

4. All projected ventilators must open out.

5. Hinges for pivoted vents must have stop lugs limiting opening to 135°.

6. No more than two ventilators may be used in a unit.

7. Maximum area of one ventilator is 20 sq. ft. Maximum dimensions are 5 ft. horizontally, 4 ft. vertically.

Note:—The maximum size recommended is 41x38 in. which is a ventilator 3 lights wide, 2 lights high, 14x20 in. glass.

Hardware

8. All hardware must be malleable iron.

9. *Projected ventilators* may be operated by gravity type handle (No. 141, page 73) or spring catch. A chain may be used to operate handle or spring catch beyond reach from floor, or a pull down ring (No. 4481 page 73) may be used for pole operation.

10. *Pivoted ventilators* may be operated by spring catch and chain or gravity type handle (No. 141, page 73) and chain. Chain arrangement is same as used for standard windows with addition of a fusible link (see detail on this page).

Mullions

11. Mullions must be "T" section as shown in details C and D. page 76, anchored at head and sill by means of clips, bolts or embedded in the masonry.

Construction of Units

12. Construction is the same as for the Lupton Standard Commercial Projected or Pivoted Windows with addition of glazing angles and expansion interlocks. (See detail on this page.)

13. Curved or splayed head units cannot be labeled.

Glazing Angles

14. Glazing angles ($\frac{9}{16}$x$\frac{1}{2}$x$\frac{1}{16}$ in.) must be fastened to the window sections with steel screws. The $\frac{9}{16}$-in. leg must be upstanding.

Note:—Small lights up to 100 sq. in. area may have $\frac{5}{8}$ in. upstanding leg.

Glass

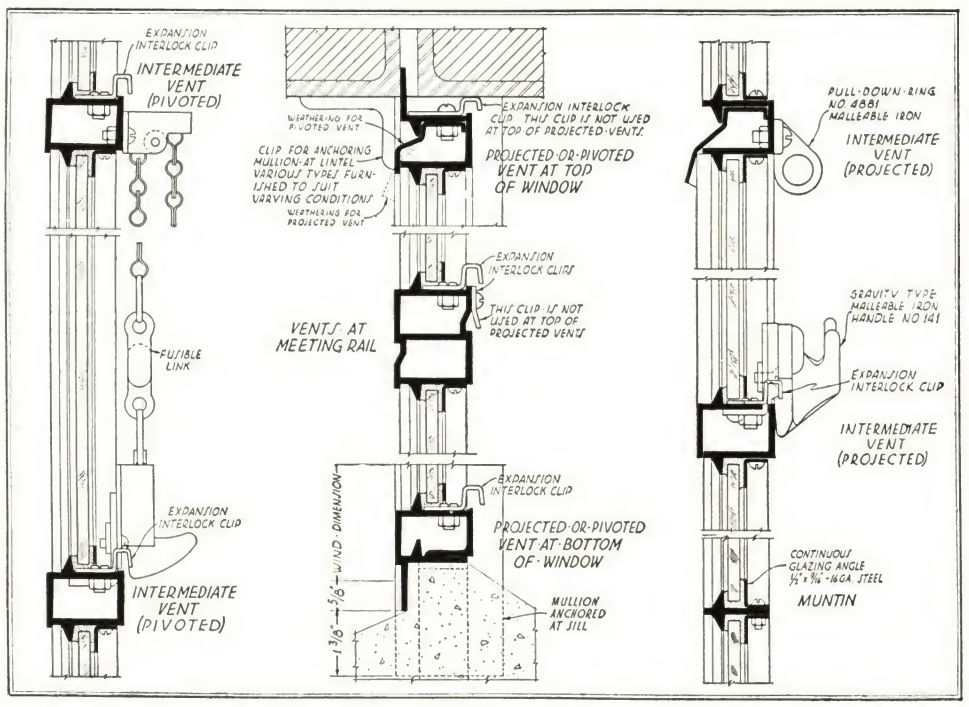
15. Glass must be ¼-in. thick wire glass.

Anchoring

16. Windows must be anchored by embedding the window flange in the masonry or by using any of the clips or anchors illustrated on page 76. Spacing of anchors is different from the standard and is as follows:

At Head or Sill—One not more than 8¼ in. from each end of frame member and one approximately at center of each light.

At Jamb—One not more than 12 in. from each end of frame member and one approximately at center of each light.



At Left. Details illustrating underwriters' requirements. Scale 3 in. equals 1 ft. 0 in.

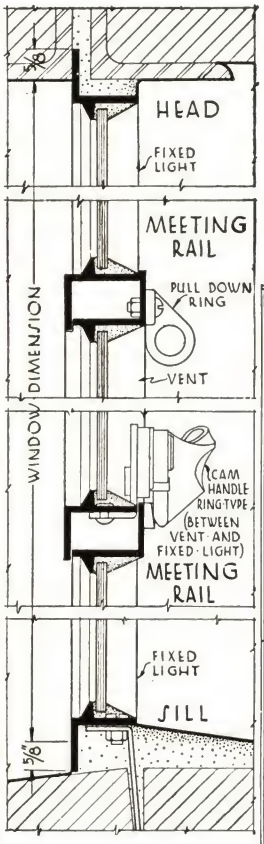
ALUMINUM WINDOWS IN PROJECTED and PIVOTED TYPES

Sections, glass sizes, wall details and anchoring are same as for steel windows. Available sizes are shown in diagrams. Ventilators must extend the full width of units.

Muntin intersections are welded and in the projected type corners of frames and ventilators are welded. Pivoted vents have cadmium plated malleable iron friction hinges, projected vents have white bronze friction shoe with sherardized coil spring and anti-cling insert.

Locking hardware is all of white bronze with dull lacquered finish same as for Aluminum Casements. See page 27.

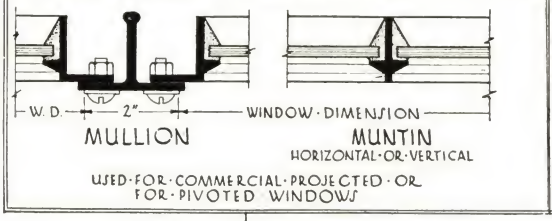
Windows have natural extruded aluminum finish. (For finish of windows and general properties of aluminum, see page 26.)

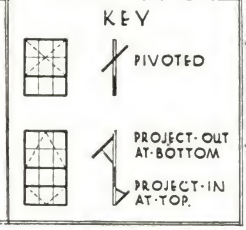


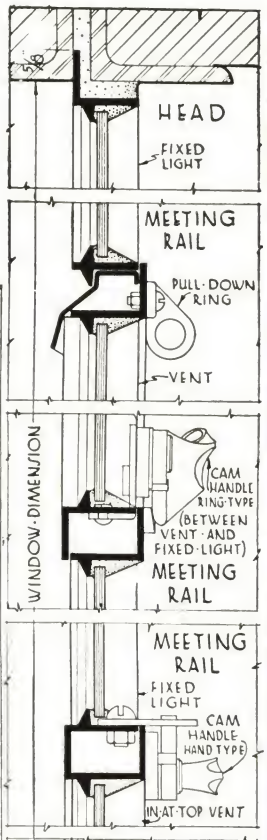
STANDARD TYPES AND SIZES

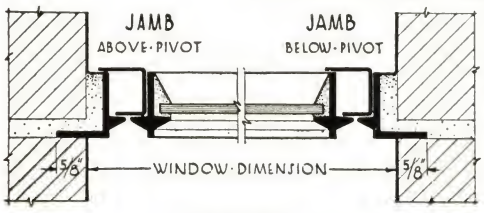
WINDOW DIMENSION WIDTH

NO OF LIGHTS →	2	3	4	2	3
12"x18" GLASS →	2'-1 3/16"	3'-2"	4'-2 3/8"	2'-1 5/8"	5'-2"
14"x20" GLASS →	2'-5 5/8"	3'-8"	4'-10 3/8"	2'-5 5/8"	3'-8"
WINDOW DIMENSION HEIGHT 2	3'-1 5/8" 3'-5 5/8"	A-32 A-32160	A-42 A-42180	A23141 A32160	
3	4'-8" 5'-2" A-23141	A-33 A-33161	A-43 A-43181		A-33161
4	6'-2 3/8" 6'-10 3/8"	A-34 A-34161	A-44 A-44181		A-34161 A-3423602
5	7'-8 3/4" 8'-6 3/4"	A-35 A-35161 A35162	A-45 A-45181 A-45182		A-35161 A-35162 A3523602

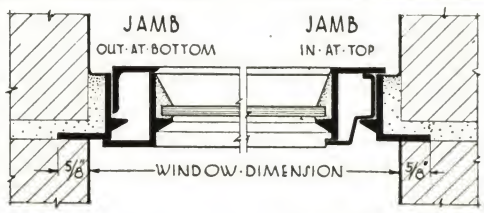








PIVOTED



COMMERCIAL PROJECTED

EXPLOSION RELEASING LATCH

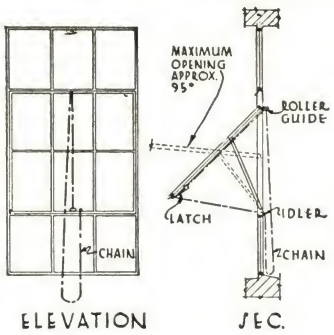
For Commercial Projected Ventilators

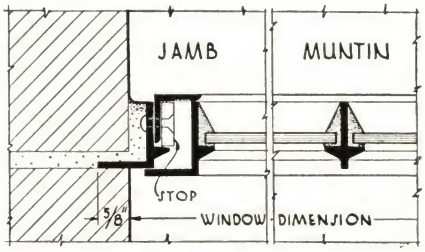
Commercial Projected Windows equipped with explosion releasing latch operate automatically to relieve internal explosive pressure. Used wherever explosion hazard is present as in film storage rooms, etc.

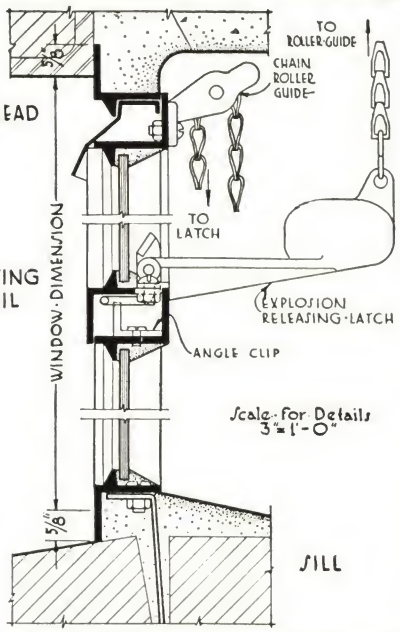
Construction of the window is the same as for the standard Commercial Projected Window except that a special friction shoe is used. Opening sizes, glass sizes and anchoring details are same as for Standard Commercial Projected Windows. See pages 72 to 77. Glass must be 1/4 in. thick wire glass.

Normally the window is operated by the hand chain shown in illustration. Under explosive pressure, however, the vent will open and remain open until closed by hand.

Patent Applied For



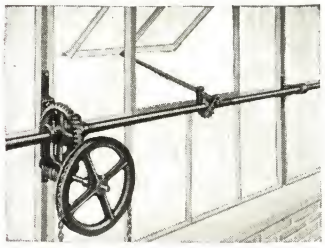




PIVOTED WINDOW OPERATORS

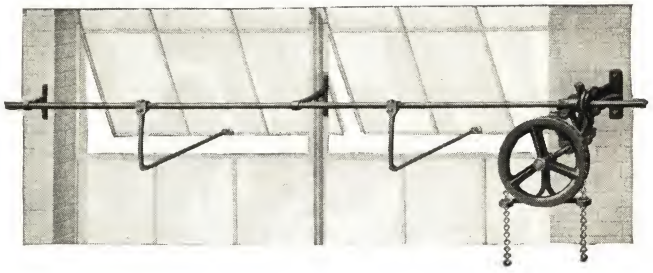
Mechanical Operators for Pivoted Windows are available in two general types—tension type and torsion type. Torsion operators prove economical in most cases, but where the requirements exceed the limits of torsion operators a form of tension operator described on page 87 is recommended.

With torsion operators ventilators are controlled by lever arms (Lever Type Operator) or racks and pinions (Rack and Pinion Operator) mounted on a horizontal shaft which is supported in brackets attached to wall or window mullions. Power is applied to the horizontal shaft through a worm and gear which also locks the ventilators at the desired degree of opening. Worm and gear may be open type or fully enclosed to run in oil and may be operated by hand chain, hand wheel or electric motor. Electrical power usually proves economical only for Rack and Pinion Operator. Details are given on pages 82 and 83.



At left. Rack and Pinion Operator. Malleable iron pinion gears securely attached to horizontal shaft operate the steel channel racks to open and close the ventilators.

At right. With the Lever Type Operators the ventilators are controlled by steel operating arms clamped to the horizontal shaft and connected to the vent by steel vent rods.



SPECIFICATIONS FOR LEVER TYPE OPERATOR

Work Included

1. Furnish and install where shown on drawings Lupton Operating Device, manufactured by DAVID LUPTON'S SONS COMPANY, Philadelphia, Pa.

Materials and Construction

2. Power shall be a machine cut steel worm operating a gray cast iron segment worm gear assembled with a gray cast iron yoke and mounted on a malleable iron supporting bracket adapted to rigid attachment to building construction, or, by means of extension clips, to window mullion. The hub of the segment gear shall be drilled to fit the power transmission line and shall be tightly secured to it with set screws so as to rotate the line on the gear axis.

Note:—There are two types of power shaft: 1 in. and ½ in. The larger will operate runs up to 40 ft. on each side of power, and no more than 12 average size ventilators. The smaller will operate runs up to 10 ft. on either side of power and no more than 6 average size ventilators.

3. Power shaft shall be standard black wrought iron pipe joined into a continuous line by standard threaded pipe couplings, screwed tight and secured by two ¼-in. steel pins.

4. Shaft shall be supported by malleable iron brackets attached to the window mullions or to the building construction.

5. Steel operating arms (one to each ventilator) shall be rigidly clamped to the shaft.

6. Connection between the operating arm and the ventilator shall be made by a steel vent rod and a malleable iron bracket mounted on the ventilator. Pivot pins at both ends of the vent rod shall be bronze.

Note:—Specify operation by chain or by vertical steel shaft.

7. Chain Operation—Power shall be operated by No. 9 Register hand chain, operating over a chain wheel and guided by a guard. Both wheel and guard shall be gray iron castings. Wheel shall be accurately drilled, mounted on worm shaft and securely held by a setscrew. Chain shall terminate approximately 2 ft. above the floor.

Note:—Where building construction makes it impractical to hang the chain directly vertical from the power (as in monitor window installations) single and double chain idlers are furnished if clearly indicated on original drawings and in specifications, and mentioned in contract for operators. See page 89.

8. Steel Shaft Operation—Power shall be operated by a vertical ¾-in. round steel shaft, coupled directly to the worm shaft with a malleable iron coupling. The shaft shall be supported by adjustable malleable iron brackets spaced not over 6 ft. apart, one bracket always being placed at the lower end of the shaft, approximately 4 ft. above the floor.

Note:—Lower end of shaft may be terminated in either one of two ways, specify which.

9. (a) (Wheel in horizontal plane.) A gray iron hand wheel and handle shall be mounted on the lower end of the shaft.

(b) (Wheel in vertical plane.) The shaft shall be directly connected by a malleable iron coupling to a pair of miter gears of cut machine steel assembled with a gray iron hand wheel and handle on an adjustable malleable iron bracket.

Note:—When specified and mentioned in contract for operators a gray cast iron housing is furnished for the miter gears.

Note:—Where building construction makes it necessary, universal joints for the vertical shaft are furnished if clearly indicated on original drawings and in specifications and mentioned in contract for operators. The angle between two adjacent lengths of shaft must not be less than 135°.

Erection

10. All operating devices shall be erected and adjusted to proper working order by the window contractor.

Painting

11. All operating devices shall have one coat of manufacturer's standard, dark gray paint, oven dried and applied before shipment.

Note:—The following should be provided for in the paint specifications—one coat of red lead and oil should be applied after erection followed by one or more coats of finishing paint as required.

SPECIFICATIONS for RACK AND PINION OPERATOR

Work Included

1. Furnish and install where shown on drawings Rack and Pinion Operating Device, manufactured by DAVID LUPTON'S SONS CO., Philadelphia, Pa.

Materials and Construction

2. Power.

Note:—There are three types of powers as follows:

(a) Power shall be a worm and gear having a 40 to 1 ratio. Worm to be cut from steel, worm wheel to be cast iron with cast teeth and fastened to the horizontal shaft with two setscrews. Worm and wheel shall be held in mesh by a cast iron yoke.

(b) Power shall be a worm and gear having a 26 to 1 ratio. Worm to be cut from steel and provided with a thrust bushing. Worm wheel to be cast steel with cut teeth and fastened to the horizontal shaft with two ¼-in. diameter steel pins. Both worm and gear shall be enclosed in an oil tight case.

(c) Power shall be a worm and gear having a 60 to 1 ratio. Worm to be cut from steel and to be provided with two Nice ball bearings. Worm wheel to be cast iron with cut teeth and attached to horizontal shaft with two ⅜-in. diameter steel pins. Worm and wheel shall be enclosed in an oil tight cast iron case.

3. Power shall be mounted on a malleable iron bracket adapted to rigid attachment to building construction or by means of clips to window mullion.

4 and 5. Power Shaft—See specification for Lupton Operating Device Lever Type—paragraphs 3 and 4.

Note:—½ in. pipe is not used for the rack and pinion operator. In addition to the 1 in. standard pipe, 1 in. extra heavy and 1 in. double extra heavy pipe may be used.

6. One rack and pinion shall be provided for each ventilator. Rack shall be of 1x⅜-in. steel channel punched with slots to mesh with a malleable iron pinion clamped with one bolt to the horizontal shaft so tightly as to withstand a pull of 300 lbs. on a 2-in. radius.

7. Rack and pinion shall be held in mesh by two 13 gauge steel yokes with two brass bushed steel rollers.

8. Rack shall be—

Note:—Racks may be straight or curved and may be attached at top or bottom of centered pivoted ventilators. Specify type and where attached.

9. A malleable iron hinge shall be provided for attaching the rack to the ventilator. Hinge shall be adjustable so that all vents may fit tight when closed.

10 to 14. Operation.

Note:—See specifications for Lever Type Operating Device, paragraphs 7 to 9 (b) inclusive, on preceding page.

Note:—Power described under paragraph 2 (c) may be operated by motor, specify as follows:

15. Power shall be operated by a motor bolted to the base of power and geared to power with a spur gear. Limit switch shall be attached to power. Push button with open, closed and stop buttons and a motor control panel as well as limit switch shall be furnished by manufacturer.

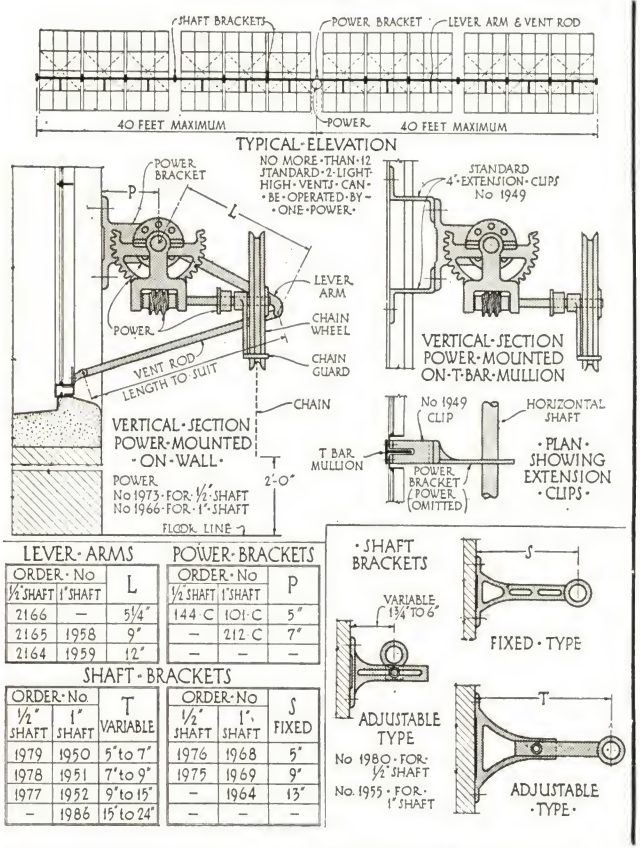
Note:—Conduit wiring and line switch are to be furnished by the electrical contractor. See "Electrical Construction" under specification for Lupton Tension Operating Device, Lupton page 88.

Erection and Painting

Note:—Same as for Lever type. See preceding page.

DETAILS for LEVER TYPE OPERATOR

Hand Chain Operation — *Scale ¾" Equals 1'0"* — Hand Wheel Operation

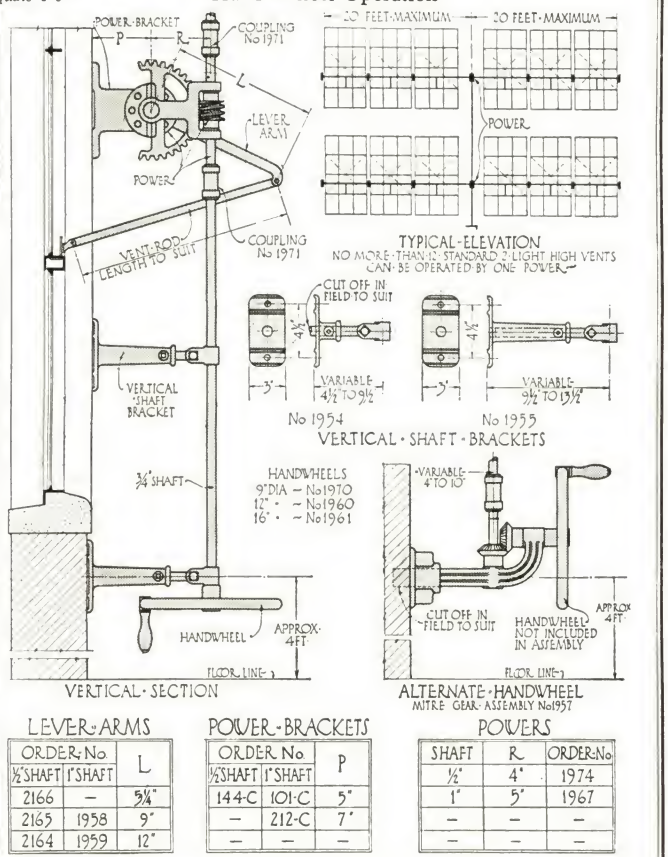


LEVER-ARMS		
ORDER-No ½"SHAFT	ORDER-No 1"SHAFT	L
2166	–	5¼"
2165	1958	9"
2164	1959	12"

POWER-BRACKETS		
ORDER-No ½"SHAFT	ORDER-No 1"SHAFT	P
144-C	101-C	5"
–	212-C	7"
–	–	–

SHAFT-BRACKETS		
ORDER-No ½" SHAFT	ORDER-No 1" SHAFT	T VARIABLE
1979	1950	5' to 7'
1978	1951	7' to 9'
1977	1952	9' to 15'
–	1986	15' to 24'

SHAFT-BRACKETS		
ORDER-No ½" SHAFT	ORDER-No 1" SHAFT	S FIXED
1976	1968	5"
1975	1969	9"
–	1964	13"
–	–	–



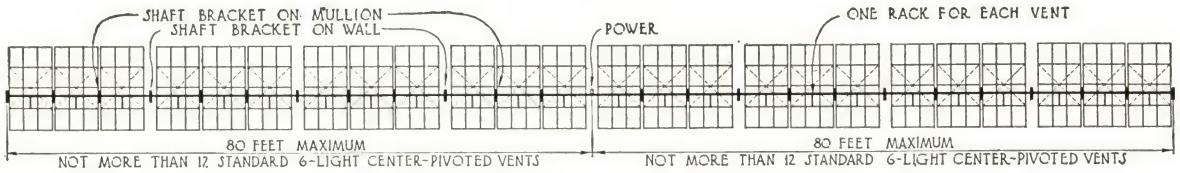
LEVER-ARMS		
ORDER-No ½"SHAFT	ORDER-No 1"SHAFT	L
2166	–	5¼"
2165	1958	9"
2164	1959	12"

POWER-BRACKETS		
ORDER-No ½"SHAFT	ORDER-No 1"SHAFT	P
144-C	101-C	5"
–	212-C	7"
–	–	–

POWERS		
SHAFT	R	ORDER-No
½"	4"	1974
1"	5"	1967
–	–	–
–	–	–

DETAILS for RACK AND PINION OPERATOR

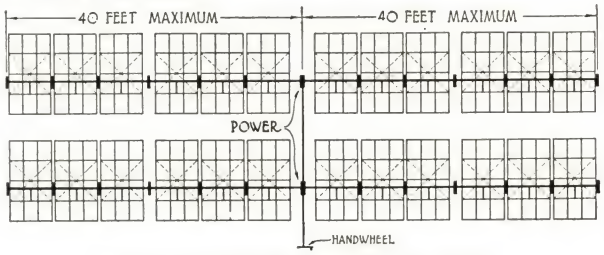
Scale ¾" = 1'0"



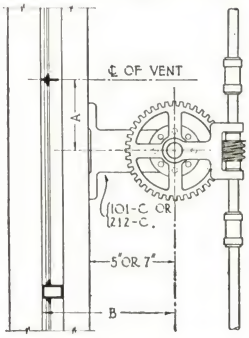
ELEVATION OF TYPICAL HAND CHAIN OPERATION

LIMITS

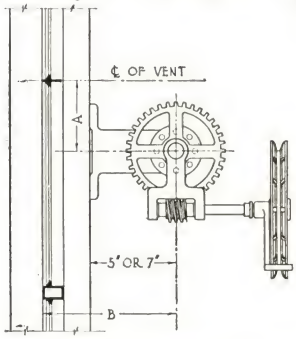
Center Pivoted (vents pivoted 2 ins above center)
Not over 24 standard vents - See diagrams at right
Top Pivoted (vents pivoted 4 ins from top)
Limits are ½ those shown for Center Pivoted
Continuous Windows (vertical, top hinged
✳ 3ft high-100ft, 4ft high-90ft, 5ft high-60ft, 6ft high-40ft.



TYPICAL ELEVATION OF MULTIPLE BANK HANDWHEEL OPERATION



HANDWHEEL OPERATION



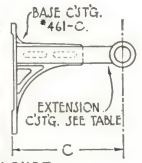
HAND CHAIN OPERATION

POWERS WITH FULL WORM GEAR

VERTICAL SHAFT ℄ HANDWHEEL SAME AS FOR L.O.D.
SCALE ¾" — 1'-0"

NOTE POWERS ARE MOUNTED ON *101-C (5') OR *212-C (7') L.O.D. POWER BRACKETS ATTACHED TO WALL. WHERE POWERS ARE TO BE ATTACHED TO MULLIONS 4-INCH EXTENSION CLIPS *1949 ARE USED, SAME AS FOR L.O.D.

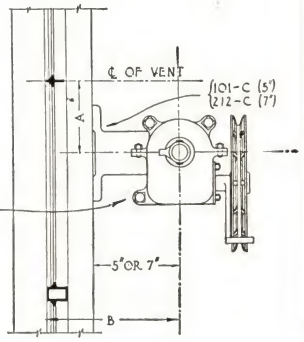
USING EXTENSION C'STG. NO.	"C" VARIABLE
215-C	14" to 16½"
460-C	12" to 14½"
113-C	9" to 12"
111-C	7⅛" to 9½"



SHAFT BRACKET

TYPE "LA" POWER
IN OIL TIGHT CASE
HAND CHAIN OPERATION

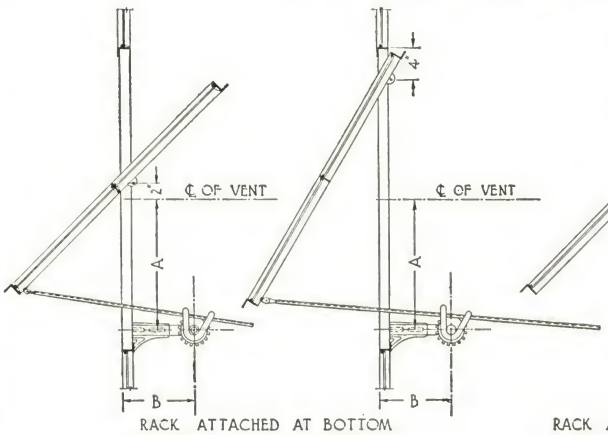
HAND WHEEL OPERATION USES SAME SHAFT ℄ HANDWHEELS AS LUPTON OPERATING DEVICE
SCALE ¾" — 1'-0"



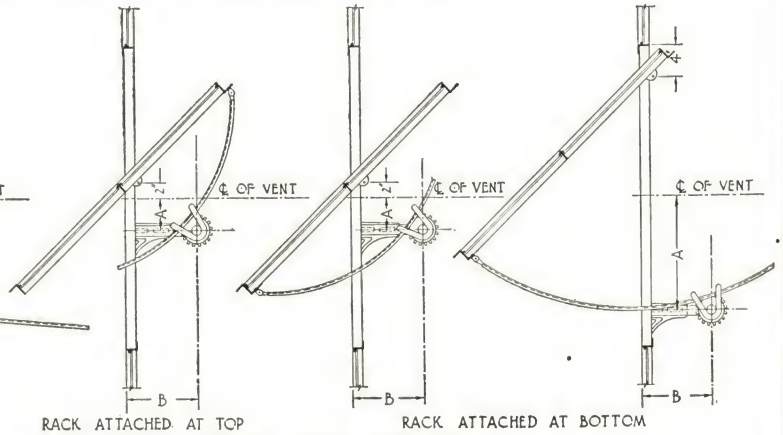
✳ When applied to Continuous Windows, shaft is 1" Double Extra Strong pipe, Power is at center of run and Racks are 10'-0" apart.

GLASS SIZE	STRAIGHT RACK 60° MAX. OPG.				CURVED RACK FOR CENTER PIVOTED WINDOWS - 60° MAX. OPG.				CURVED RACK FOR TOP PIVOTED WINDOWS					
	LOCATION OF ℄ SHAFT		LENGTH OF RACK		LOCATION OF ℄ SHAFT		LENGTH OF RACK		LOCATION OF ℄ SHAFT		LENGTH OF RACK (34" RAD)	MAX OPG.	LENGTH OF RACK (22" RAD)	MAX. OPG.
	A	B	CENTER PIVOTED	TOP PIVOTED	A	B	I *	II *	A	B				
12" x 18"	15⅜"	9⅜"	28"	38½"	4"	9⅜"	27"	27"	14⅜"	9⅜"	39"	60°	39"	55°
		13⅜"	32"	42½"		13⅜"	27"	31"		13⅜"	43"	60°		
14" x 20"	16⅜"	9⅜"	28"	42½"	4"	9⅜"	27"	27"	15⅜"	9⅜"	43"	60°	43"	55°
		13⅜"	32"	46"		13⅜"	31"	31"		13⅜"	47"	60°		

*I RACK ATTACHED AT TOP OF VENT II RACK ATTACHED AT BOTTOM



RACK ATTACHED AT BOTTOM
STRAIGHT RACK OPERATION



RACK ATTACHED AT TOP
RACK ATTACHED AT BOTTOM
CURVED RACK OPERATION

CONTINUOUS WINDOWS

The information relating to Continuous Windows on this and following pages will be helpful in laying out elevations and preliminary details. Where special conditions present a more difficult problem a Lupton Representative will gladly furnish additional information, submitting tentative window designs and making recommendations based on Lupton's previous experience with this type window.

Lupton Continuous Windows are effectively used for daylighting and ventilating in sidewalls of industrial buildings and all the familiar types of roof construction including the Lupton V-Type Roof Design.

Units are assembled by welding and joined end to end with expansion covers to form long runs. Units are 20 ft. long except where shorter ones are needed. Operated runs on roofs usually have a stationary end panel 2 ft. long at each end. Overall length of windows should be in multiples of 2 ft. See details on next page. Muntins are spaced approximately 2 ft. apart, glass being 23 in. and 24 in. wide, combined as needed to make up the required length. Heights of units, opening and glass, are as follows:

Unit	*Opening*	*Glass*	*Unit*	*Opening*	*Glass*
3 ft.	2'10½"	33 in.	5 ft.	4'10½"	57 in.
4 ft.	3'10½"	45 in.	6 ft.	5'10½"	69 in.

SPECIFICATIONS

Work Included

1. Furnish and install where shown on drawings, Lupton Continuous Windows, manufactured by DAVID LUPTON'S SONS CO., Philadelphia, Pa.

2. Window manufacturers shall furnish drawings showing location of punching in structural steel for attaching hinges.

Materials

3. Frame Members.

Note:—Structural steel members forming frames for windows, and punching in frames for attaching hinges are not furnished by the window manufacturer and should be specified elsewhere under proper heading in specifications of other trades. The following frame members are required:

(a) A continuous girt angle at the head, to which the hinges are bolted. This angle should not be smaller than 3x3 in., ¼ in. to ⅜ in. thick.

(b) A continuous member at the sill. The face of this girt (usually an angle or channel) should be in the same plane as the face of the girt angle at the head.

(c) A continuous girt angle between upper and lower lines of windows where one line is placed directly above the other. This member should be the same size as girt angle at head when windows above and below are both vertical or both sloping, but when windows above are vertical and windows below are sloping, the leg to which hinges for lower windows are bolted, should be at least 4 in. long.

4. Window Sections.—Top rail, bottom rail and end rail shall be special hot rolled solid steel sections. Bottom rail shall not project beyond surface of glass on the outside. Overlapping end rail shall be 13 gauge steel. Muntins shall be special hot rolled steel T section.

5. Jamb weathering of 13 gauge steel plate, formed, shall be furnished (but not installed) by the window contractor where window extends between pilasters.

6. Flashings.

Note:—Under proper heading elsewhere in specifications of other trades, specify sheet metal flashing at joints of and over gaps between girts, and condensation gutters (where required). These are not furnished by the window manufacturer.

7. Steel clips shall be furnished for storm panels and stationary windows.

8. Glazing wedges shall be of galvanized pressed steel.

Construction

9. All Lupton Continuous Windows shall be designed for outside glazing.

10. All units shall be straight and true with members in alignment and surfaces in a plane. All joints shall be rigid and tight. Members shall be coped, fitted together and oxy-acetylene welded along their entire length of contact.

11. Units shall be hung on malleable iron hinges with heavy bronze pins.

12. Muntins shall be continuous from top to bottom of unit. Joints at top and bottom rails shall be oxy-acetylene welded.

Mechanical Operators

Note:—These are covered in other specifications. *See page 87.*

Erection

13. All Lupton Continuous Windows shall be erected in prepared openings by the window contractor. They shall be set plum and true, properly aligned, securely attached to structural members and properly adjusted before glazing. *(See page 3.)*

14. Where long lines of windows occur units shall be joined end to end with weatherproof expansion joints at intervals of approximately 20 ft.

15. A short stationary panel shall be furnished at each end of an operated line of windows except where window extends between pilasters, and special jamb weathering (described in paragraph 5) is used.

Note:—(a) Storm panels attached to end panels and underlapping the operated windows for a distance of 2 ft. are desirable if windows are to remain open in stormy weather. They are furnished if clearly indicated on original drawings and in specifications and mentioned in contract for windows.

(b) Include under the proper heading elsewhere in specifications of other trades, that all structural steel members that come in contact with Lupton Continuous Windows shall form straight parallel lines and shall be located, punched and flashed in accordance with the Lupton Continuous Window details. Where there is a deflection structural members shall be straightened in the field by the structural steel contractor before windows are erected.

(c) Include in the masonary specification that all masonry openings shall be accurately constructed in accordance with the Lupton Continuous Window details and that all mortar, grouting, pointing etc., shall be done by the mason contractor after windows have been erected.

POWER HOUSE WINDOWS

Power House Windows are made of the same sections and with the same welded construction as Lupton Continuous Windows. Units are set in a structural steel frame furnished by Lupton.

Both the window and operator are usually designed to meet special conditions and therefore a Lupton representative should be consulted for details.

Painting

16. All Lupton Continuous Windows shall receive one shop coat of window manufacturer's standard dark gray paint, oven dried. *(See page 3.)*

Glass and Glazing

Note:—(See page 3.) Glass and Glazing should be included under the proper heading elsewhere in the specifications of other trades.

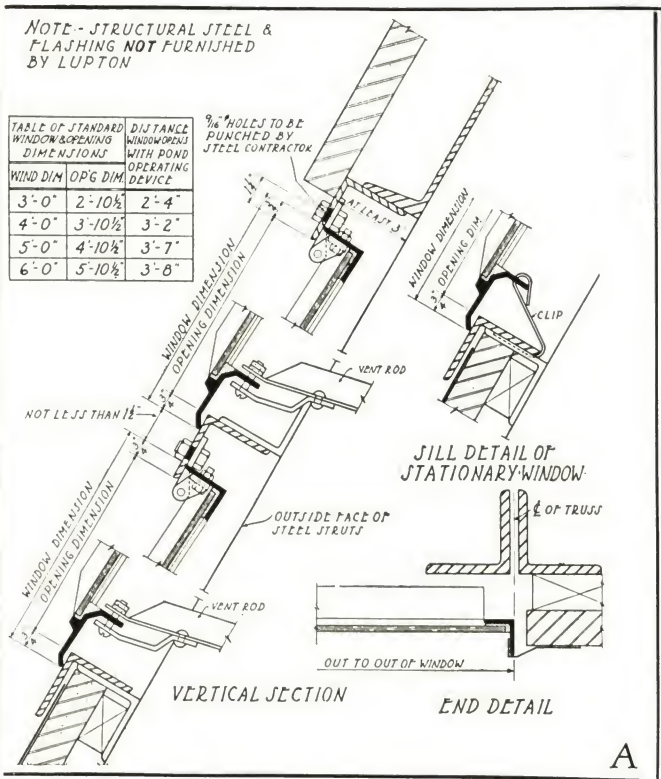
(a) Specify vertical ribbed glass ¼ in. thick. (Ribs to be placed on the side least exposed to dust.)

(b) Specify special steel window putty.

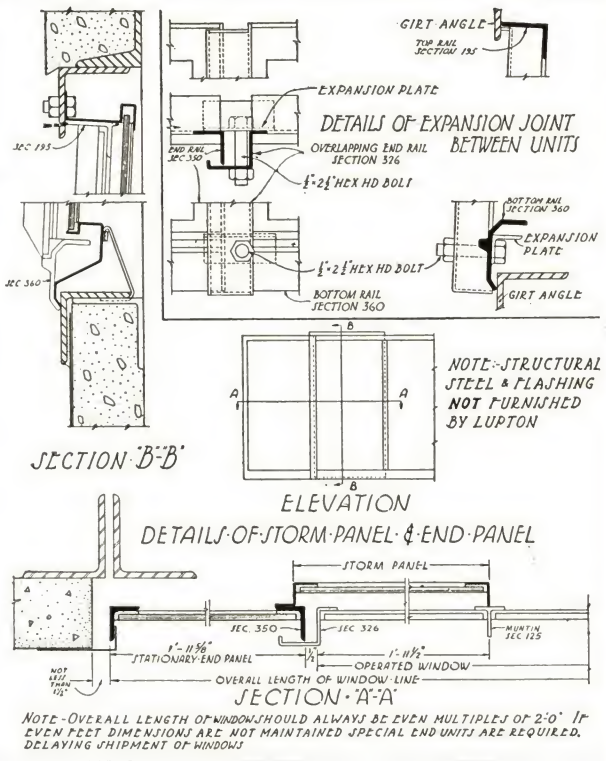
(c) Specify that glass shall be set in a bed of putty and secured by steel glazing wedges supplied by the window manufacturer. Four wedges per light shall be used on windows 3 or 4 ft. high and six wedges per light shall be used on windows 5 or 6 ft. high.

DETAILS for CONTINUOUS WINDOWS

Scale $1\frac{1}{2}'' = 1'0''$



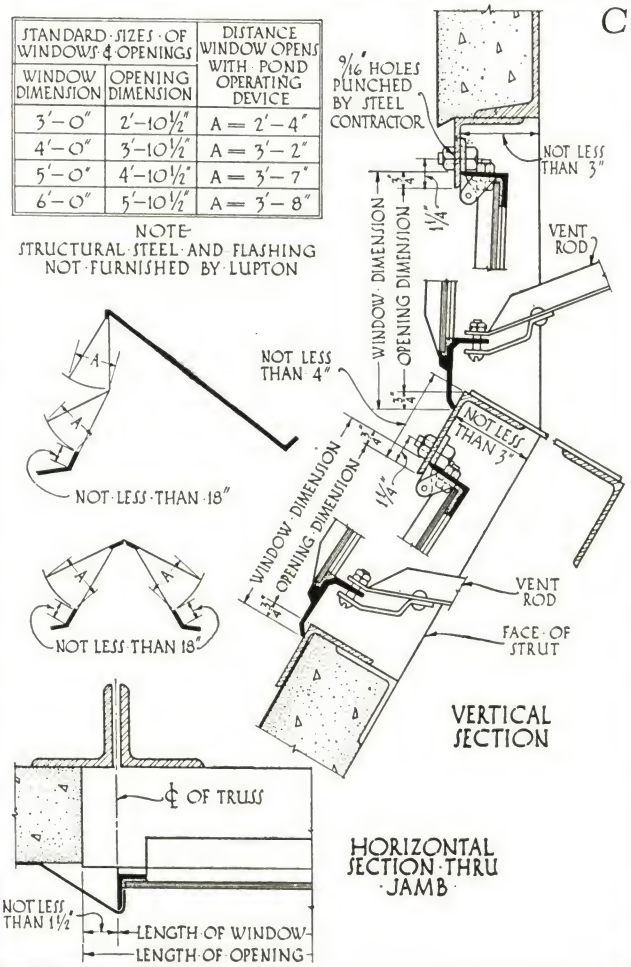
A



C

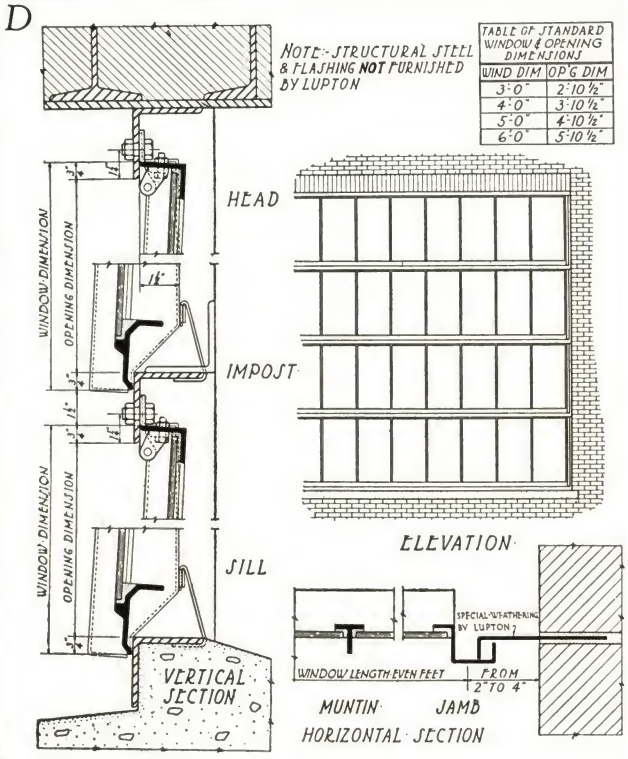
STANDARD SIZES OF WINDOWS & OPENINGS		DISTANCE WINDOW OPENS WITH POND OPERATING DEVICE
WINDOW DIMENSION	OPENING DIMENSION	
3'-0"	2'-10½"	A = 2'-4"
4'-0"	3'-10½"	A = 3'-2"
5'-0"	4'-10½"	A = 3'-7"
6'-0"	5'-10½"	A = 3'-8"

NOTE
STRUCTURAL STEEL AND FLASHING NOT FURNISHED BY LUPTON



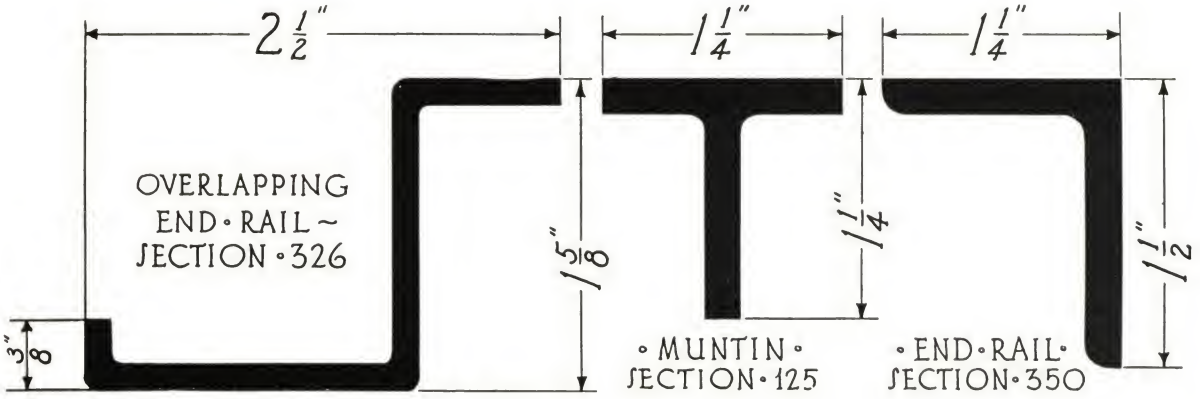
A—Sloping Windows.
B—Storm and End Panels and Expansion Joints.
C—Vertical and Sloping Windows.
D—Vertical Sidewall Windows.

D

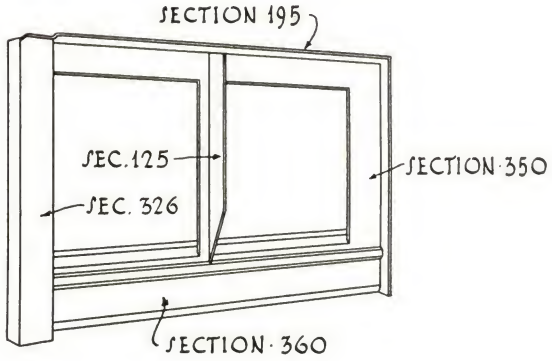


CONTINUOUS WINDOWS

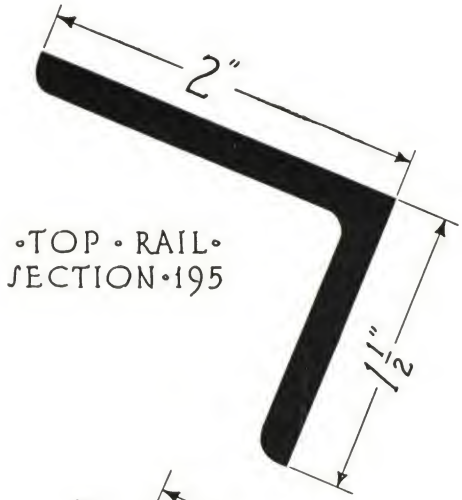
FULL SIZE SECTIONS and HINGE PUNCHING DETAILS



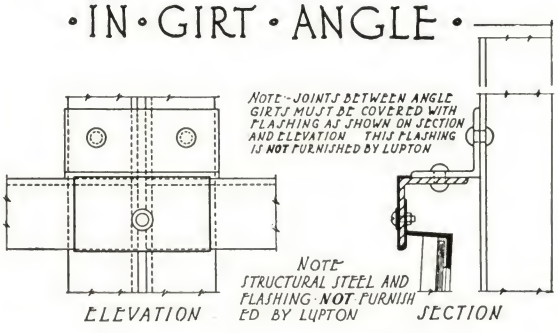
HORIZONTAL · SECTION

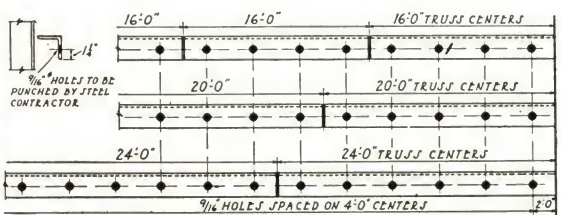


· DIAGRAM · OF · UNIT ·
· VIEWED · FROM · OUTSIDE



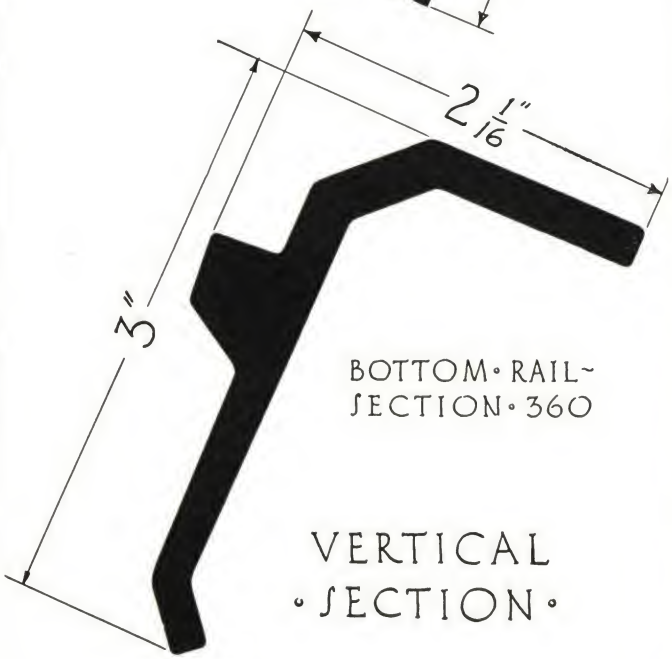
HINGE · PUNCHING · AND FLASHING · OF · JOINT · IN · GIRT · ANGLE ·





TYPICAL LAYOUT OF HINGE PUNCHING IN GIRT ANGLES FOR 16'-0, 20'-0 & 24'-0" TRUSS CENTERS

WINDOW MUST START ON CENTER LINE OF TRUSS TO MATCH THE PUNCHING SHOWN ON THIS DRAWING



VERTICAL · SECTION ·

CONTINUOUS WINDOW OPERATORS

Mechanical Operators for Continuous Windows are available in two general types, torsion type and tension type. The torsion type Rack and Pinion operator described on page 81 is practicable and economical for small runs (40 to 100 ft. depending on height of window), but for larger runs the tension operator described below is required.

Tension Type Operator

The Lupton Tension Type Operating Device permits operation of extremely long lines of windows. Power is applied by hand chain or motor through worm and gear and transmitted by a double line of steel rods always in tension. Motion is transferred to the windows through pairs of operating arms arranged to eliminate useless stresses, friction and lateral thrust against the transmitting rods.

In a modified form it may be used to operate pivoted windows in groups exceeding the limits of the Rack and Pinion Operator.

Applied to top hung continuous windows the tension operator gives the following degrees of opening:

Windows 3 ft. high open 46° (28 ins.)
Windows 4 ft. high open 47° (38 ins.)
Windows 5 ft. high open 42° (43 ins.)
Windows 6 ft. high open 36° (44 ins.)

Explosion Operator

Pat. No. 1747271

The explosion operator is a tension operator for use in chemical or rubber process buildings, granaries or other industrial buildings where explosion hazards are more or less unavoidable. The explosion operators are made in two types to operate Lupton Continuous Windows. The counterweighted type can be adjusted to operate automatically at any desired atmospheric pressure. The pressure type operator requires the explosive pressure to open the windows. It is recommended for storage buildings where there are no workmen. Both operators continue to hold windows open after explosion has occurred, allow the poisonous gases and smoke to escape and assure a quick change of air.

Note:—See also page 80 for an explosion releasing latch for small projected ventilators used in film storage rooms, etc.

SPECIFICATIONS

Work Included

1. Furnish and install where shown on drawings Lupton Tension Type Operating Device, manufactured by DAVID LUPTON'S SONS CO., Philadelphia, Pa.

Material and Construction

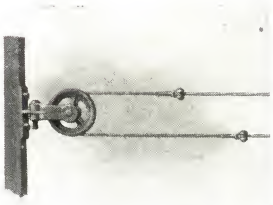
Note:—Structural Steel supports for Lupton Tension Type Operating Device are not furnished by the window contractor. These consist of uprights (angles, channels or tees) for attaching the operating arms.

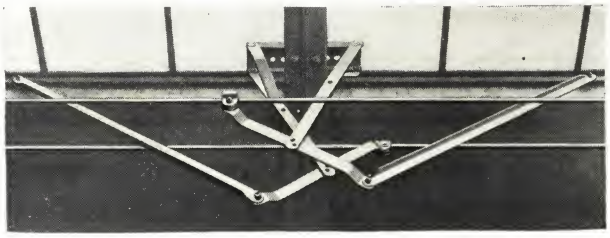
For windows 5 or 6 ft. high the center spacing of the supports should not be less than 7½ ft. nor more than 16 ft.; for windows 3 or 4 ft. high, the spacing should not be less than 6½ ft. nor more than 15 ft. Trusses on 20 ft. centers, with one intermediate usually make the most economical arrangement for steel work.

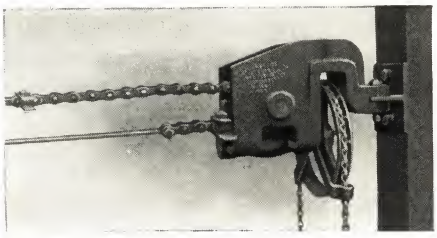
2. *Power*—The operating power unit shall consist of a machine cut steel worm shaft mounted in ball-bearings operating a machine cut worm wheel. For manually operated powers the worm wheel shall be a steel casting made integrally with the sprocket wheel. For electrically operated powers the worm wheel shall have a bronze rim with cut teeth. Bearings shall be phosphor bronze. The power unit shall be assembled in a dust-proof, grease packed, cast steel case. The worm shall lock the window in any position.

3. *Power Brackets*—Power units shall be mounted on brackets made of structural steel angles, trussed to the building construction and designed to withstand the lateral stresses caused by operating the windows.

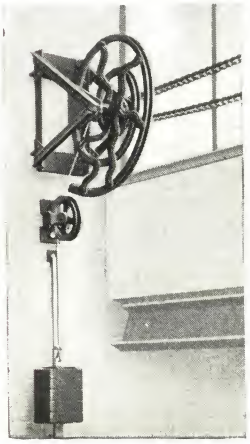
Please turn to next page→







Illustrated above and in their correct relative positions are an idler, a set of operating arms and a hand operated power.



At left is shown a spiral and counter weight sometimes used in place of an idler especially on long motor operated runs where it prevents overload when starting motor with windows partly open and keeps load and speed substantially uniform. Table at right shows how spiral increases allowable length of run.

MAXIMUM LENGTHS OF RUNS IN FEET

Height of window	Hand operation		Motor operation	
	Vertical	60° Slope	Vertical	60° Slope
With Idler				
3 ft.	300	194	792	512
4 ft.	190	132	500	346
5 ft.	176	116	463	304
6 ft.	166	100	438	263
With Spiral and Counterweight				
3 ft.	500	323	1320	854
4 ft.	317	220	833	577
5 ft.	294	193	772	506
6 ft.	276	167	730	438

CONTINUOUS WINDOW OPERATORS—SPECIFICATIONS

Continued from preceding page.

Transmission Line

4. Transmission line shall consist of 2 lines of solid round steel rods. (Note: Specify ½-in. or ¾-in. diameter as required by conditions.) Where joints occur rods shall have the ends hot headed and securely clamped in malleable iron couplings so as to develop the maximum tensile strength of the rods. The rods shall not be run through guides, rollers or other bearings. Forged steel turnbuckles shall be furnished for adjusting.

5. At the end of the run the two rods shall be connected by a sprocket chain passing over the sprocket wheel in the power unit.

6.

Note:—There are two ways of terminating the end of the run opposite the power.
(A) With an idler. (B) With a spiral and counterweight. Specify the one desired.

(A) At the end of the run opposite the power unit the two rods shall be connected by a ⅜-in. steel wire cable passing over an idler wheel. Bearing in idler shall be phosphor bronze.

(B) At the end of the run opposite the power unit the two rods shall be connected by a sprocket chain passing over a sprocket wheel of steel cast integrally with a spiral. A weight shall be attached to the spiral by means of a steel wire cable in such a way that as the windows open the weight shall exert increasing force on the transmission line and balance a part of the load.

Operating Arms

7. Operating arms shall be mounted in pairs on 4-in. channel brackets. Brackets shall be rigidly bolted to structural steel supports furnished by others. Arms shall be of flat steel specially constructed to form a rigid T shape and so arranged that all back thrust from the windows shall be transformed into tension in the transmission line. Operating arms shall be attached to transmission rods with malleable iron clamps and connected to bottom rail of window by 1¼x1¼x⅛-in. steel angle. Pivots shall have phosphor bronze bushings.

Manual Operation

8. Manual operation power unit shall be operated by a No. 9 Register hand chain passing over a chain wheel mounted on the worm shaft and secured to it by a setscrew. Chain shall be guided by a suitable guard.

Note:—Where building construction makes it impractical to hang the chain directly vertical from the power (as in monitor window installations) chain idlers are furnished if clearly indicated in original drawings, and specifications, and mentioned in contract.

Electrical Operation

9. Electrically operated power shall be operated by an electrical power unit operating a sprocket and silent chain. Sprocket shall be mounted on the worm shaft secured to it by a steel key. Electrical unit shall be located beneath the power unit and securely bolted to it.

Note:—Immediately following this specification include specification for Electrical Equipment.

Erection

10. (See page 3.) All operating devices shall be erected and adjusted to proper working order by the window contractor.

Painting

11. All operating devices shall have one coat of manufacturer's standard, dark gray paint, oven dried and applied before shipment.

Note:—The following should be provided for in the paint specifications. One coat of red lead and oil should be applied after erection, followed by one or more coats of finishing paint as required.

SPECIFICATIONS FOR ELECTRICAL EQUIPMENT

Work Included

1. The Operating Device manufacturer shall furnish wiring diagram and complete electrical equipment for Lupton Tension Type Operating Device as hereinafter specified.

Electrical Equipment

2. Motors shall be of type best adapted to the power equipment, of high torque and ample horsepower.

Note:—The motors for Lupton Tension Type Operating Device operate on A. C., 220 or 440 volts, 60 cycle, 3 phase, and are especially wound for high starting torque. They are furnished from stock, which avoids delay. Motors with other current characteristics require from four to six months to deliver.

3. Motors shall be connected to power by means of sprockets and silent chains.

4. Standard magnetic reversing switches shall be enclosed in steel boxes and so designed, that the movement of the ventilator either in opening or closing may be stopped or started at any point by manipulation of push buttons.

5. Limit switches shall be positive in action and rigidly attached to the power to form an integral part of the power unit. All limit switches shall be enclosed yet accessible for adjustment so as to positively limit the motion of the ventilator in either direction.

6. Push button stations "open," "close," and "stop" shall be of rugged construction to withstand hard usage. Buttons shall be recessed in cover so that they cannot be accidentally operated.

Electrical Construction

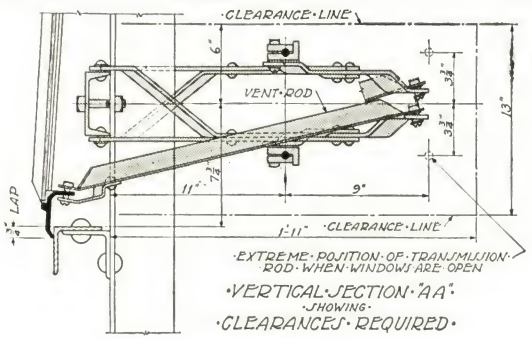
Note:—The following provisions should be made in the Electrical Specifications.

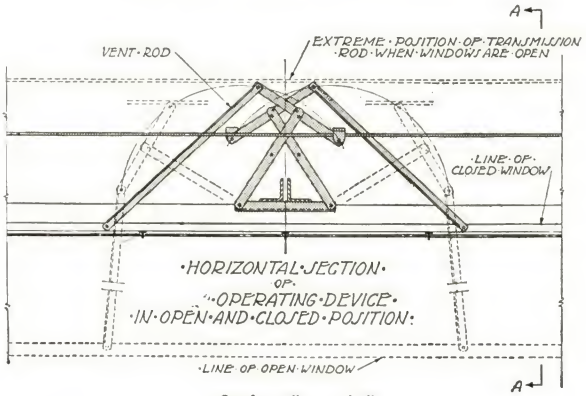
7. The Electrical Contractor shall install magnetic reversing switches and push button stations and shall furnish and install safety type, line switches. He shall also furnish all conduit, fittings and wire and do all wiring between the electrical equipment furnished by the Window Operator Manufacturer and that furnished by himself in accordance with the wiring diagram furnished by the Window Operator Manufacturer. All materials and workmanship shall meet the requirements of the National Electric Code and all Local and State Inspection Bureaus.

8. Conduit shall be galvanized or black enameled, approved by Underwriters' Laboratories, Inc. Wire shall be rubber covered N.E.C. Exposed conduit shall be run in a systematic, sightly manner, paralleled with structural features of the building and rigidly and neatly attached. Where walls are plastered conduit shall be concealed.

9. The Electrical Contractor shall carry fire, workmen's compensation, and public liability insurance. He shall guarantee his work for a period of one year after completion. Defects in the work and material furnished by him developing during the above named period shall be promptly and satisfactorily made good at his expense.

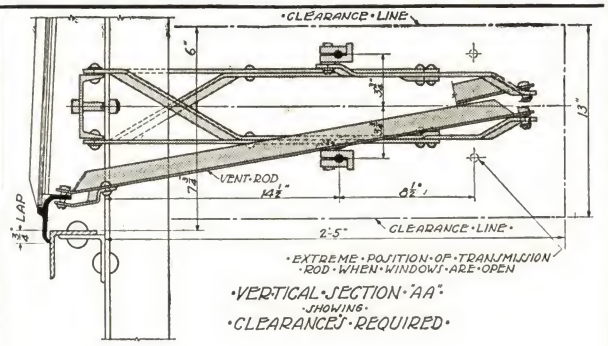
DETAILS of TENSION OPERATOR for CONTINUOUS WINDOWS

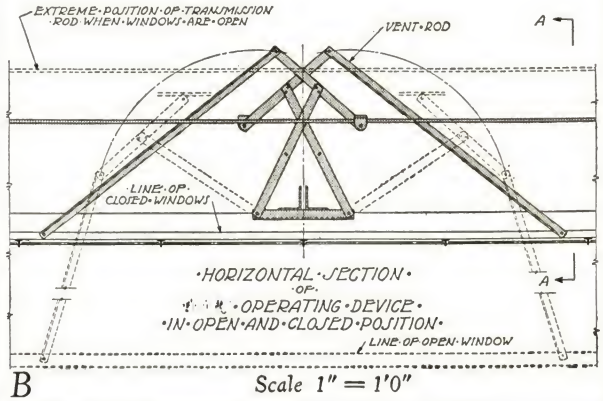




Scale 1" = 1'0"

A

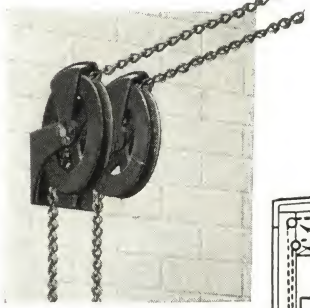


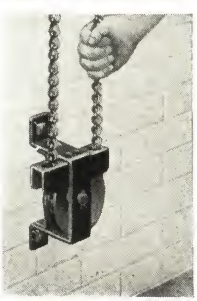


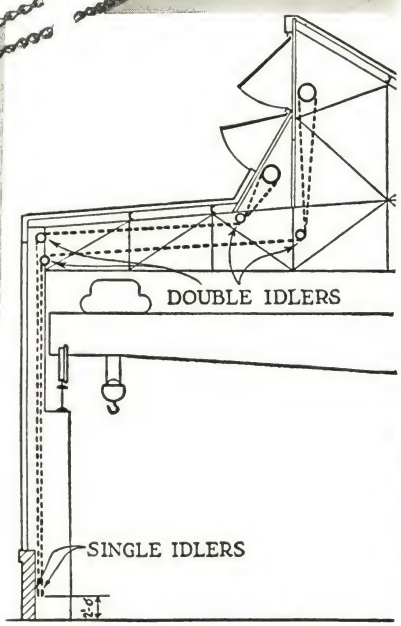
B Scale 1" = 1'0"

A—Operating arms for 3 and 4 ft. windows.
B—Operating arms for 5 and 6 ft. windows.
C—Details of clips and punching.

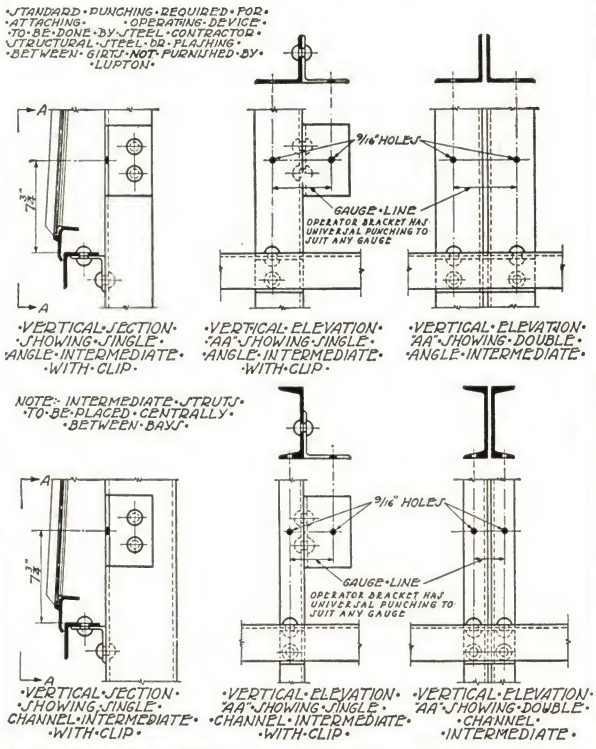
Below — A system of double idlers can be furnished for hand chain operator when point of operation cannot be conveniently located directly below operator.







C Scale 3/4" = 1'0"



INDUSTRIAL DOORS

Lupton doors are built to withstand successfully the constant and ofttimes rough usage given them in buildings used for industrial purposes.

They are made in a wide range of sizes suitable for exterior and interior doors in all types of industrial buildings, power houses, warehouses, etc.

SPECIFICATIONS

Work Included

1. Furnish and install where shown on drawings, Steel Industrial Doors, manufactured by DAVID LUPTON'S SONS CO., Phila., Pa.

Material and Construction

Note:—Frames are not furnished for slide doors. Where frames are desired for swing doors, specify as follows:

2. Frames shall be furnished for swing doors where noted on plans (or as listed).

3. Frames shall be made of 4" structural channel. Top corners shall be bolted together by means of clips. Jambs shall be braced at bottom with structural angles to preserve square lines of frame during shipment.

4. All doors shall have 1½"x½" structural channel stops at head and jambs. Stops shall be attached to frames with round head self-tapping screws not over 9" on centers.

5. Anchors of $\frac{3}{16}$" steel plate bent in Z shape shall be attached to jambs of frame not over 3' on centers.

6. Doors up to and including those 10'0" in height shall have rails and stiles of 1½" x 2⅝" x 14 ga. welded steel tubing.

7. Doors over 10'0" in height shall have rails and stiles of 3" x 2" x 14 ga. welded steel tubing.

8. Rails and stiles shall be mitered at corners—welded and ground flush.

9. All doors shall have a 14 ga. steel panel insert in the lower part of the door and standard rolled steel window glazing panel in the upper portion, both panels to be attached to the rails and stiles by sheet metal screws.

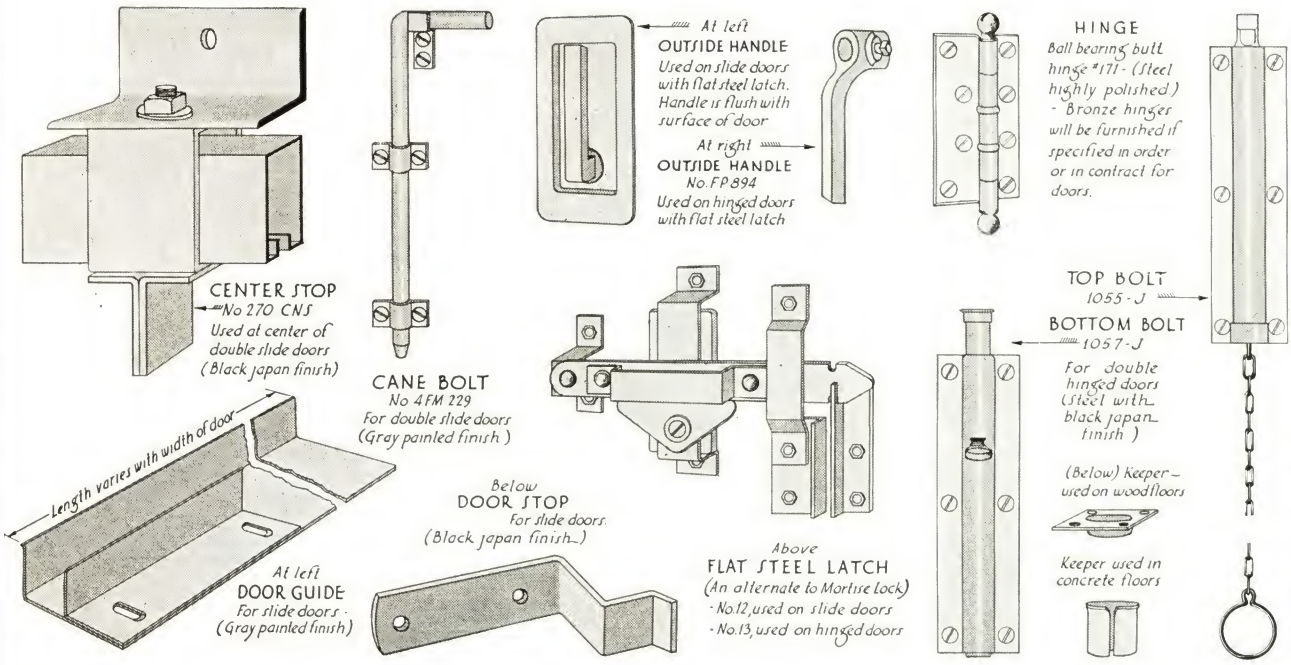
10. Astragals of 14 ga. steel plate shall be furnished for double doors.

Hardware

11. Swing doors made of 1½" x 2⅝" tube shall have ball bearing butt hinges. Three hinges for doors up to and including those 8'0" high, four hinges for doors over 8'0" high. Swing doors made of 3" x 2" tube shall have strap hinges. Three per leaf.

Continued on next page→

HARDWARE



Illustrated above are standard hardware fittings (with the exception of tracks, hangers, etc., for hanging slide doors which are shown on page 93).

The following hardware is optional and is furnished if clearly specified and mentioned in order or in contract for doors:

(a) Mortise locks for swing or slide doors.

(b) Iron or bronze handles for mortise locks.

(c) Cylinder—one or both sides for mortise locks.

(d) Master Key systems for cylinders.

(e) Door checks, (f) Panic hardware, and (g) Bronze butt hinges.

In ordering locks always indicate hand and swing of door. See diagrams on pages 92 and 93.

All hardware wherever possible is fitted in factory and shipped unattached except in the case of single hinged doors with frames where frame, door and hinges are shipped assembled together.

SPECIFICATIONS for INDUSTRIAL DOORS

Continued from preceding page.

12. Tracks, track brackets and roller bearing trolleys together with adjustable door guides and door stops shall be furnished for slide doors.

13. Double slide doors shall have cane bolt on dead leaf. Double hinged doors shall have top and bottom bolts on dead leaf with suitable keepers, for installation in (state whether floor is wood or concrete).

14. Hinged doors shall be equipped with—specify (a) or (b),

(a) Flat steel latch and keeper with malleable iron handle on outside.

(b) Mortise lock furnished with malleable iron (or bronze) handles, cylinder and thumb latch.

15. Slide doors shall be equipped with—specify (a) or (b),

(a) Flat steel latch and keeper with flush handle on outside.

(b) Mortise lock with flush grip, cylinder and thumb latch.

Note:—The following hardware is furnished if clearly indicated on original drawings and in specifications and mentioned in contract for windows.

(1) Cylinder substituted for thumb latch.
(2) Master key systems.
(3) Polished bronze handles for swing door mortise lock.
(4) Panic hardware.
(5) Door checks.
(6) Bronze butt hinges.

Note:—All hardware wherever possible is fitted in the factory and shipped unattached, except in the case of single hinged doors with frames where frame, door and hinges are shipped assembled together.

Erection

(See page 3)

16. Lupton Steel Industrial Doors shall be erected by (state by whom) in accordance with details furnished by door manufacturer. Frames for swing doors shall be set plumb and square and securely anchored to the building construction. Slide doors shall be hung from tracks securely fastened to building construction. They shall be adjusted to give satisfactory operation. Hardware shall be applied according to door manufacturer's directions.

Note:—Where slide doors are hung outside on exterior wall flashing is required. This flashing is not supplied by Lupton.

Painting

17. All doors shall receive one shop coat of door manufacturer's dark gray paint, oven dried.

Note:—See page 3.

Glass and Glazing

18. Glazing stops of ½" x $\frac{5}{16}$" rolled steel angle section shall be furnished, shipped attached.

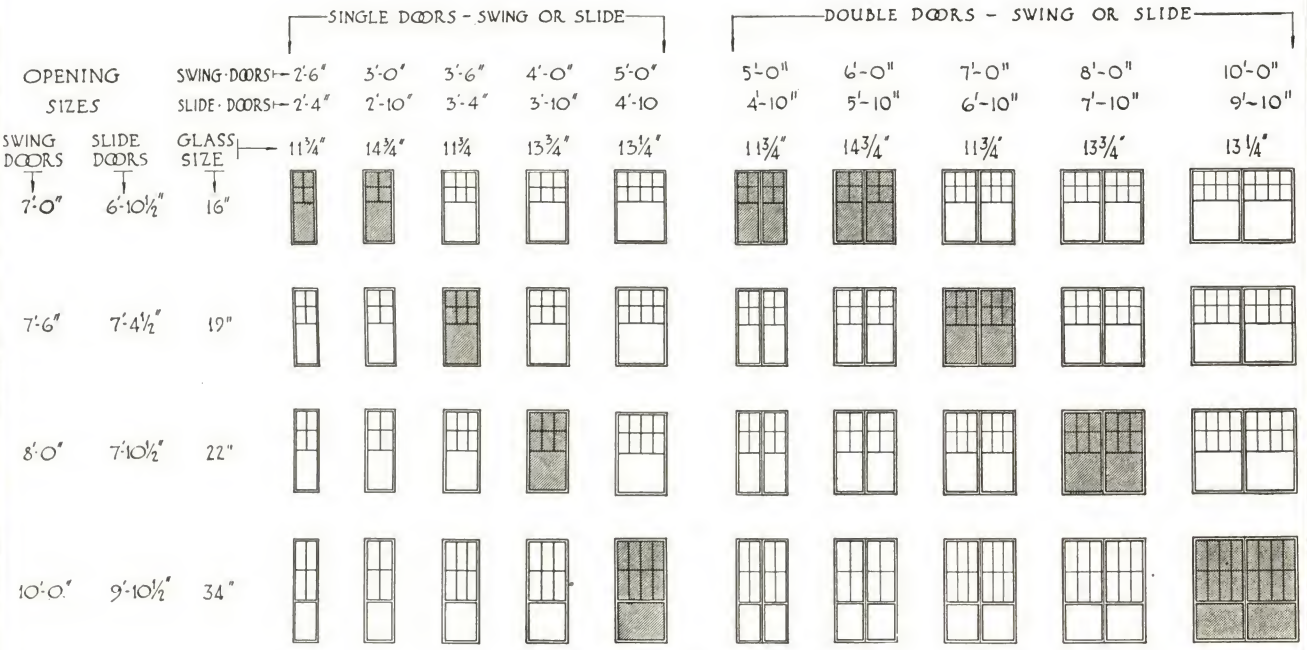
Note:—(See also page 3.) Specify glass and glazing under proper heading elsewhere in specifications.

(a) Do not specify single thickness glass.

(b) Specify high-grade steel window putty (ordinary wood sash putty must not be used).

(c) Specify that Lupton Steel Industrial Doors shall be glazed from the inside; that the glass shall be set in a bed of putty and held by Lupton glazing and angle stops.

STANDARD TYPES AND SIZES



OPENING SIZES										
SWING DOORS	SLIDE DOORS	GLASS SIZE	SWING DOORS 2'-6"	3'-0"	3'-6"	4'-0"	5'-0"	5'-0"	6'-0"	7'-0"	8'-0"	10'-0"
			SLIDE DOORS 2'-4"	2'-10"	3'-4"	3'-10"	4'-10	4'-10"	5'-10"	6'-10"	7'-10"	9'-10"
			11¾"	14¾"	11¾	13¾"	13¼"	11¾"	14¾"	11¾"	13¾"	13¼"
7'-0"	6'-10½"	16"										
7'-6"	7'-4½"	19"										
8'-0"	7'-10½"	22"										
10'-0"	9'-10½"	34"										

The above diagram shows the standard sizes and types of door units. Shaded units are carried in stock. Units are used interchangeably as swing or slide doors. The dimensions given in diagram are opening dimensions as indicated on pages 92 and 93.

Glass is not included with the doors, but glazing angles are furnished, shipped attached.

Where doors larger than 10' x 10' are required it is economical to use if possible, doors of the following opening dimensions.

Swing Doors

Heights	11	12	13	14 and 15 ft.
Widths (single doors)	3	3½	4	5 and 6 ft.
Widths (double doors)	6	7	8	10 and 12 ft.

Slide Doors

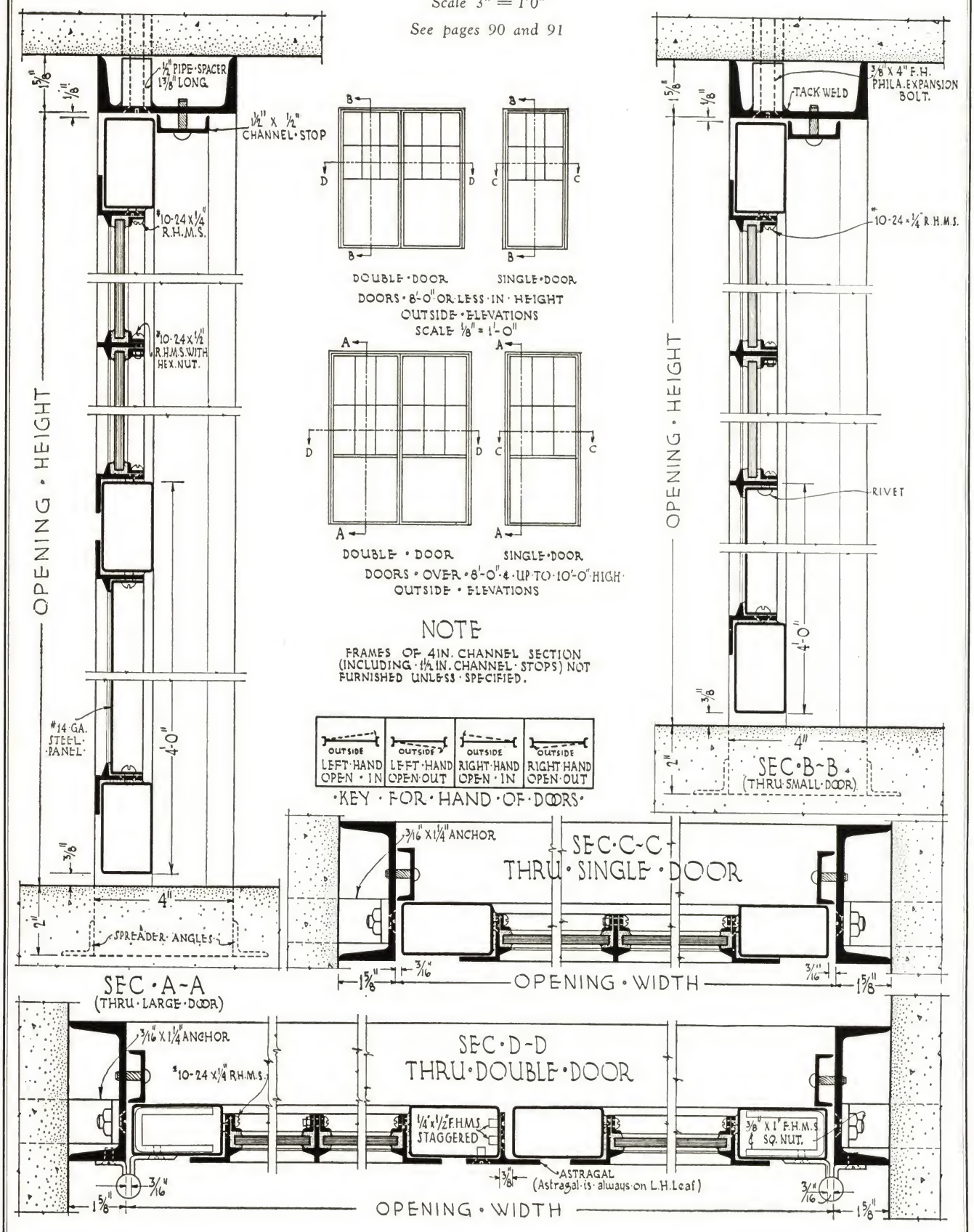
Heights	10'10½"	11'10½"	12'10½"	13'10½"	14'10½"
Widths (single doors)	2'10"	3' 4"	3'10"	4'10"	5'10"
Widths (double doors)	5'10"	6'10"	7'10"	9'10"	11'10"

INDUSTRIAL DOORS

DETAILS for HINGED DOORS

Scale 3" = 1'0"

See pages 90 and 91

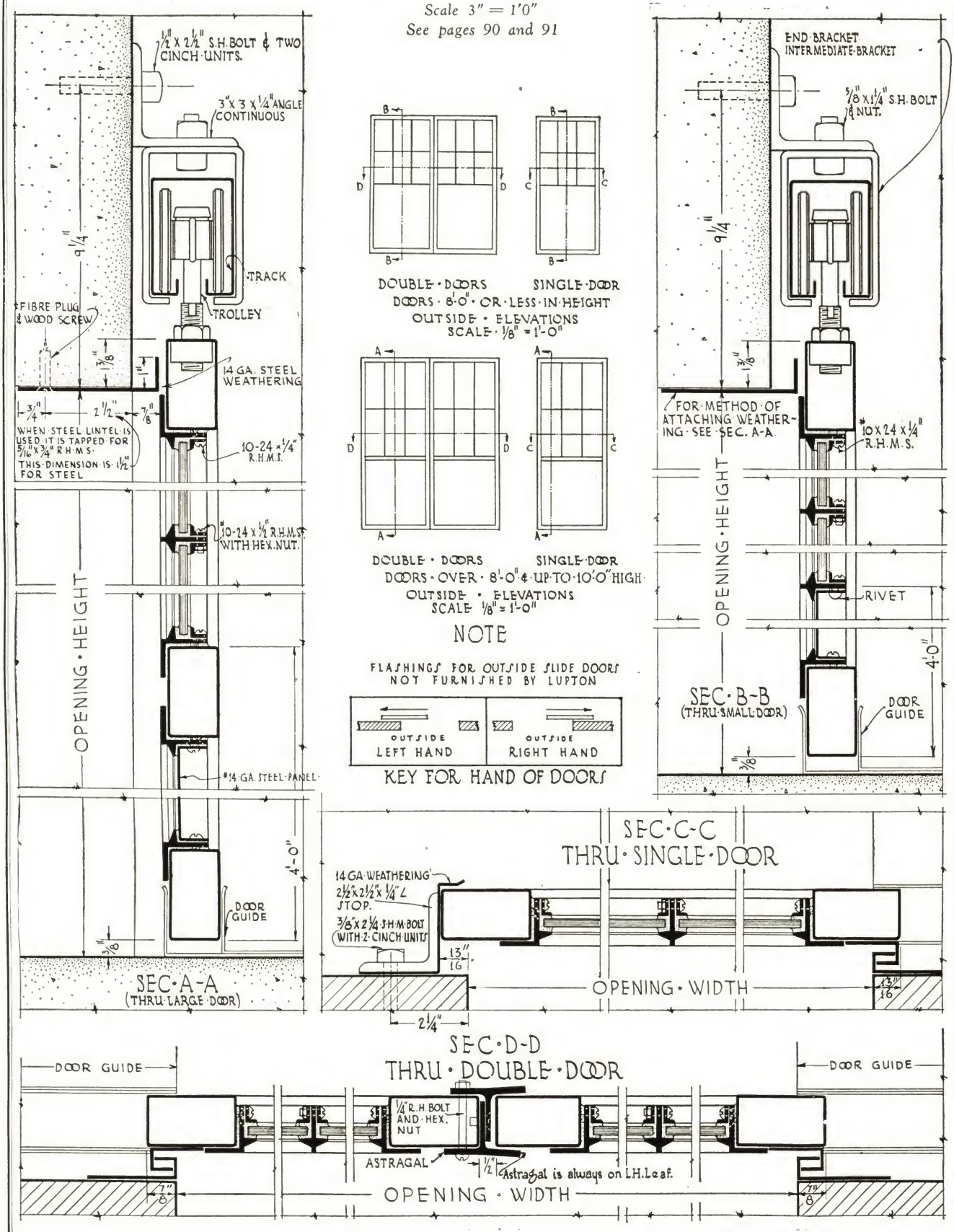


INDUSTRIAL DOORS

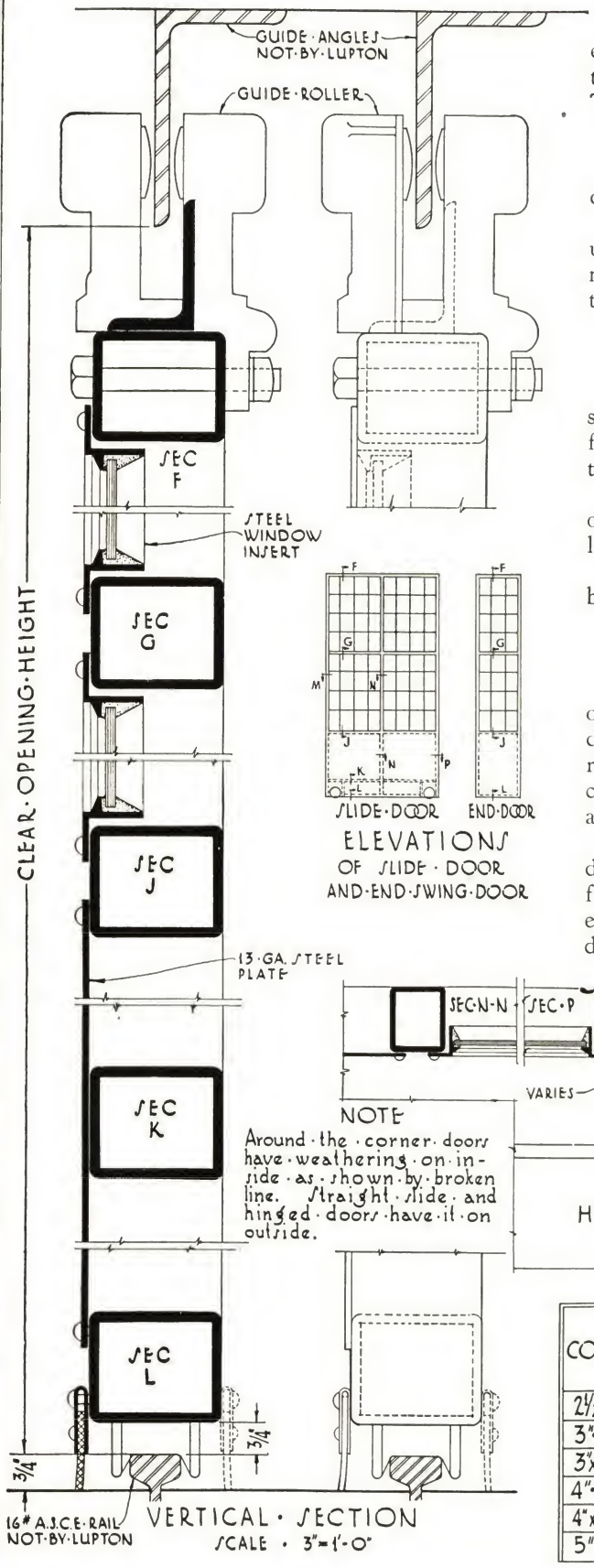
DETAILS for SLIDE DOORS

Scale 3" = 1'0"

See pages 90 and 91



AIRPLANE HANGAR DOORS



These doors are built by skilled workmen to satisfy the exacting requirements of the airplane industry. Made in two types, Straight Slide Type and Around-the-Corner Type.

Sizes of Openings

Standard opening heights range from 12 to 30 ft. Larger doors of the same design can be furnished when required.

Width of a door unit approximately 10 ft. Hinged end units for use with around-the-corner doors, are approximately 4 or 5 ft. as required. It is desirable to make the total width of opening some multiple of 10 ft. (40, 50, etc.)

Construction

Doors are made of steel tubing (shown in detail) or structural steel channel as specified. All joints between frame members are solidly welded and the exposed part of the weld ground flush.

Pilot doors are provided where required. They are made of 1½ x 2⅝-in. steel tubing and are equipped with cylinder locks.

Glazing panels are glazed inside with putty. Glass is held by steel wire glazing clips.

Hardware

Weight of door is carried on two bottom rollers running on 16-lb. A.S.C.E. rails. Doors are guided at top by two double rollers bearing on a structural steel angle. Bottom rollers have Timken bearings and Alemite fittings for lubrication. A ball thrust bearing is used to pivot rollers for around-the-corner doors.

Slide doors are equipped with a wheel lock for locking door at any desired position. Cremone bolts are furnished for locking hinged end doors. Bumpers are furnished at end of tracks. Travel of doors is limited by stops at top of door.

CONSTRUCTION	CLEAR OPENING HEIGHT	CENTER TO CENTER OF TRACK
2½" x 2½" TUBE	12'-0" TO 18'-0"	5¼"
3" CHANNEL	12'-0" TO 18'-0"	6"
3" x 2½" TUBE	18'-6" TO 22'-0"	6"
4" CHANNEL	18'-6" TO 22'-0"	7"
4" x 2½" TUBE	22'-6" TO 30'-0"	7"
5" CHANNEL	22'-6" TO 30'-0"	8"

COMMERCIAL DOORS

Lupton Commercial Doors are designed for use as exterior or interior doors for garages, manufacturing plants, etc., where inexpensive steel doors are desirable. Lighter in construction than Industrial Doors, they are, within their size limits, a practical and economical product.

Sizes and Construction

Doors are made only in stock sizes shown below. Stiles and rails are made of 18 gauge steel, mitered and welded at corners of door and the welds ground flush. The lower part of door has a 16 gauge steel panel and the upper part is made to receive glass. Frames are furnished for swing doors only and only when specified. They are made of steel plate. Flat steel anchors are provided at jambs and an expansion bolt at head.

Hardware

All necessary hardware (shown below and on next page) is included with doors except Hook Back No. 101 which must be specified if required. In ordering swing doors specify whether Mortise Lock or Lever Latch is desired.

Erection

Door frames must be set plumb and square, securely anchored to building. Tracks for slide doors must be level and anchored securely. *(See page 3.)*

Swing doors are drilled in shop for hinges and when Lock No. 97 is ordered doors are mortised and drilled to receive it. All other drilling must be done in field.

Single doors with frames are shipped assembled in frames. Double doors are shipped separately from frames.

Glazing and Painting

See table below for glass sizes. Orders for doors do not include glass, but steel glazing stops are furnished, shipped attached. Always use steel window putty and glaze after doors are erected. *(See page 3.)*

Doors are given one shop coat of gray paint, oven dried.

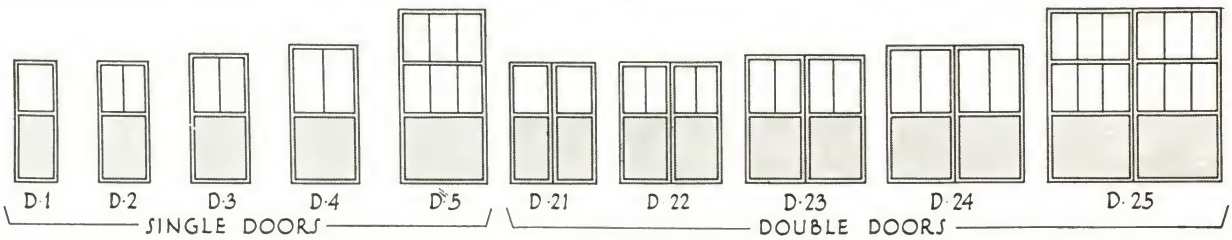
Ordering

When ordering give the following information:

1. Symbol numbers of doors required (D-1, D-2, etc.).
2. Quantity of each type required.
3. Whether doors are to swing or slide and whether right or left hand. (See "Key for Hand of Doors" on next page.) If Swing Doors are ordered state also,
   a. Type of lock desired (No. 97 or No. 98).
   b. If frames are required, give Door Frame Marks (see table below).
   c. Whether or not Hook Backs are required.

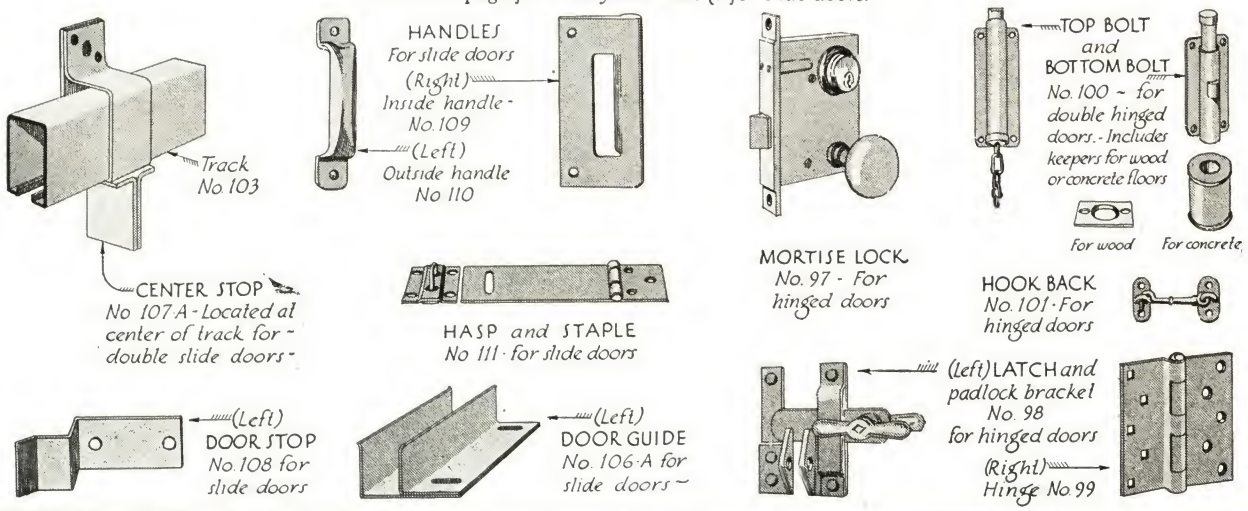
SIZES AND TYPES

SWING DOORS					SWING OR SLIDE		SLIDE DOORS			
Opening		Door Mark	Frame Mark	Catalog No. of Astragal	No. of Lights	Glass Size	Catalog No. of Astragal	Door Mark	Opening	
Width	Height								Width	Height
2′ 6″ 3′ 0″	7′ 0″ 7′ 0″	D-1 D-2	DF-1 DF-2		1 2	19⅞″x30½″ 12⅝″x30½″		D-1 D-2	2′ 3″ 2′ 9″	6′ 10½″ 6′ 10½″
3′ 6″ 4′ 0″ 5′ 0″	7′ 6″ 8′ 0″ 10′ 0″	D-3 D-4 D-5	DF-3 DF-4 DF-5		2 2 6	15⅝″x36½″ 18⅝″x42½″ 16¼″x30¾″		D-3 D-4 D-5	3′ 3″ 3′ 9″ 4′ 9″	7′ 4½″ 7′ 10½″ 9′ 10½″
5′ 0″ 6′ 0″	7′ 0″ 7′ 0″	D-21 D-22	DF-21 DF-22	2392 2392	2 4	19⅞″x30½″ 12⅝″x30½″	2035 2035	D-21 D-22	4′ 9″ 5′ 9″	6′ 10½″ 6′ 10½″
7′ 0″ 8′ 0″ 10′ 0″	7′ 6″ 8′ 0″ 10′ 0″	D-23 D-24 D-25	DF-23 DF-24 DF-25	2393 2394 2395	4 4 12	15⅝″x36½″ 18⅝″x42½″ 16¼″x30¾″	2036 2037 2038	D-23 D-24 D-25	6′ 9″ 7′ 9″ 9′ 9″	7′ 4½″ 7′ 10½″ 9′ 10½″



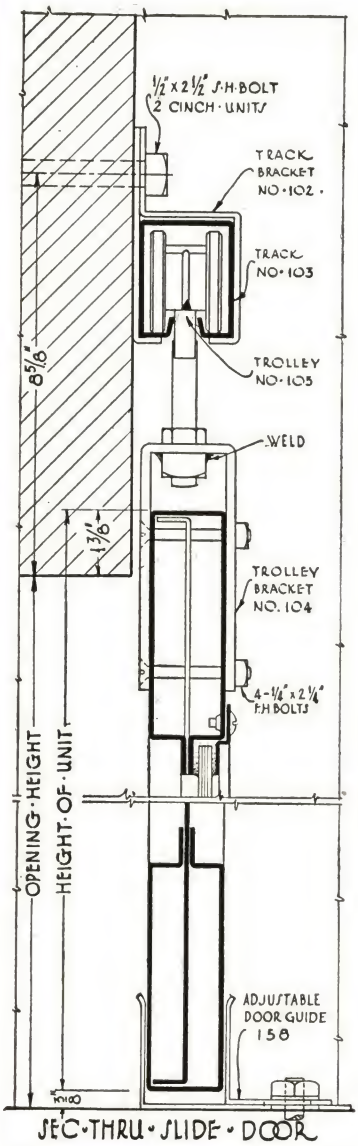
HARDWARE

See next page for trolleys and tracks for slide doors.

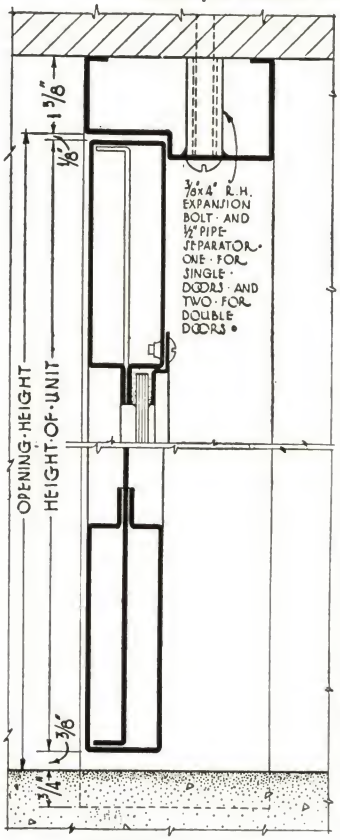


DETAILS for COMMERCIAL DOORS

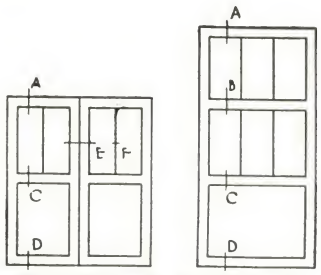
Scale for Details 3" = 1'-0"



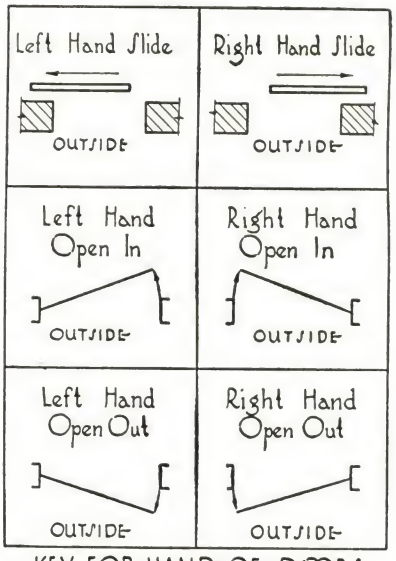
SEC. THRU SLIDE DOOR



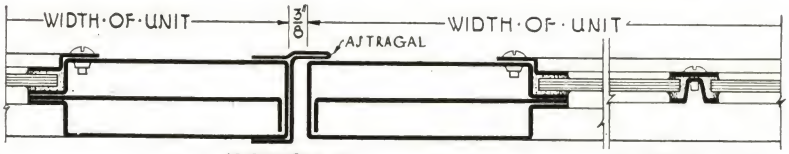
SECTION THRU SWING DOOR



TYPICAL ELEVATIONS

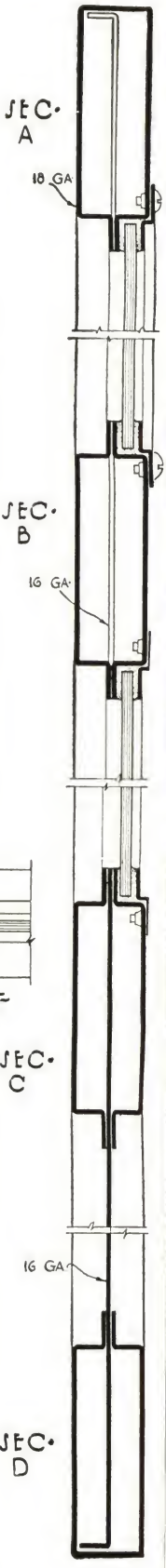


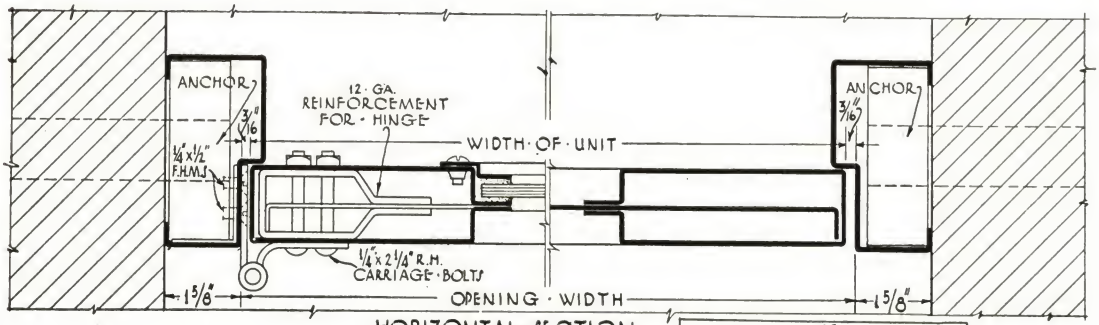
KEY FOR HAND OF DOORS



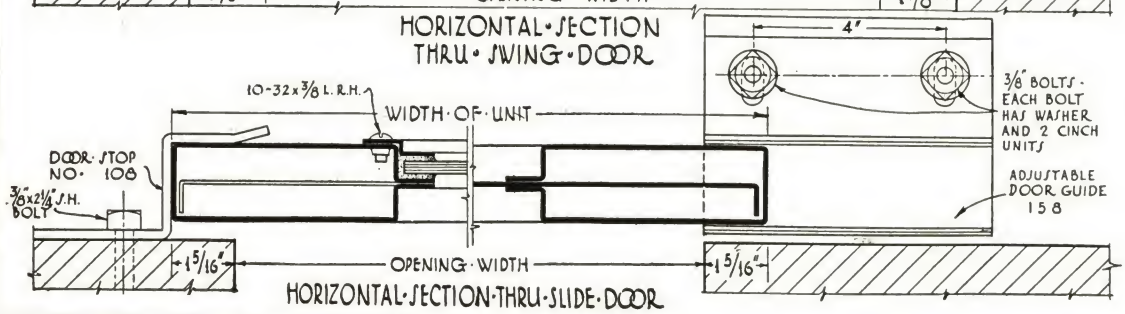
SECTION E MEETING STILE

SECTION F MUNTIN





HORIZONTAL SECTION THRU SWING DOOR



HORIZONTAL SECTION THRU SLIDE DOOR

CORRUGATED WIRE GLASS *by Lupton*

Lupton service in connection with Corrugated Wire Glass is based on a wide experience with installation of this type of skylight-roof covering. Wherever roof lighting is being considered, Lupton will be glad to co-operate by submitting tentative designs indicating practical and economical methods of applying skylights of Corrugated Wire Glass.

Corrugated Wire Glass is a translucent material which, if used as a covering for skylights, roofs and sidewalls, has definite advantages.

It transmits a finely diffused light with minimum glare and shadow.

It is easily erected and completely weatherproof.

Because of its corrugations it develops greater strength under uniform loading and greater resistance to vibration and temperature changes than any other type of sheet glass of equal thickness.

No skylight bars are used. The glass carries the load directly to purlins and curbs.

Maintenance cost is low because there are no bars to rust or corrode, breakage is practically eliminated and the corrugations permit rain to clean the glass.

It meets every requirement of the National Board of Fire Underwriters for fire retardment.

Corrugated Wire Glass is often used as a covering for the entire roof area of a building. It is readily applied to single or double pitch roofs, connected directly to any type roof covering. It can be used for sawtooth roofs, back slopes of Lupton V-type roof, sidewalls, marquises and canopies.

Specifications and Installation Details

Specifications for Corrugated Wire Glass and details covering the more usual types of installations appear in another section of SWEET'S CATALOGUES under "Skylights." A folder containing additional roof details, details for Canopy and Marquise, Sidewall Construction and application of Roof Ventilators will be sent on request.

Draining Condensation

Condensation is readily disposed by means of drainage tubes, that conduct the moisture directly to the outside of the roof, or by using condensation gutters.

Actinic Glass

Actinic glass excludes much of the sun's radiant heat, thus reducing the summer temperature under the glass. Its use is advisable where reduction in sun's heat or glare is desired without sacrificing visibility.



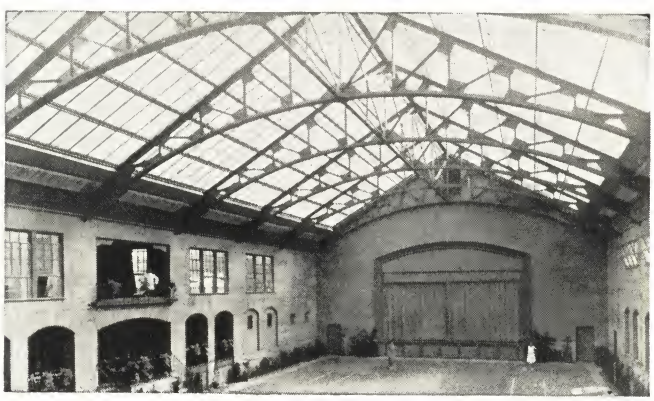
(Upper left). Corrugated Wire Glass used over a swimming pool at the Fordson High School, Dearborn, Michigan, Van Leyen, Schilling and Keough, Architects. Notice that the usual wire guards have been omitted due to the resistance of Corrugated Wire Glass to breakage.



(Lower left). Corrugated Wire Glass was selected to withstand temperature stresses and vibration from cranes and to give better light diffusion at the plant of the General Steel Castings Company, Eddystone, Pa. Approximately 241,000 sq. ft. of Corrugated Wire Glass is used here. Cost of Corrugated Wire Glass permits its installation over extremely large areas.

The excellent light diffusing properties of Corrugated Wire Glass, its simplicity of construction, weathertightness and freedom from usual breakage recommends its use wherever abundant but perfectly diffused daylighting is a desired element in design.

(Below). Corrugated Wire Glass in the indoor tennis court for Mrs. H. E. Talbot, Dayton, Ohio, Peabody, Wilson and Brown, Architects.



LUPTON
STEEL PRODUCTS

OTHER LUPTON PRODUCTS not described in detail in this catalogue—Steel Partitions, Detention Windows, Steel Shelving, Textile Mill Equipment, Sheet Metal Products, Steel Factory Equipment, Retail Store Equipment, Steel Printing Equipment. The articles listed here and those described in detail in the foregoing pages are in no sense a limit to Lupton's ability to serve in the making of quality metal products. Our facilities are always available for making products to meet your particular requirements.

» » » » » DETAILS AND SPECIFICATIONS FOR LUPTON STEEL PRODUCTS

1932

DAVID · LUPTON'S · SONS · COMPANY
ALLEGHENY AVENUE AND TULIP STREET · PHILADELPHIA, PA.
SALES REPRESENTATIVES IN ALL PRINCIPAL CITIES

LUNDELL-ECKBERG MANUFACTURING CO., INC.

Lemco Steel Casements

JAMESTOWN, N. Y.

LOCAL REPRESENTATIVES

ATLANTA, GA., Steel Specialties Co., 305 Walton Building
BALTIMORE, MD., I. G. Cockey, Consolidated Supply Co., 1102 No. Charles Street
BOSTON, MASS., Joseph F. Farrell, 164 Stuart Street
BUFFALO, N. Y., James M. Hawkins Co., 132 W. Chippewa Street
CHICAGO, ILL., W. L. Van Dame Co., 820 Tower Court
CINCINNATI, OHIO, Durbrow & Otte, 206 W. Court Street
CLEVELAND, OHIO, A. L. Hawkins, 16717 Kenyon Road
COLUMBUS, OHIO, Alvan Tallmadge, 63 Parkwood Avenue
DALLAS, TEX., Metal Products Co., 406 Linz Building
DAYTON, OHIO, Durbrow & Otte, 275 Fourth Street
DES MOINES, IOWA, Tower Materials Co., Hubbell Building
DETROIT, MICH., E. H. Gunnison Co., 439 Penobscot Building
ERIE, PA., Erie Concrete & Steel Supply Co., 13th and Cranberry Streets
HARTFORD, CONN., Bidwell Hardware Co., 1293 Main Street
HUNTINGTON, W. VA., James J. Weiler & Sons, 202 Elm Street
INDIANAPOLIS, IND., E. B. McComb, 4141 College Avenue
LINCOLN, NEB., Paul O. Wells Co., 1000 No. 9th Street
LITTLE ROCK, ARK., Chas. S. Watts, 7th Floor Pyramid Life Building (P. O. Box 92)
LOS ANGELES, CALIF., Associated Materials Co., 707 E. 61st Street
MILWAUKEE, WIS., Walter E. Klinka, 597 57th Street
MINNEAPOLIS, MINN., Hauenstein & Burmeister, 614 Third Avenue, So.
NEW YORK, N. Y., A. F. Nagle Co., Inc., 10 E. 43rd Street
OKLAHOMA CITY, OKLA., Lusco Brick & Stone Co.
PITTSBURGH, PA., Harry H. Frank, 207 Fulton Building
PHILADELPHIA, PA., A. E. Ohnstrand, W. I. Gustafson, 1103 Architects Building
ROCHESTER, N. Y. Beardsley Glass & Glazing Co., 964 Chili Avenue
ST. PAUL, MINN., Hauenstein & Burmeister, 903 Builders Exchange Building
ST. LOUIS, MO., H. C. Morrison Co., Railway Exchange Building
SCRANTON, PA., Frank E. Ryan, 520 New York Street
SEATTLE, WASH., W. P. Fairbairn, 449-450 Skinner Building
TAMPA, FLA., Carrington Sweeny, 105 Cass Arcade
TOLEDO, OHIO, H. A. Sparks Co., 237 Michigan Street
TULSA, OKLA., W. E. McEvoy, P. O. Box 1704
WASHINGTON, D. C., Consolidated Supply Co., 421 Bond Building
WICHITA, KAN., Lusco Brick & Stone Co.
YOUNGSTOWN, OHIO, John M. Nanson, P. O. Box 745
RICHMOND, VA., Lee O. Miller Co.

FOREWORD

LEMCO
STEEL
CASEMENTS

We specialize in high grade steel casements of any design or size. Our casements and doors may be divided into two general groups.

Strictly Custom Built Casements and Doors—These are made of No. 200 heavy three-point section and No. 600 heavy two-point section. They may be of any shape or size.

Standardized Steel Casements and Doors—Casements and doors are made of our No. 600 heavy two-point section in standard sizes and are kept in stock at all times for immediate shipment.

LEMCO QUALITY

Our casements are produced to conform to a high standard of both workmanship and material. The sections, which are unusually heavy, are made from hot rolled steel bars and are carefully straightened. The corners are accurately mitered and electrically welded together, making strong and neatly finished casements.

They are made by expert mechanics and all work is subjected to rigid inspection for precision of contact parts and assembly. The hardware, including hinges and fasteners, is made of bronze and not of malleable iron.

LEMCO HARDWARE

All hardware is solid bronze, even for the most inexpensive sash, and is made in our own foundry. Plates 1H-1, 1H-2 and 1H-3 show the designs of the various parts. Our patented safety cleaning friction hinge allows the outside of the glass to be cleaned from the room side and the friction feature does away with the use of a sill adjuster. The friction hinge is easily operated, yet it will hold the sash in any desired position.

LEMCO FINISH

All steel is thoroughly cleaned and brushed before painting. All custom built jobs receive one coat of rust resisting paint and one coat of gray enamel, each coat baked on separately; standardized casements receive only one coat of gray enamel. However, painting specifications may vary to meet conditions or architect's specifications.

SOME LEMCO INSTALLATIONS AND THEIR ARCHITECTS

Banks, Commercial and Public Buildings

River Forest State Bank, River Forest, Ill., Schmeitler & Wenisch

Title Insurance & Trust Bldg., Los Angeles, Cal., John & Donald Parkinson

Laramie State Bank, Chicago, Ill., Meyer & Cook

Hyde Park National Bank, Chicago, Ill., K. M. Vitzthum & Co.

Baltimore Trust Co. Bldg., Baltimore, Md., Taylor & Fisher; Smith & May

Suffolk Title Guarantee & Trust Co., Jamaica, N. Y., Dennison & Hirons

Detroit Savings Branch Bank and Office, Detroit, Mich., C. L. Phelps

State Savings Bank Bldg., St. Paul, Minn., Toltz, King & Day

West Town State Bank Bldg., Chicago, Ill., Mundie & Jensen

Worthen Bank, Little Rock, Ark., Mann, Wanger & King

Butler Savings & Trust Co., Butler, Pa., Mowbray & Uffinger

People's State Bank, Detroit, Mich., Hans Gehrke

Franklin Savings & Trust Co., Pittsburgh, Pa., Thomas Pringle

Chicago Daily News Bldg., Chicago, Ill., Holabird & Root

Jewel Tea Company Bldg., Barrington, Ill., Holabird & Root

Internal Revenue Bldg., Washington, D. C., J. A. Wetmore

Wall & Hanover Bldg., New York, N. Y., Delano & Aldrich

Rockland State Hospital, Orangeburg, N. Y., New York State Architect

One La Salle Street Bldg., Chicago, Ill., K. M. Vitzthum & Co.

St. Joseph's Sanitorium, Albuquerque, N. M., George Williamson, Inc.

Central Fire and Police Station, Columbus, Ohio, Allied Architects

Churches

Immanuel Baptist Church, Little Rock, Ark., Mann & Stern

St. Benedict's Parish Bldg., Detroit, Mich., Donaldson & Meier

Synagogue for Congregation Rodeph Sholom, New York, N. Y., Charles B. Meyers

St. Joseph's Cathedral Rectory, Buffalo, N. Y., Mortimer J. Murphy

Hendricks Memorial Chapel (Syracuse University), Syracuse, N. Y., John Russell Pope and Dwight James Baum, Associate Architects

St. Catherine's Parish, Detroit, Mich., Donaldson & Meier

Northminster Presbyterian Church, Evanston, Ill., Mundie & Jensen

Episcopal Church School, Middletown, Del., Arthur H. Brockie

Wilmette Parish M. E. Church, Wilmette, Ill., Granger & Bollenbacher

Second Presbyterian Church Addition, Wilkinsburg, Pa., Lawrence Wolfe

St. Joseph's Church, Owatonna, Minn., Slifer & Abrahamson

Ida F. Stiles Memorial Church, Jackson, Mich., Thielbar & Fugard

St. George's Monastery, Cincinnati, Ohio, Crowe & Schulte

St. Boniface Parish, Philadelphia, Pa., Frank R. Watson

Holy Trinity Parish, Erie Pa., Fuller & Stickle

Holy Trinity Parish, Cleveland, Ohio, J. M. Miller

St. Stephen's Church, Philadelphia, Pa., Wetherill P. Trout

Presbyterian Church, Tacoma, Wash., Sutton, Whitney & Dugan

M. E. Church, Lincoln, Ill., Deal & Ginzel

Spiritual Science Church, Jamestown, N. Y., Oliver R. Johnson

Residences

Bernard Residence, Pasadena, Cal., Morgan, Walls & Clements

Hess Residence, Wheeling, W. Va., Sidney F. Heckert

Franklin Baker Residence, Newton Township, Delaware County, Pa., Carl A. Ziegler

Wilson Residence, Rochester, N. Y., Smith, Hinchman & Grylls

Henry A. Page Residence, Toledo, Ohio, Mills, Rhines, Bellman & Nordhoff

Wm. Chamberlain Residence, Winnetka, Ill., S. S. Beman

Bryant Residence, Detroit, Mich., Smith, Hinchman & Grylls

Edwin Merrill Residence, Bedford Hills, N. Y., Frank E. Newman

Henry P. Williams Residence, Grosse Point, Mich., Hugh T. Keyes

George B. Everitt Residence, Winnetka, Ill., S. S. Beman

George R. Elder, Jr., Residence, Greenwich, Conn., Edgar A. Self

Kayser Residence, Minneapolis, Minn., Carl A. Gage

William F. Raskob Residence, Wilmington, Del., E. William Martin

M. R. Burrowes Residence, Farmington, Mich., M. R. Burrowes

Field Residence, Jackson, Mich., L. H. Field

S. F. Abraham, Detroit, Mich., Abraham & Wood

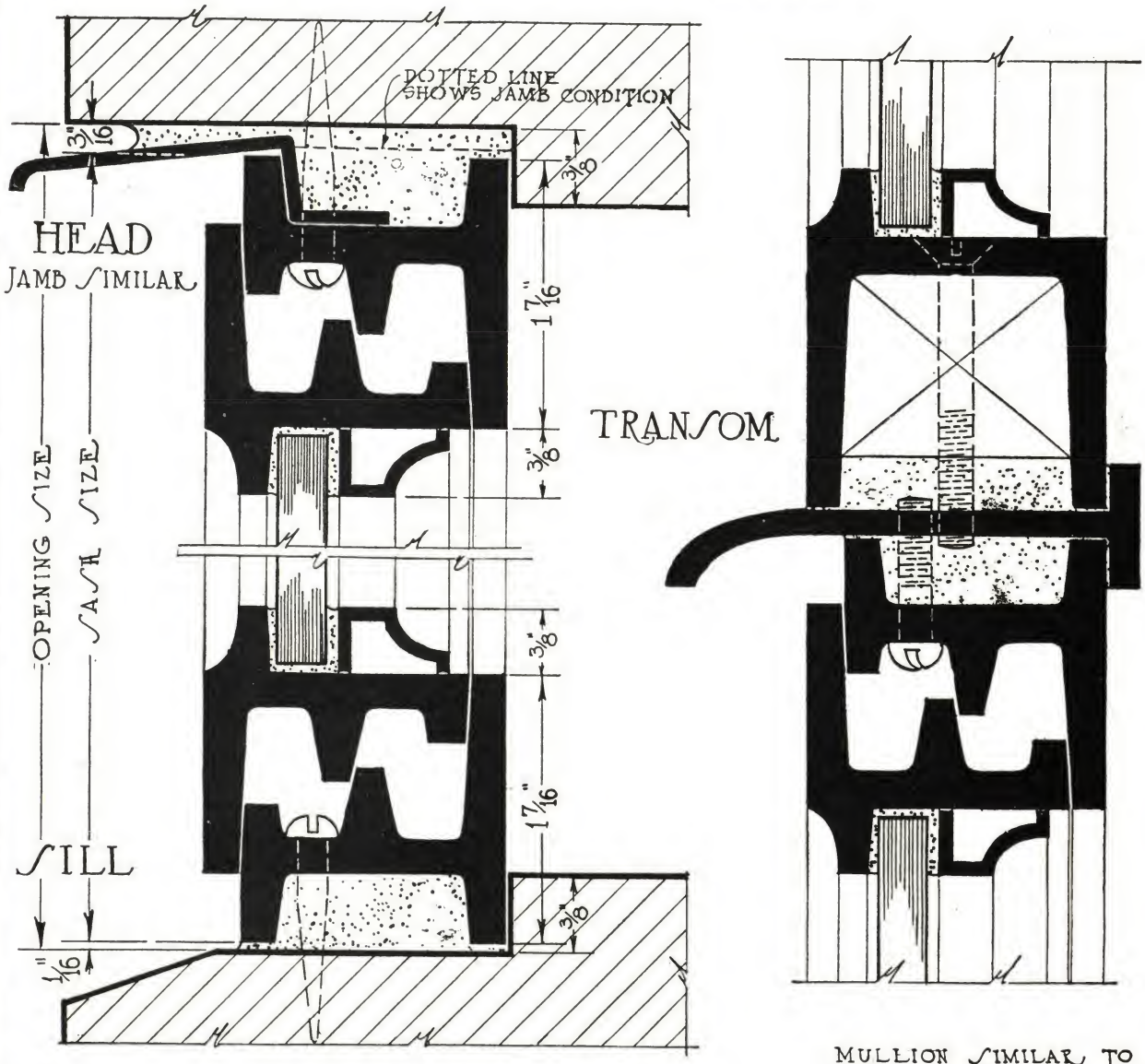
Dr. Hall, Detroit, Mich., W. C. Morris

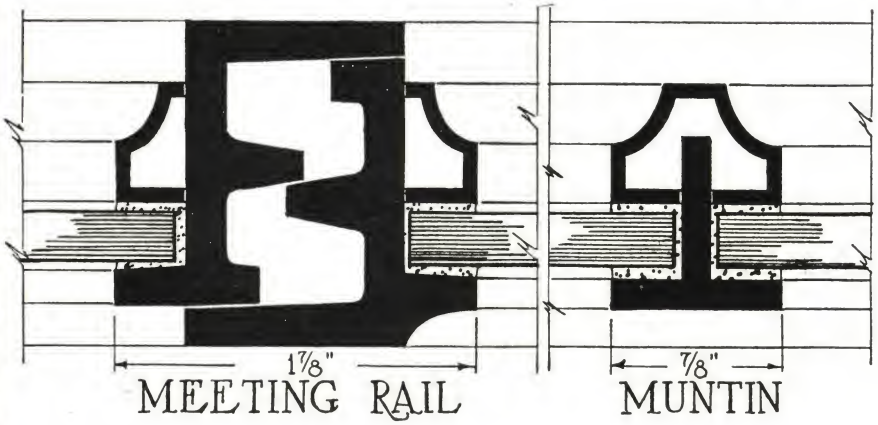
W. H. McGarr, Birmingham, Mich., Hugh T. Keyes

Frank R. Watson, Philadelphia, Pa., F. R. Watson

Henry Rigg's Residence, Ann Arbor, Mich., Chas. J. Sullivan

NO. 200 LEMCO
HEAVY THREE POINT SECTION CASEMENT
OPENING OUTWARD





MULLION SIMILAR TO THAT SHOWN ON PLATE NUMBER 2A-1.

SECTIONS CAN BE ARRANGED FOR INSIDE OR OUTSIDE GLAZING.

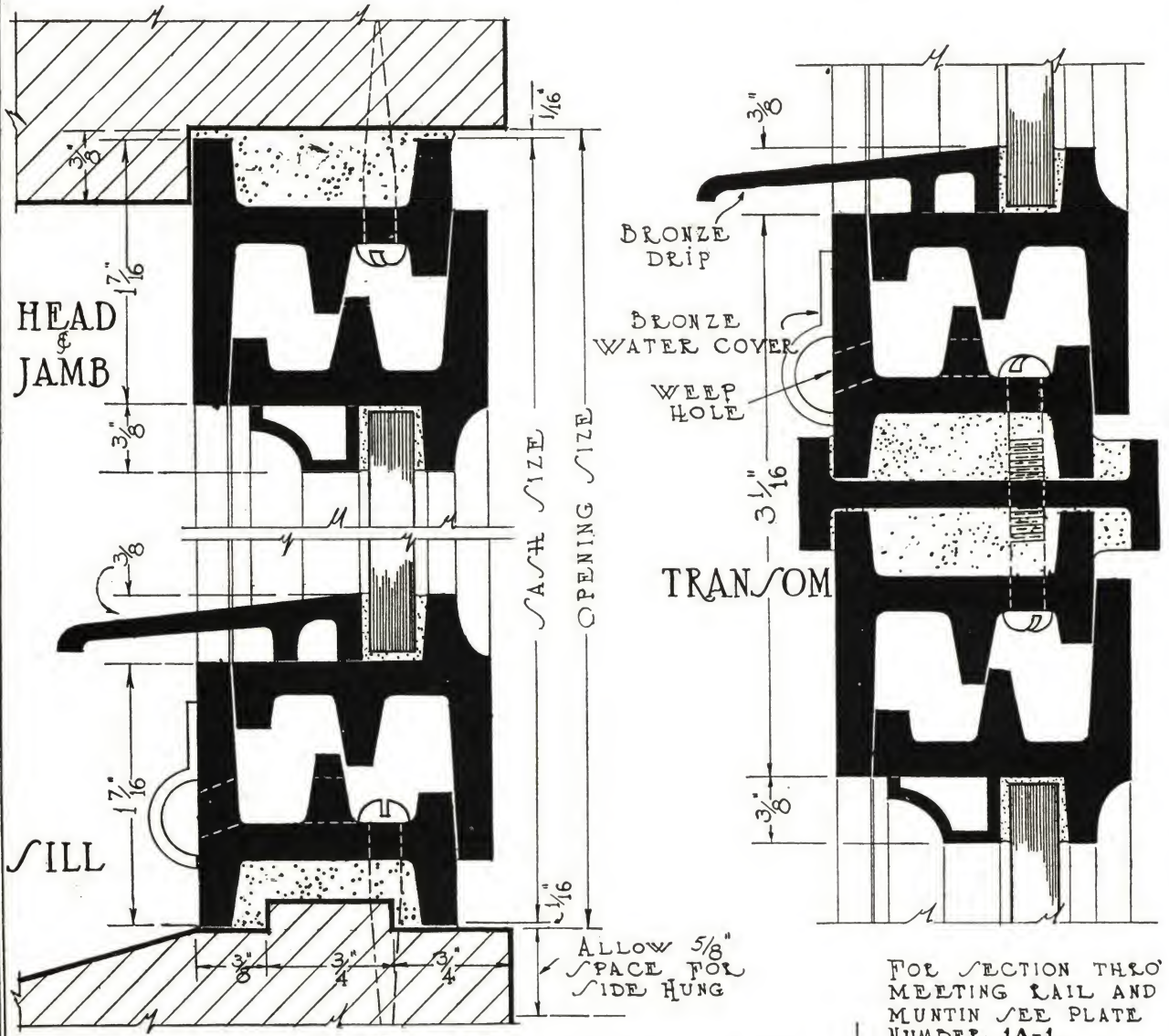
CLEARANCE FOR SETTING SHOULD BE INCREASED TO 1/8" FOR MASONRY & CAST IRON.

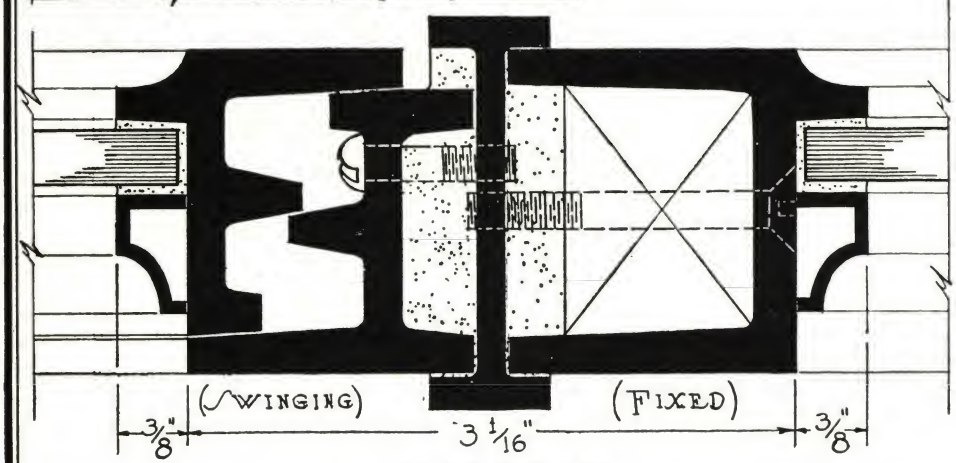
SCALE-FULL SIZE

PLATE NO. 1A-1

NO. 200 LEMCO

HEAVY THREE POINT SECTION CASEMENT OPENING INWARD





MULLION

FOR SECTION THRO' MEETING RAIL AND MUNTIN SEE PLATE NUMBER 1A-1.

SECTIONS CAN BE ARRANGED FOR INSIDE OR OUTSIDE GLAZING.

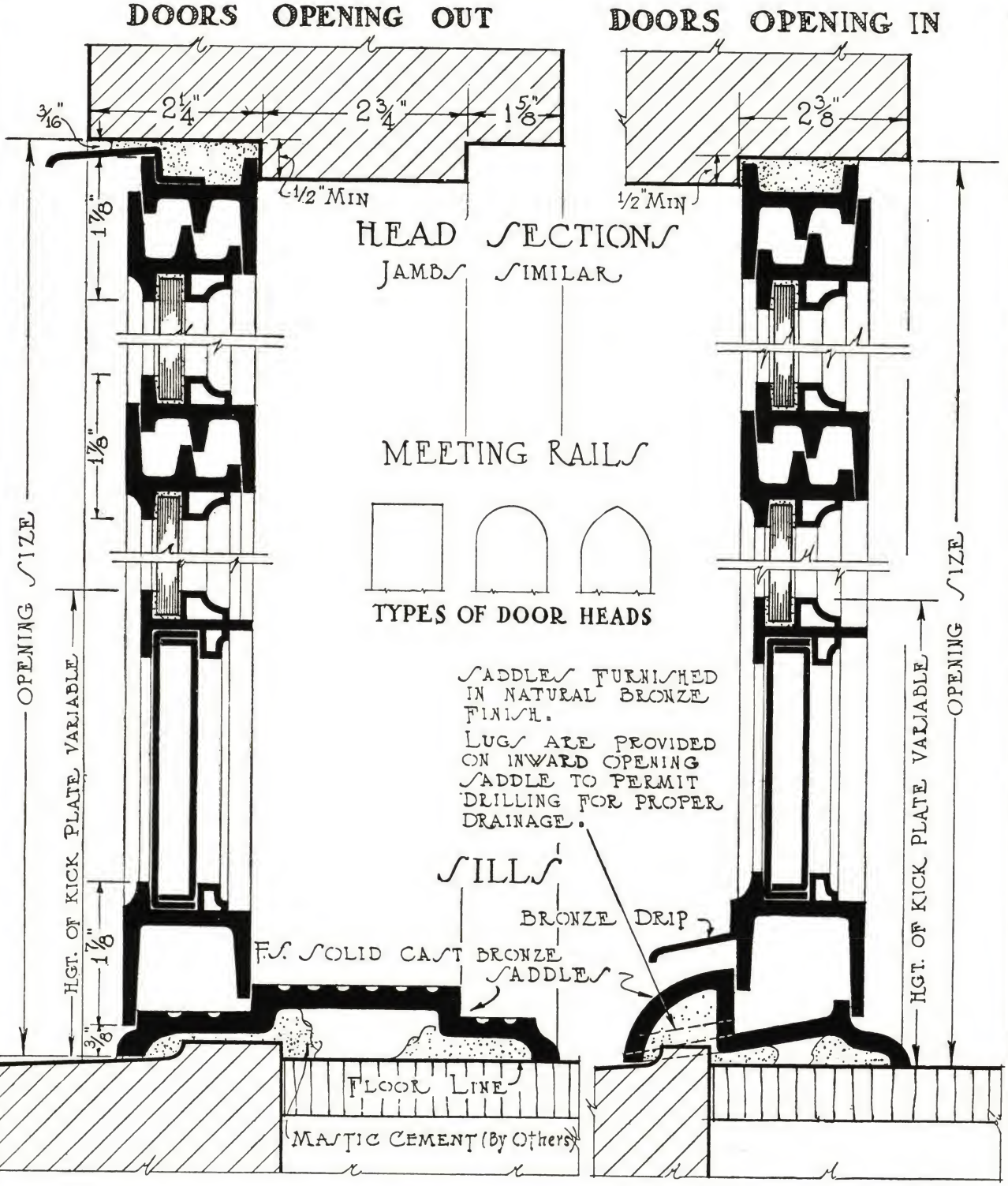
CLEARANCE FOR SETTING SHOULD BE INCREASED TO 1/8" FOR MASONRY & CAST IRON.

SCALE-FULL SIZE

PLATE NO. 2A-1

LEMCO DOUBLE FOLDING DOORS

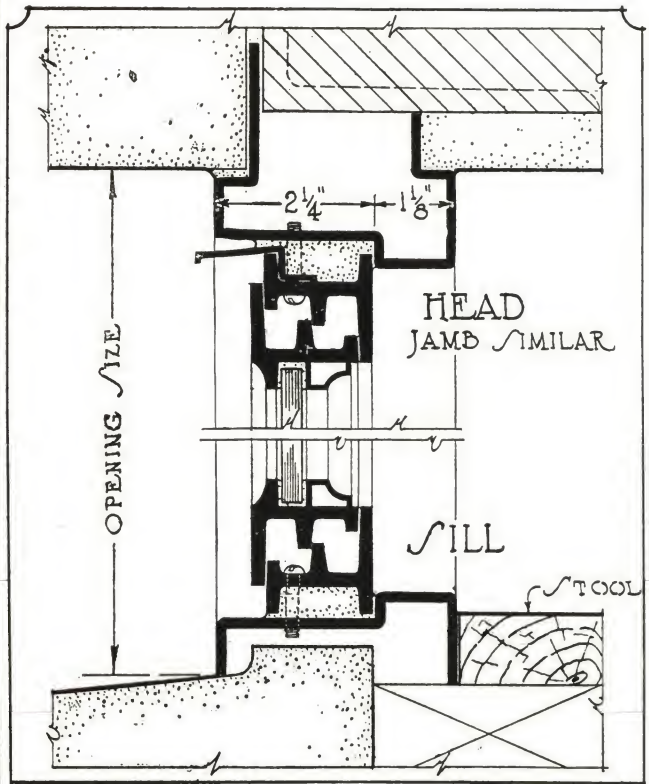
HEAVY THREE POINT SECTION — SEE PLATE NO. 1A-1



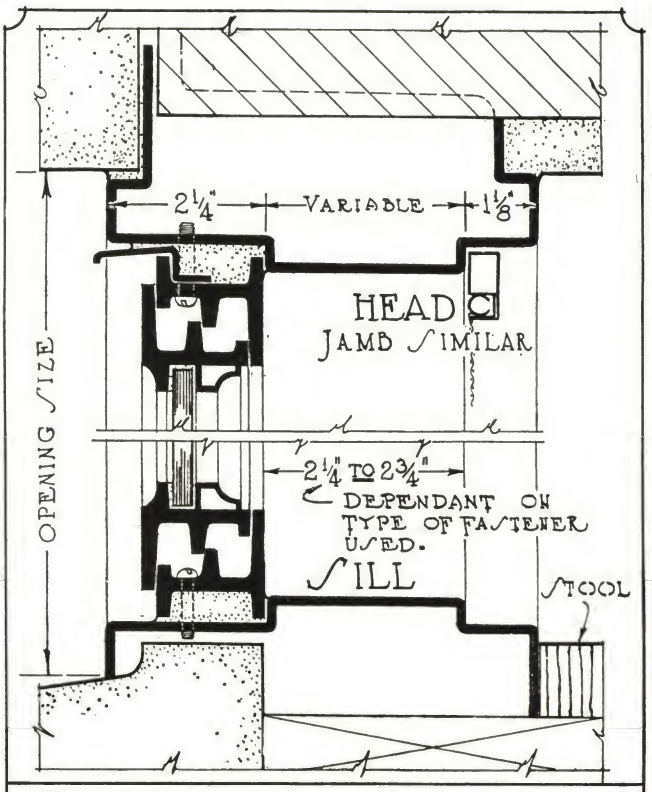
NOTE ~ OUTWARD OPENING DOOR SHOWN WITH DOUBLE RABBETTED SADDLE AND INWARD OPENING DOOR SHOWN WITH SINGLE RABBETTED SADDLE. EITHER TYPE OF SADDLE CAN BE FURNISHED FOR BOTH OUTWARD AND INWARD OPENING DOORS. SCALE-ONE-HALF FULL SIZE

PLATE NO. 3A-1

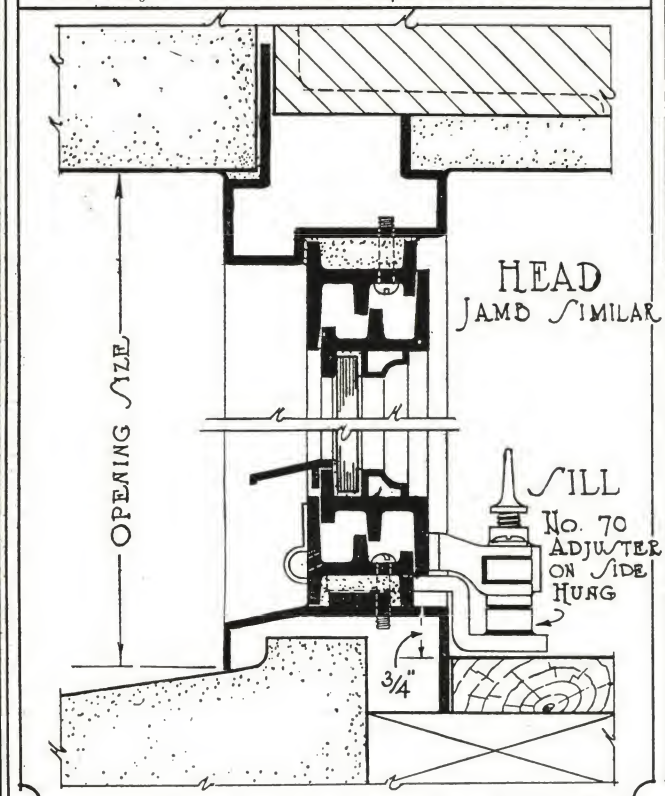
LEMCO BUILTIN SUBFRAMES
APPLICATION DETAILS

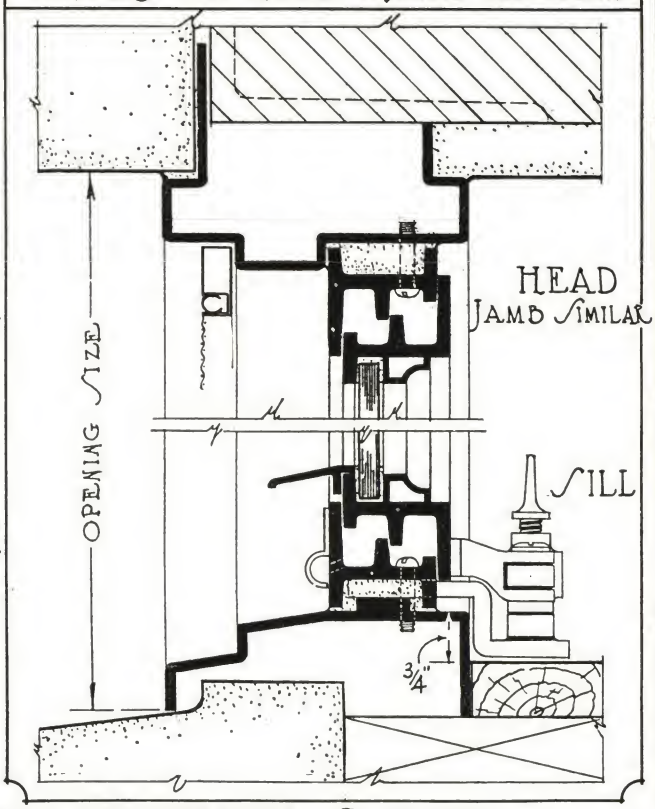


SINGLE RABBETTED SUBFRAMES
OUTWARD AND INWARD OPENING CASEMENTS



DOUBLE RABBETTED SUBFRAMES
OUTWARD AND INWARD OPENING CASEMENTS

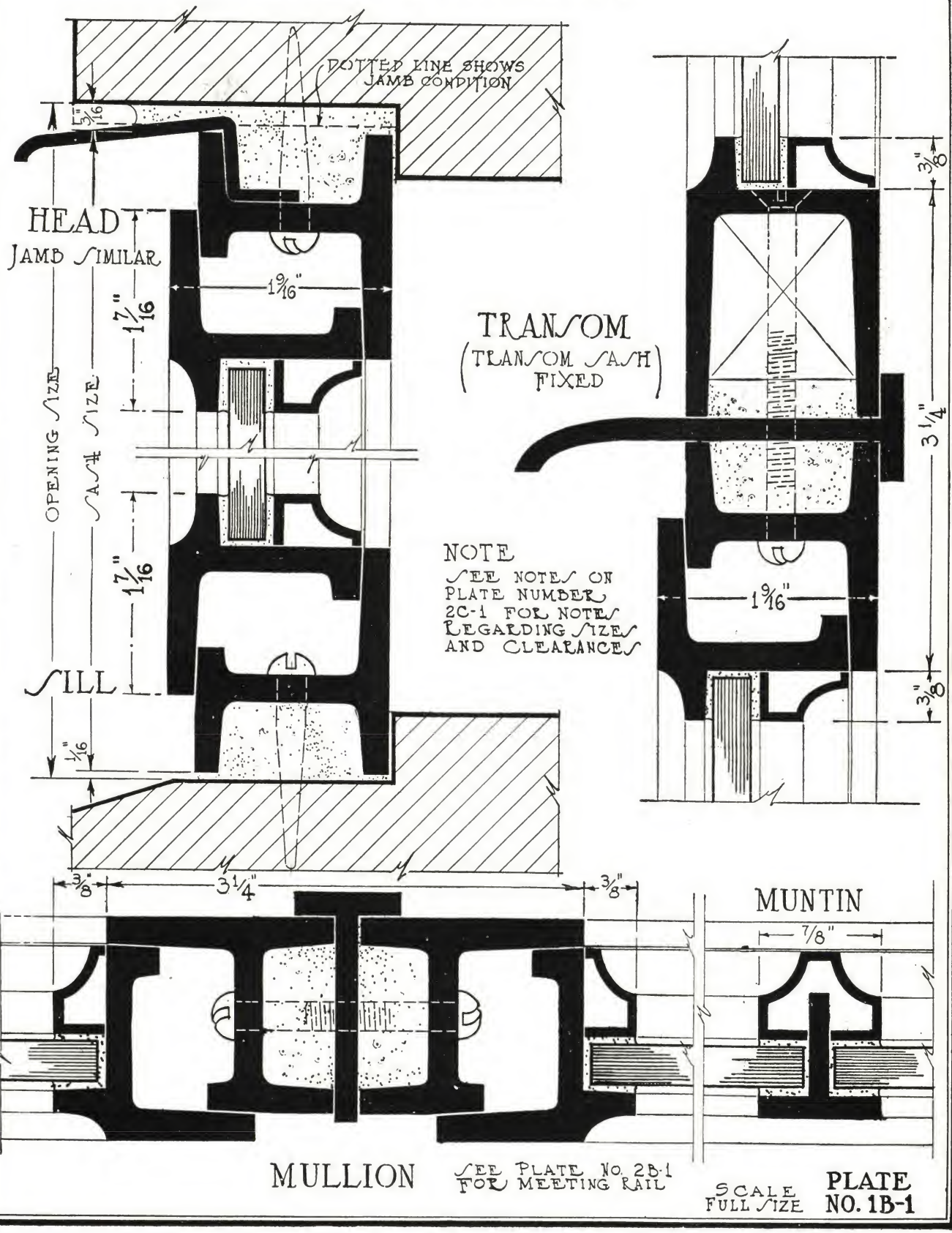




SUBFRAMES ARE BUILT INTO MASONRY BY MASON CONTRACTOR. CASEMENTS ARE SET AFTER ALL ROUGH TRADES HAVE BEEN COMPLETED. ALL FRAMES ARE RIGIDLY CONSTRUCTED OF No. 12 GUAGE STEEL. MADE TO ARCHT'S DETAILS.

PLATE NO. 4A-1

NO. 600 LEMCO
HEAVY TWO POINT SECTION CASEMENT
OPENING OUTWARD

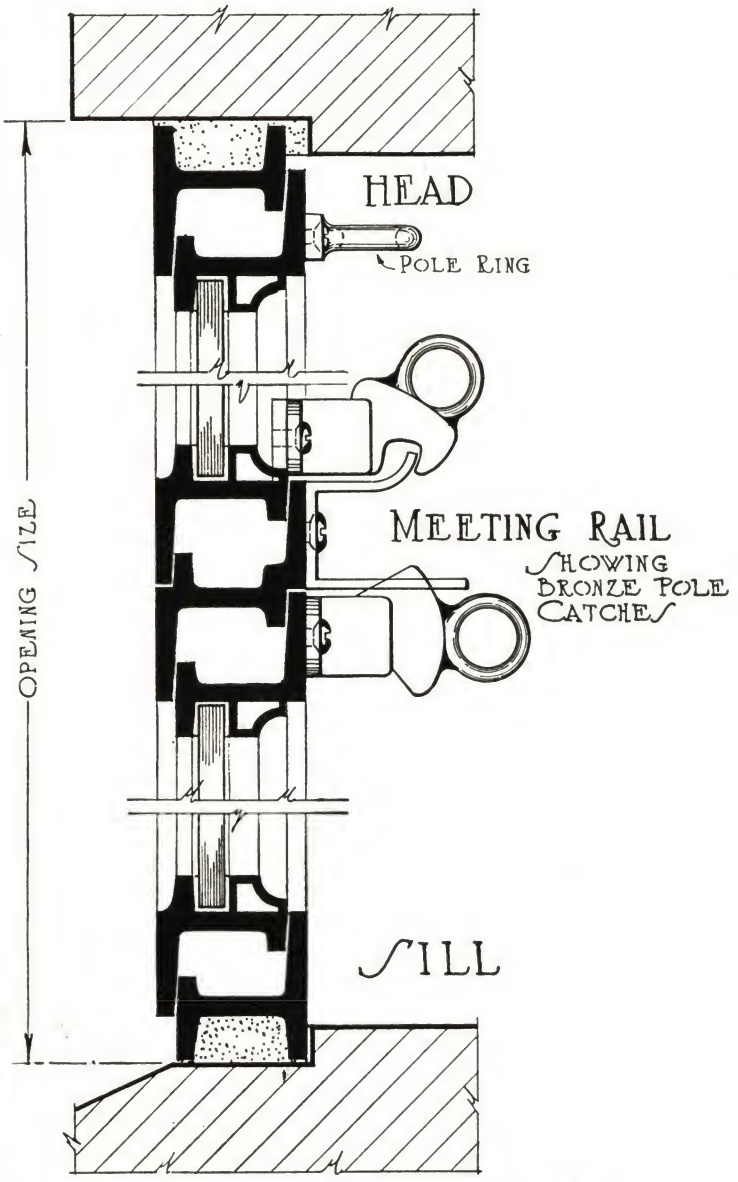


SCALE FULL SIZE

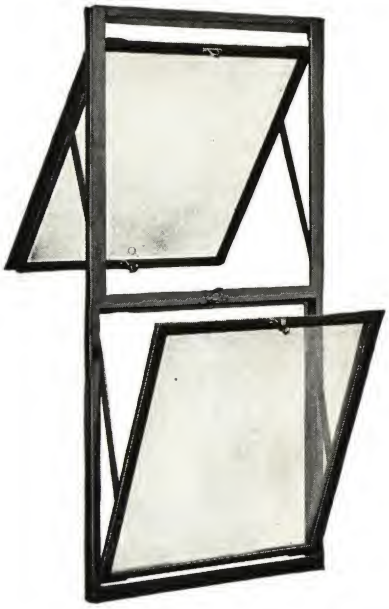
PLATE NO. 1B-1

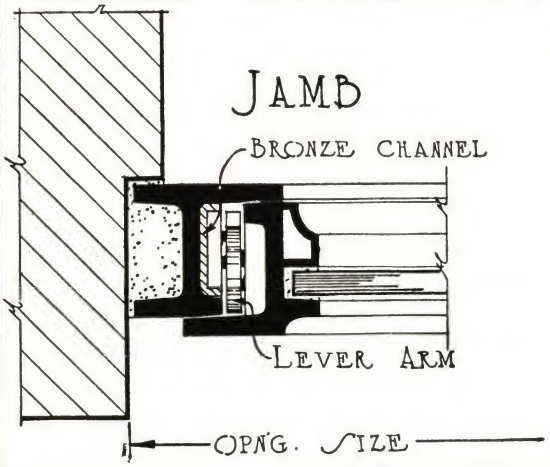
LEMCO PROJECTED TYPE SASH

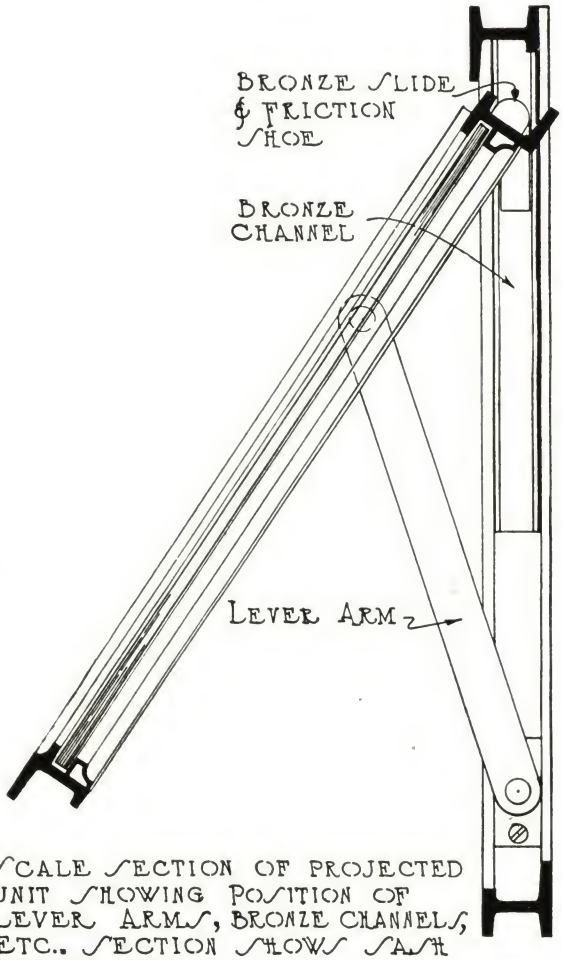
HEAVY TWO POINT SECTION—SEE PLATE NO. 1B-1



DETAILS—ONE HALF FULL SIZE



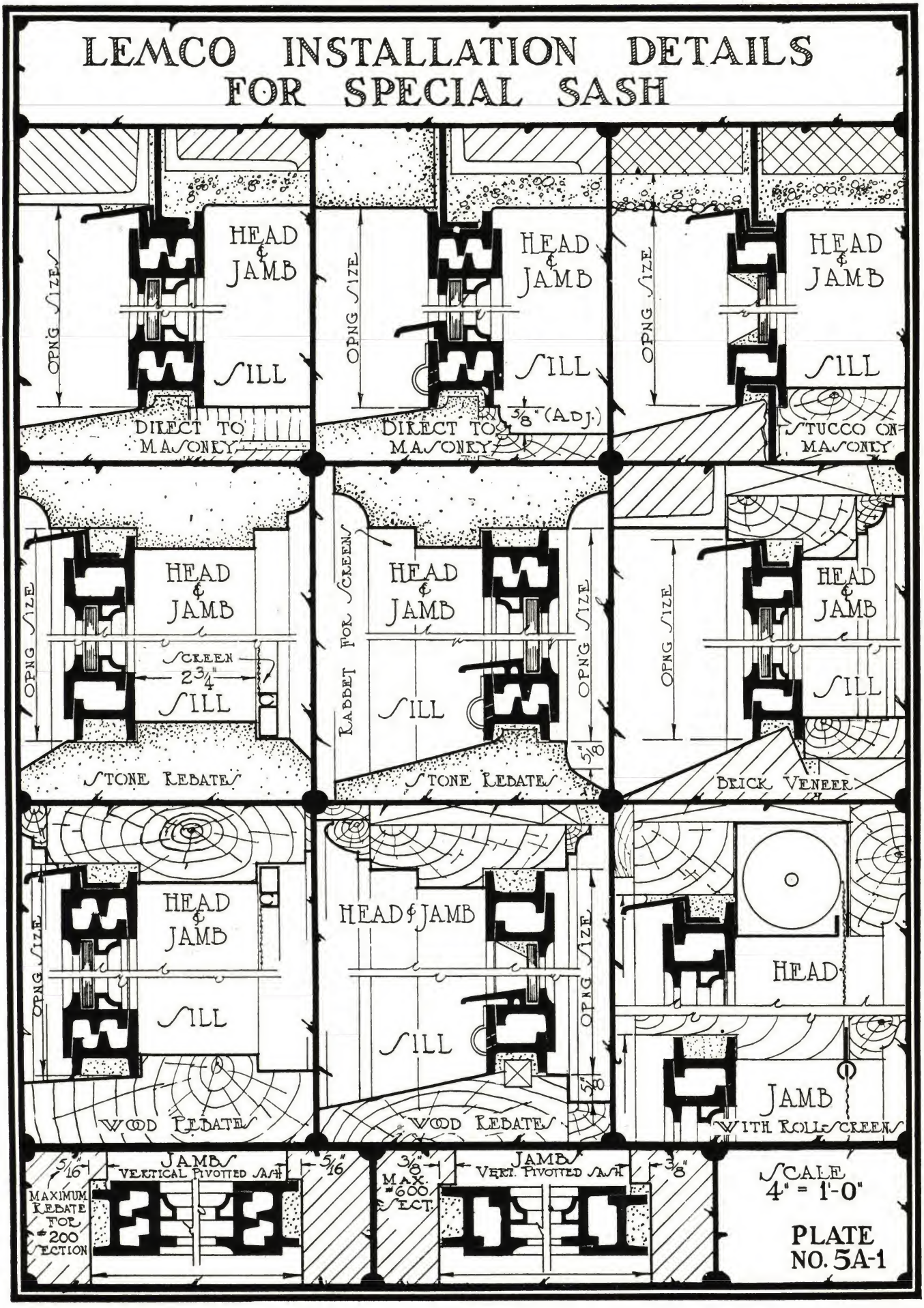




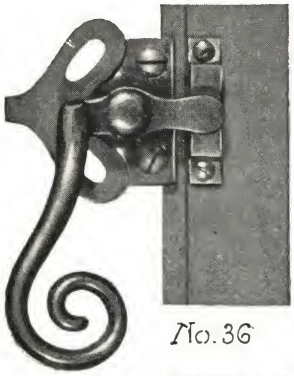
SCALE SECTION OF PROJECTED UNIT SHOWING POSITION OF LEVER ARMS, BRONZE CHANNELS, ETC.. SECTION SHOWS SASH PARTLY OPEN.

PLATE NO. 10B-1

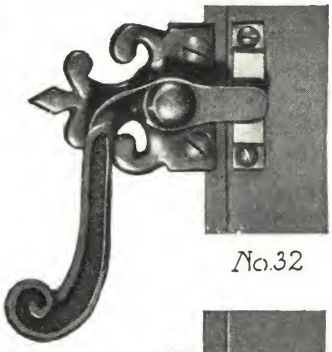
LEMCO INSTALLATION DETAILS FOR SPECIAL SASH



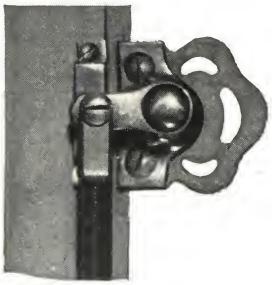
LEMCO SOLID BRONZE CASEMENT HARDWARE

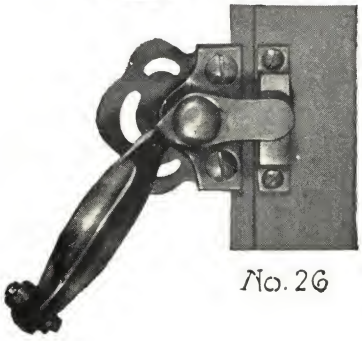


No. 36



No. 32

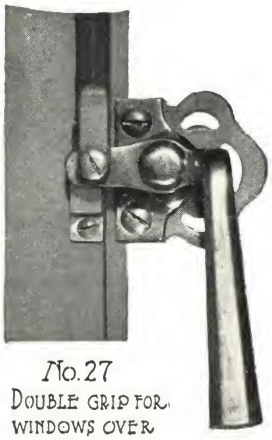




No. 26



No. 27



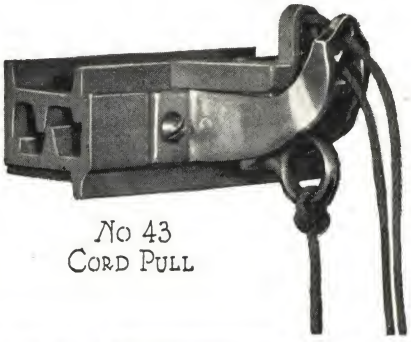
No. 27
DOUBLE GRIP FOR WINDOWS OVER 60 IN.



No. 16
CREMONE BOLT

FASTENERS

TRANSOM CATCHES



No 43
CORD PULL



No. 41
POLE TYPE

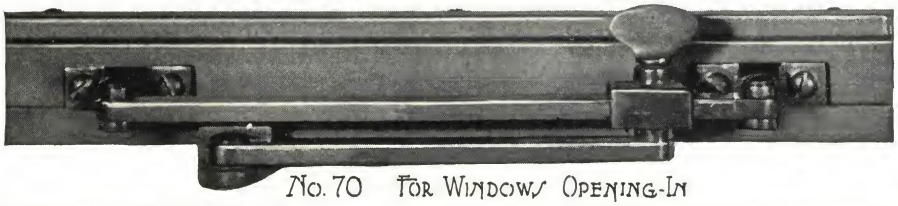
ADJUSTERS



No 78
FOR DOORS



No. 70
FOR WINDOWS OPENING-OUT



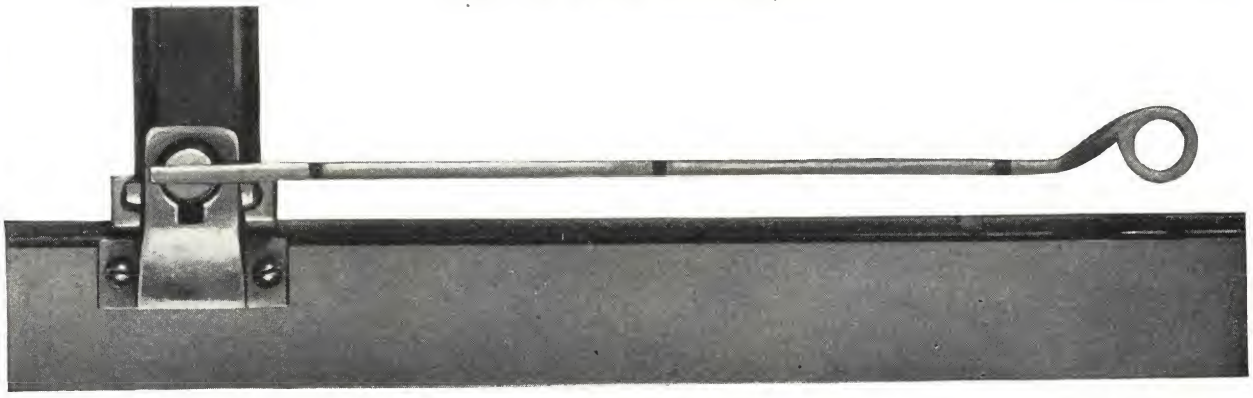
No. 70 FOR WINDOWS OPENING-IN

PLATE NO. 1H-1

LEMCO SOLID BRONZE CASEMENT HARDWARE



No 77 Peg Adjuster



No 74 Cam Adjuster



No 111 Side Arm



No 26 Fastener
Inward Opening
Casement



No 115 Butt



No 83
Cam Adjuster

PLATE
No. 1H-2

LEMCO SOLID BRONZE CASEMENT HARDWARE



No 75 Transom Opener



No 118



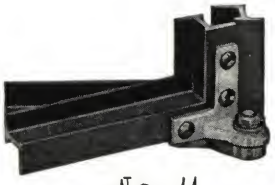
No 34



No 120



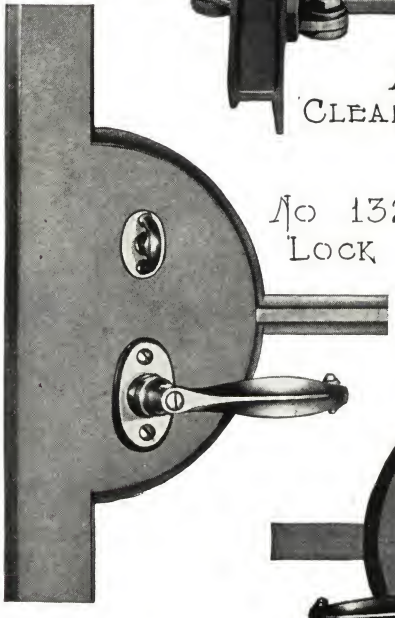
No. 10
Cleaning Hinge



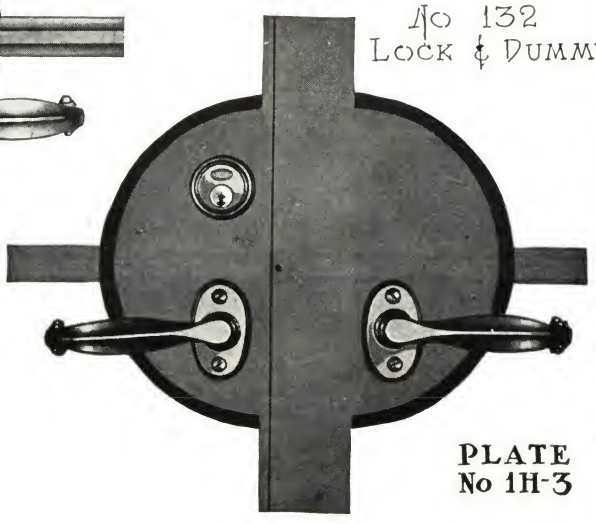
No. 11
Friction Pivot



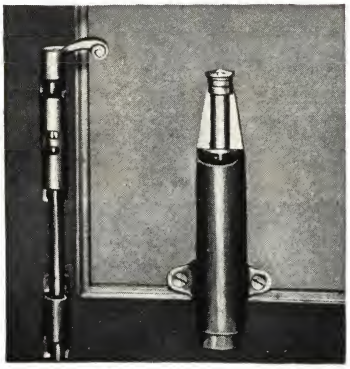
No 125 Fastener
With Double Grip



No 132
Lock



No 132
Lock & Dummy

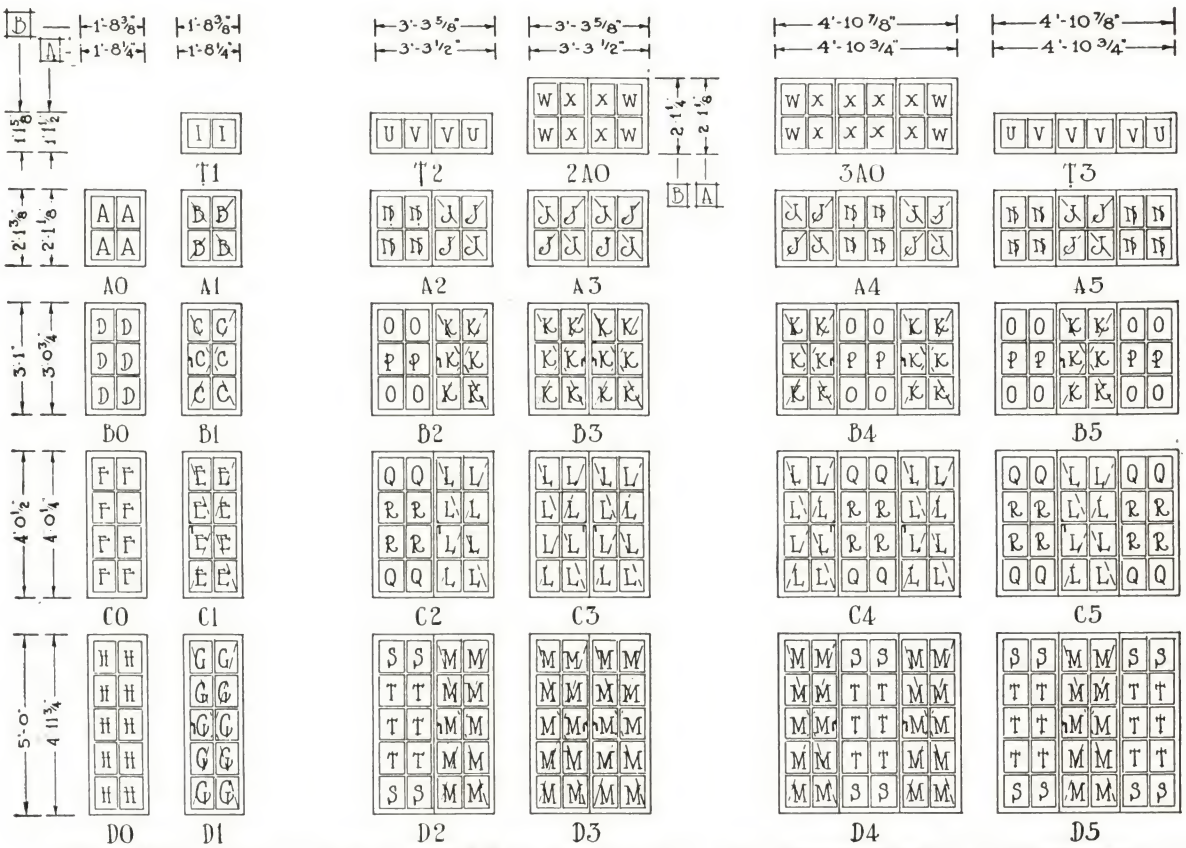


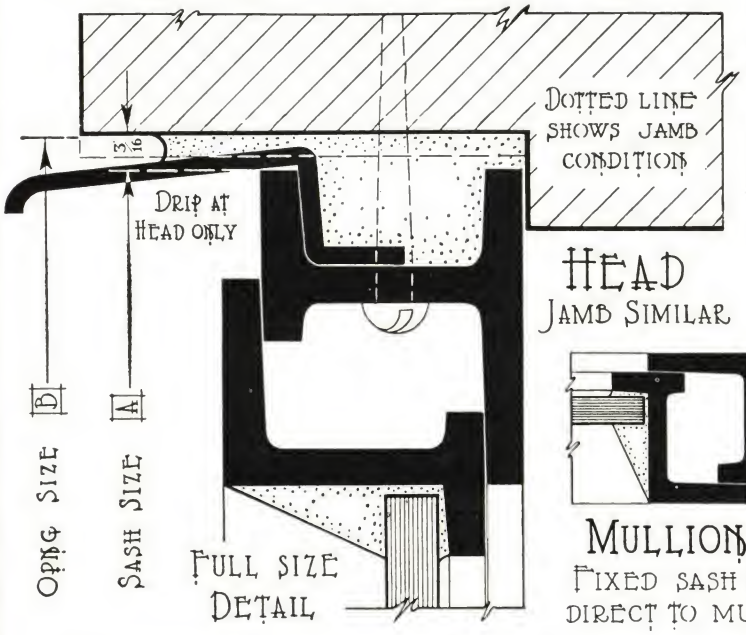
No 64
Foot Bolt

No 107
Bottom Bolt

**PLATE
No 1H-3**

STANDARD LEMCO CASEMENTS

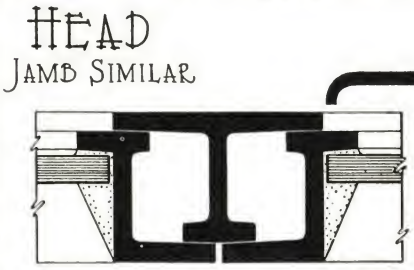




GLASS SCHEDULE

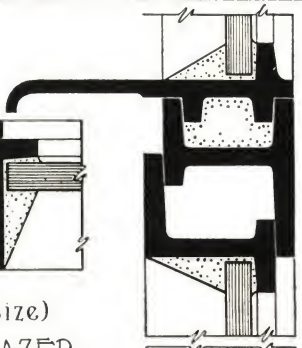
MAKE ALLOWANCE FOR FITTING — SIZES ARE NOT GUARANTEED

PANE	SIZE	PANE	SIZE	PANE	SIZE
A	8 1/2 × 10 15/16	I	8 1/2 × 11 3/4	Q	9 3/16 × 11 7/8
B	8 7/16 × 10 7/8	J	8 7/16 × 10 7/8	R	9 3/16 × 11 1/8
C	8 7/16 × 11 1/16	K	8 7/16 × 11 1/16	S	9 3/16 × 11 5/16
D	8 1/2 × 11 1/16	L	8 7/16 × 11 1/8	T	9 3/16 × 11 3/16
E	8 7/16 × 11 1/8	M	8 7/16 × 11 3/16	U	8 1/2 × 11 3/4
F	8 1/2 × 11 1/8	N	9 3/16 × 11 5/8	V	9 3/16 × 11 3/4
G	8 7/16 × 11 3/16	O	9 3/16 × 11 3/16	W	8 1/2 × 10 15/16
H	8 1/2 × 11 3/16	P	9 3/16 × 11 1/16	X	9 3/16 × 10 15/16

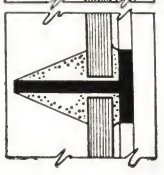


HEAD
JAMB SIMILAR

MULLION (½ full size)
FIXED SASH ARE GLAZED DIRECT TO MULLION BARS



TRANSOM SECTION
½ full size



MUNTIN
½ full size

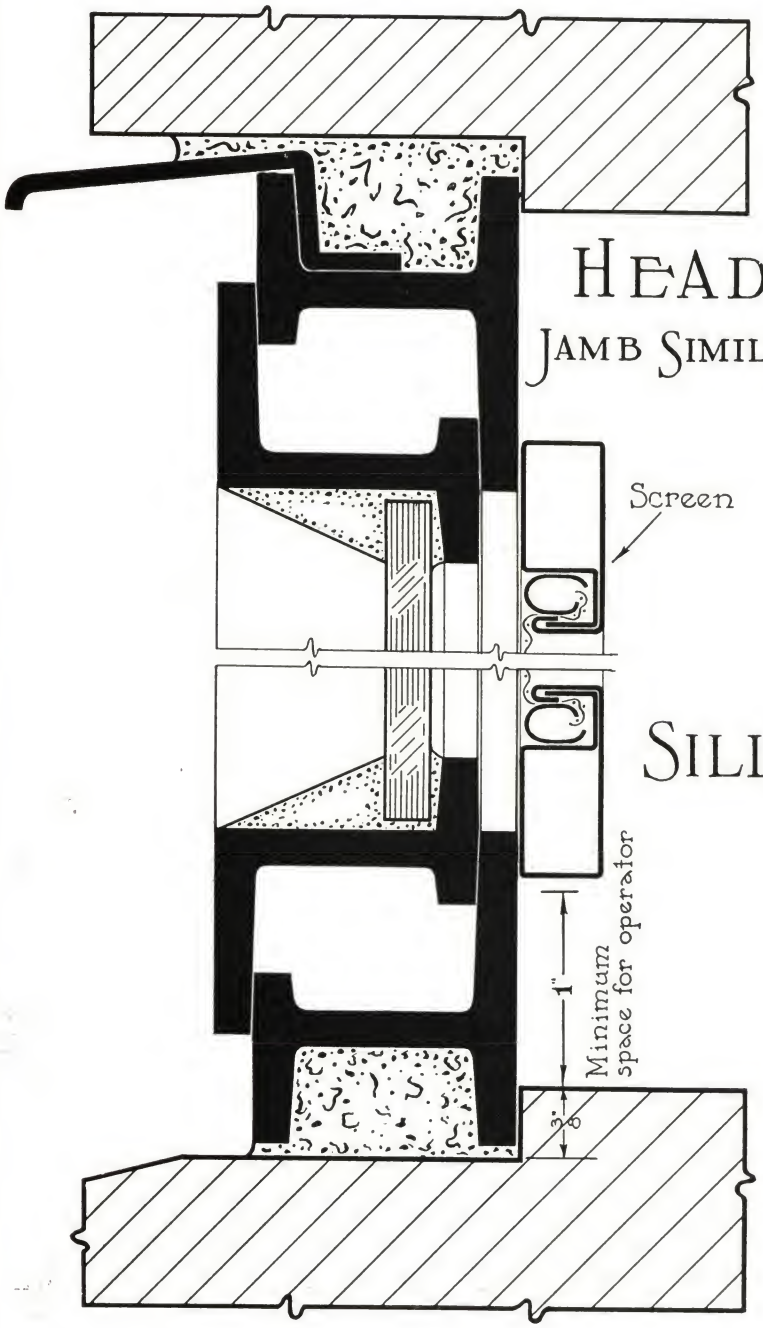
CASEMENTS ARE SIDE HINGED TO SWING OUT EXCEPT TYPE A WHICH ARE TOP HINGED TO PUSH OUT. THESE ARE MADE SIDE HINGED TO ORDER. ABOVE UNITS CAN BE CHANGED INTO VARIOUS COMBINATIONS; FOR EXAMPLE: T3 CAN BE PLACED OVER B4, C4 OR D4.

LUNDELL-ECKBERG MFG. CO., INC.

JAMESTOWN, NEW YORK.

MANUFACTURERS OF HIGH GRADE STANDARD AND CUSTOM BUILT STEEL CASEMENTS AND SOLID BRONZE CASEMENT HARDWARE. WRITE FOR OUR COMPLETE CATALOG.

LEMCO - STANDARD - SCREENED - CASEMENTS

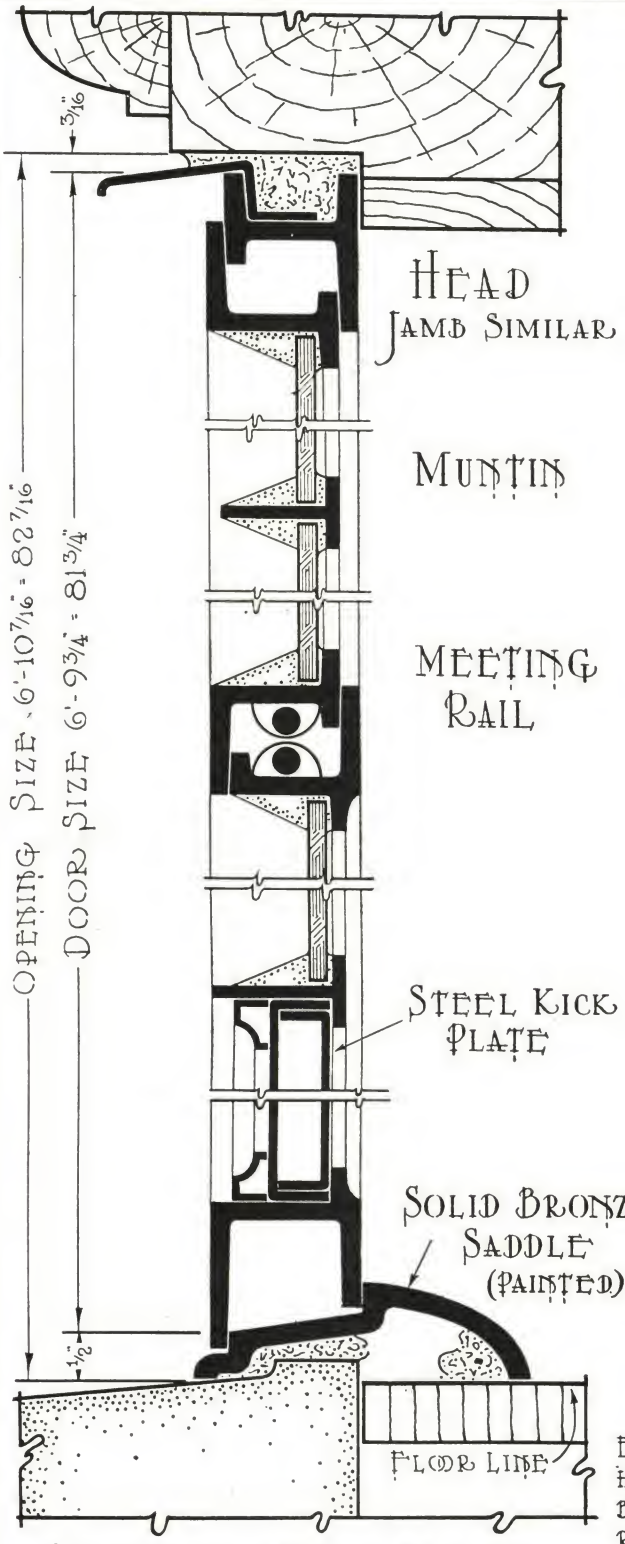


FULL SIZE DETAIL OF STANDARD SASH SHOWING APPLICATION OF SCREEN AND SILL CONDITIONS FOR OPERATORS ETC.



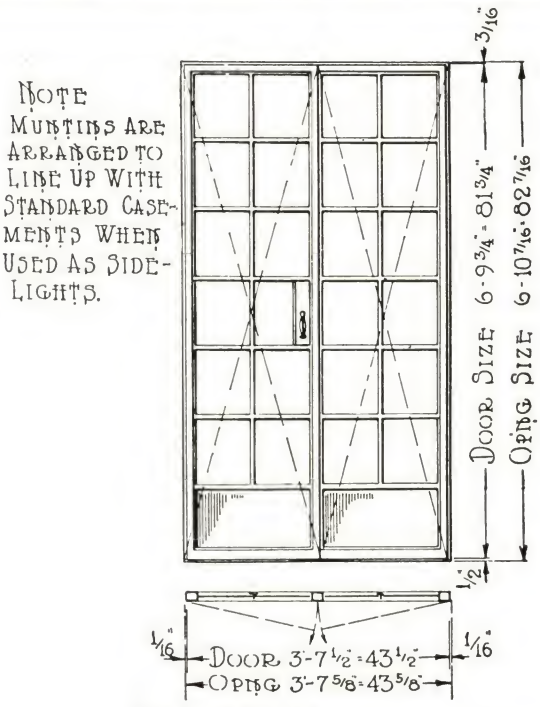
EACH UNIT OF THE NEW SCREENED CASEMENTS IS EQUIPPED WITH AN OPERATOR DESIGNED TO PERMIT EASY REMOVAL OF SCREENS AND FOR FACILITY IN WINDOW OPERATION. SEPARATE SCREEN IS FURNISHED FOR EACH UNIT. THESE SASH ARE FURNISHED IN STANDARD & SPECIAL SIZES.

STANDARD LEMCO DOORS

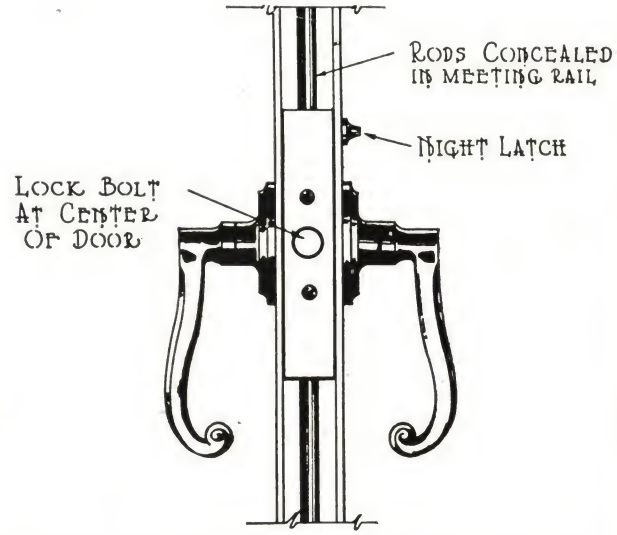


SECTION THRU DOOR

Scale ½ Full Size



ELEVATION SCALE 3/8" = 1'-0"



DETAIL OF ACTIVE LEAF OF MEETING RAIL SHOWING CONCEALED LOCK RODS

HARDWARE

EACH LEAF HUNG ON THREE 3" BRONZE BUTTS. RIGHT HAND LEAF FITTED WITH ALUMINUM LOCK BOX AND BRONZE LEVER HANDLES OPERATING CONCEALED RODS THAT LOCK DOORS AT HEAD AND SILL. DOORS ALSO LOCK AT CENTER. LEFT HAND LEAF FITTED WITH CONCEALED TOP AND BOTTOM BOLTS. FRICTION ADJUSTERS APPLIED TO HEAD OF EACH LEAF.

ESTABLISHED 1912 INCORPORATED 1931

MICHEL & PFEFFER IRON WORKS INC.

Manufacturers of Ariston Steel, Bronze and Aluminum Windows and Doors, also Ornamental Iron, Bronze and Aluminum

MAIN OFFICE AND FACTORY
Tenth and Harrison Streets
SAN FRANCISCO, CALIF.

FACTORY BRANCH OFFICE
337 South Anderson Street
LOS ANGELES, CALIF.

CABLE ADDRESS: "Mifer San Francisco"—Codes Used, Acme and Private

Ariston Steel Windows

Ariston Steel Windows have been developed for every purpose, and have been designed with care to meet the demands of the most exacting Architects and Owners.

Ariston Residential Casements are obtainable in Standardized, Architectural Medium Section, and Standard Heavy Section constructions, giving wide selection in standard and special designs and construction.

Ariston Office Type Windows are also procurable in four grades to care for every condition of economy and design, manufactured in steel. Ariston also offers bronze and aluminum windows.

Ariston Commercial Windows of flat section construction offer the maximum of rigidity, weathertightness and rust resistance. This flat section is especially designed to eliminate rust pockets and simplify painting procedure.

Ariston Service

Ariston's policy is service. Our facilities permit delivery of either stock or special items with a minimum of delay.

Ariston service extends to all and is ready to answer questions and lend assistance wherever specialized expert advice is required.

Service, more than any other commodity, is demanded by the Builder and Architect. And justly so, for in scheduling work on a building it is highly essential to avoid costly delays.

Ariston Hardware

Ariston hardware is *solid bronze* (U. S. Government mixture). This insures lasting quality in the window installation.



Residential Casement Window



Bassett Office Building, El Paso, Tex.

TROST & TROST, Architects and Engineers
ROBERT MCKEE, Contractor

Ariston standardized office windows used throughout. This marks the modern trend of business to steel. Neat in appearance, giving maximum light and ventilation



Architectural Projected Window

ARISTON METAL PRODUCTS

Miscellaneous Steel Work

STANDARD STEEL SERVICE STATIONS:
- Canopies
- Cleaning and Grease Racks
- Comfort Stations
- Single Buildings and Superstation Units
- All types carried in stock

PLATE WORK:
- Buckets, Boiler Breechings
- Bunker Gates, Mortar Boxes
- Concrete Hoppers and Skips
- Beams, Columns, Girders
- Sidewalk Doors, Conveyor Frames

WIRE WORK:
- Window Guards
- Elevator Shaft Guards
- Elevator Enclosures
- Machinery Safety Guards
- Partitions, Screens for Offices

Metal Windows and Doors

In Steel, Aluminum and Bronze

ARCHITECTURAL WINDOWS:
- Residential Casement Windows
- Detention Windows
- Burglarproof Windows
- Composite and Monumental Windows
- Combination Office Windows
- French Doors
- Shower Doors

COMMERCIAL WINDOWS:
- Horizontally Pivoted and Projected Windows
- Continuous Windows and Operators
- Mechanical Operators, Manual and Motor Operated
- Industrial Doors and Partitions
- Airplane Hangar Doors

Ornamental Metal Work

ORNAMENTAL IRON:
- Wrought Iron Front Entrances
- Steel Stairs, all types
- Spiral Stairs, Stair Railings
- Bond Iron, Joist Anchors
- Ornamental Cast Iron
- Elevator Cars and Enclosures
- Wrought Iron Folding Gates
- Grilles, Gates and Fences
- Hosepipe Casing, Joist Hangers
- Manhole Covers

ORNAMENTAL BRONZE AND ALUMINUM:
- Bank Screens
- Doors, Entrances, Gates, and Windows
- Chromium Plated Shower Doors
- Cast Bronze Tablets
- Mausoleum Fixtures

Catalogues and Detail Drawings Sent on Request

MILCOR STEEL COMPANY

MILWAUKEE, WIS. CANTON, OHIO

CHICAGO, ILL. KANSAS CITY, MO. LA CROSSE, WIS.

SALES OFFICES

BOSTON, MASS. DETROIT, MICH. ATLANTA, GA. LITTLE ROCK, ARK. MINNEAPOLIS, MINN.

NEW YORK, N. Y. LOS ANGELES, CALIF.

Products

ONE-PIECE STEEL BASEMENT WINDOWS, MILK and PACKAGE RECEIVERS, CLEAN-OUT DOORS.

MILCOR TRADE-MARK (Registered)

For our pages on Metal Tile Roofing and Metal Lath, Corner Beads, etc., see Manufacturers' Index.

Milcor One-piece Steel Basement Windows

Frame—Stamped from a solid sheet and formed without a joint. A solid integral flange projects from jambs, sill and head into masonry for anchorage and weathering. An integral fin on inside of jambs guides mason when setting the window and insures against fouling the sash.

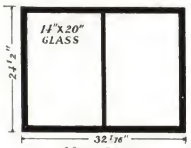
Sill—Special design provides protection against driving rain. Sill section slopes sharply downward and outward. Sloping and rounded corners prevent driven rain entering. At jambs, inside edge of frame is slightly turned in over sash providing further protection.

Sash—Formed in one piece, including hinge sections. Only glazing bars spot-welded in place. Glazing done from inside. Putty bed rests on channel formed when stamping sash. All Milcor steel sash are interchangeable in like frame sizes.

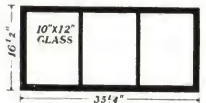
Lock—Type regularly used for double hung sash. Lever end is drilled for chain to hold window open.

Hinges—Cotter pins used for hinge coupling. Insures against unhinging as with open type hinges and makes sash easy to remove.

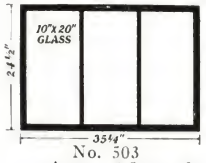
Bulletin—Write for bulletin giving complete description.



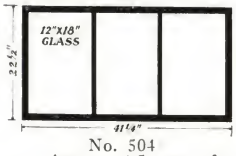
No. 501
Area: 2.5 sq. ft.
Shipping weight: 17 lb.



No. 502
Area: 4 sq. ft.
Shipping weight: 15 lb.



No. 503
Area: 4.5 sq. ft.
Shipping weight: 18 lb.



No. 504
Area: 4.5 sq. ft.
Shipping weight: 19 lb.

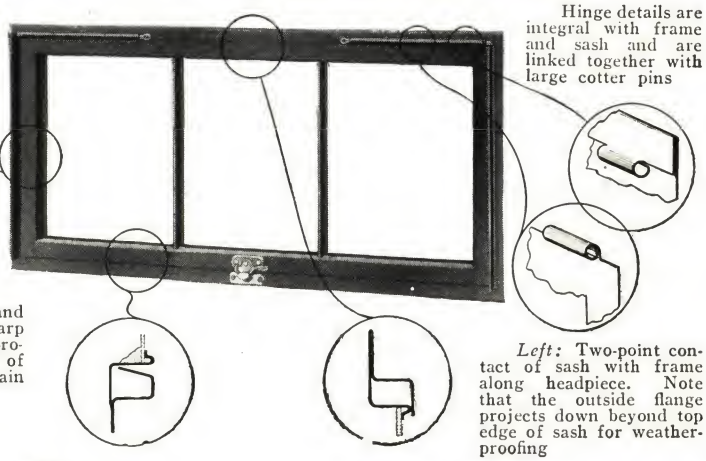
Frame and Glass Sizes

Note two-point contact of sash with one-piece frame at jamb insuring good weathering. Also channel where putty bed for glazing rests

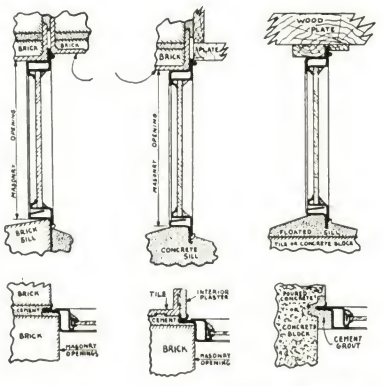


Right: Frame and sash detail. Note sharp drop of sill and protecting overhang of sash. Driving rain cannot enter

Hinge details are integral with frame and sash and are linked together with large cotter pins



Left: Two-point contact of sash with frame along headpiece. Note that the outside flange projects down beyond top edge of sash for weatherproofing

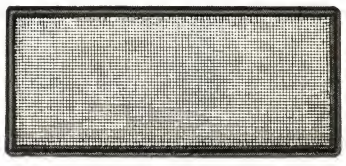


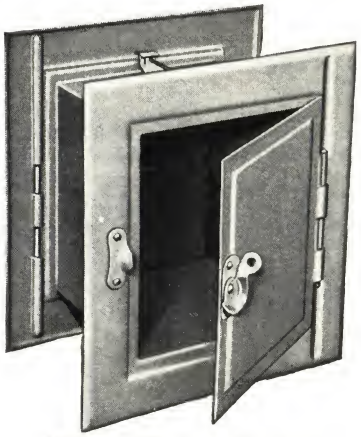
Installation Details

Right:
Milcor Steel Basement Window
Outside. Note wide anchorage flange



Right:
Steel Frame Screen for Milcor Basement Window
Screen frame screws tightly to window frame on outside, and is quickly secured in place or removed





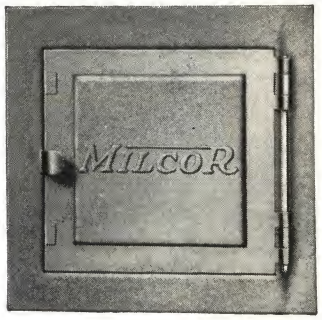
Milk and Package Receiver

Milcor Milk and Package Receiver

Milcor Milk or Package Receivers are made from the highest grade of copper alloy steel sheets stamped and drawn. The hinges are integral with door and frame, no riveting or welding being employed. They are unbreakable and will last forever. These containers will hold 6 or more quart bottles of milk, depending on the thickness of the wall in which they are installed. They consist of two frames and doors connected by an adjustable body sliding upon itself, permitting the necessary adjustment when installing. Locks or catches are of wrought steel and unbreakable.

Flue or Clean-out Door

Like the milk or package receivers these clean-out doors are stamped from heavy copper alloy steel sheets. Hinges are integral with frames and doors and no riveting or welding is employed. Catches are of wrought steel. The whole is unbreakable and everlasting.



Flue or Clean-out Door

ESTABLISHED 1884

THE PHILADELPHIA SUPPLIES CO., INC.

SUCCESSORS TO P. DEISSLER & BRO.

All-metal Window Frames and Pivoted Window Ventilators

1741 North Sixth Street, PHILADELPHIA, PA.

Products

Sole manufacturers of the P. Deissler & Bro. patented PIVOTED VENTILATORS; METAL FRAMES for church windows and the leaded glass trade.

BASEMENT WINDOW VENTILATORS for masonry or wood construction.

Also Skylights, Domes, and all other kinds of wrought iron work used in the leaded glass trade.

Improved Type All-metal Built-in Window Frames

Frames are made of steel or wrought iron as desired; finish is either painted or galvanized. They are built in as the building is in course of construction and make a rigid and everlasting weatherproof job. They are made in all styles—square, round or gothic top, and in any size or weight material desired. Used for leaded, plate, wire, ribbed or prism glass. They can also be furnished in brass, bronze and aluminum.

Frames are made for storm glass outside and leaded glass inside or for single glazing.

Ventilators can be put in the top, center or bottom of frames, and the inside swinging frames can be removed for glazing.

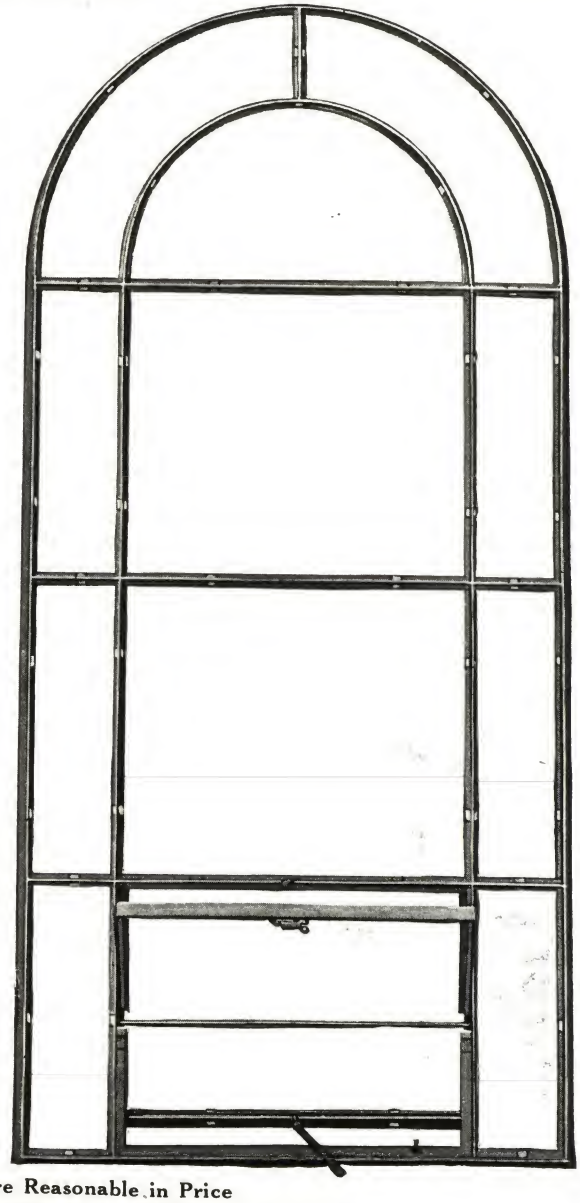
"Deissler" Improved Pivoted Ventilators

These ventilators have been specified for over 40 years as the standard church window ventilator. They are made of steel or wrought iron angles for single or double glazing and can be used for leaded, plate, wire, ribbed or prism glass. The inside frame of ventilators can be taken out and bars put in to suit the design. Finish is either painted or galvanized.

Where ventilators are in reach they are provided with spring lock at the top and lug at the bottom with strap for adjusting extent of opening. Ventilators out of reach should be specified with bottom heavy, self-closing; these are for the intermediate and bottom sections of windows. They are equipped with lock, pulley, bracket and chain fastener attached to the ventilator and are operated from the side with a chain. This eliminates the objection of cords or chains obstructing the design or view of the window.

Ventilators can also be furnished in brass, bronze and aluminum.





Two Designs of Frames That Are Reasonable in Price

We also make special designed metal frames—any style, size or weight material desired

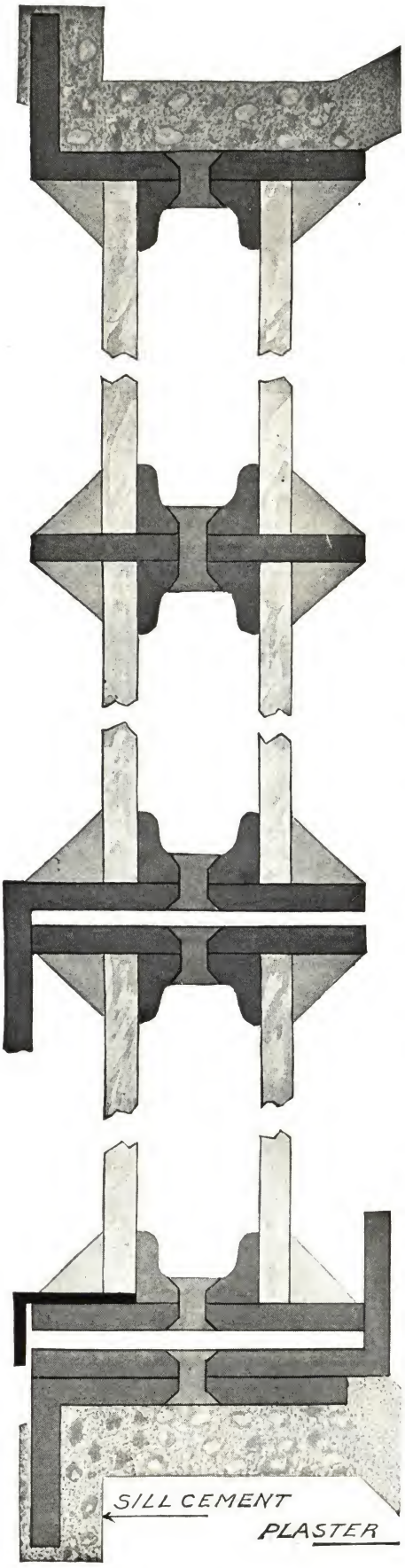


Fig. 1—Sectional View
(Full size)

Fig. 1. Sectional View (Full Size)

Illustrates a section of a metal frame for outside storm sash and inside leaded glass glazing. The double bottom ventilator shown is pivoted in the center to swing in at the top. Specify Catalogue No. 10 for double bottom ventilators where operation of sash is by spring lock at top and adjusting lug at the bottom; for the bottom heavy self-closing type adjusted by chain at the side, specify Catalogue No. 38.

Fig. 2. Sectional View (Full Size)

Illustrates a section of a Te-iron metal frame for single glazing. Type illustrated is for building into masonry openings but it can be made with angle iron all around and screwed into rough wood openings. Can also be used where wooden frames have a rabbet in which case the angle iron on the outside is not required as the frames have turned ends on the mullion bars which can be screwed direct to the wood.

The ventilator is also for single glazing and pivoted in the center to swing in at the top.

Specify Catalogue No. 1 ventilator for the bottom; No. 2 for the middle, and No. 3 for the top. Hardware can be furnished the same as described for the Nos. 10 and 38 Double, Double Bottom Ventilators described above.

Information Required for Estimates

All-metal Window Frames — Send blue prints and specifications with list of bidders. Any charge for these will be gladly remitted.

Pivoted Window Ventilators—The quality of ventilators and style wanted; and if for leaded glass, give bar sizes.

The sizes should be taken from the outside of angle iron, giving the width first, then the height. For rabbeted work, sizes should be taken full size.

In grooved mullions or jambs, the sizes should be taken daylight size.

State if ventilators are to be placed in top, middle or bottom of window, and if they fit in wood all around; and, also, if they are to be painted or galvanized.

For domes, skylights or iron work, send sketches.

Sizes, shapes and quantities vary so considerably, that it is impossible for us to issue a reliable price list. We will be glad to prepare a special estimate on receipt of specifications and quantities.



Patented Jan. 25, 1927

No. 38 Bottom Heavy Self-closing Ventilator

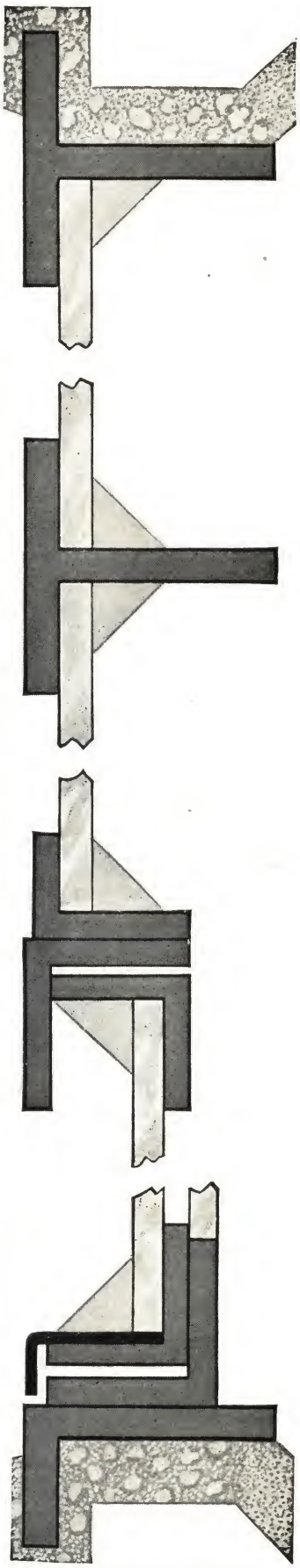


Fig. 2—Sectional View
(Full size)

Details of P. Deissler & Bro. Pivoted Ventilators and Metal Frames

The Improved Projection Type, Built-in Window Frames and Ventilators for Public Buildings and Churches

No. 60 Frame for Double Glazing—The No. 60 frame is our improved built-in steel frame with the projection type ventilators. Most adaptable for double glazing—for leaded glass inside with storm glass on the outside. Projection ventilators can be made to project outward or open inside.

The frame and ventilators are absolutely weatherproof. They can be arranged to hold glass with glazing clips, spring clips, or glazing beads. Be sure to specify which you wish, as the glazing beads come slightly higher in price.

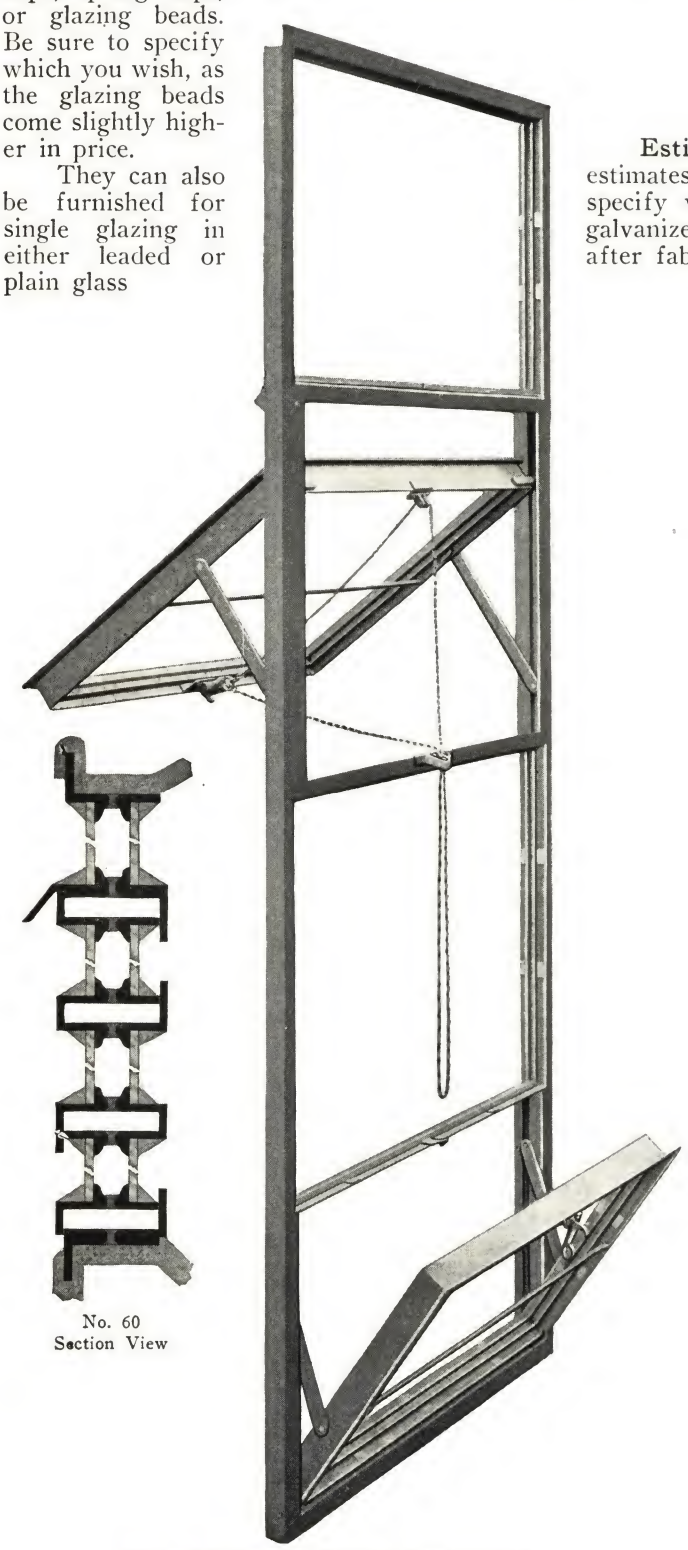
They can also be furnished for single glazing in either leaded or plain glass

No. 61 Frame for Single Glazing—The No. 61 frame is our improved built-in steel frame with projection type ventilators. Most adaptable for single glazing.

The frame and ventilators are absolutely weatherproof.

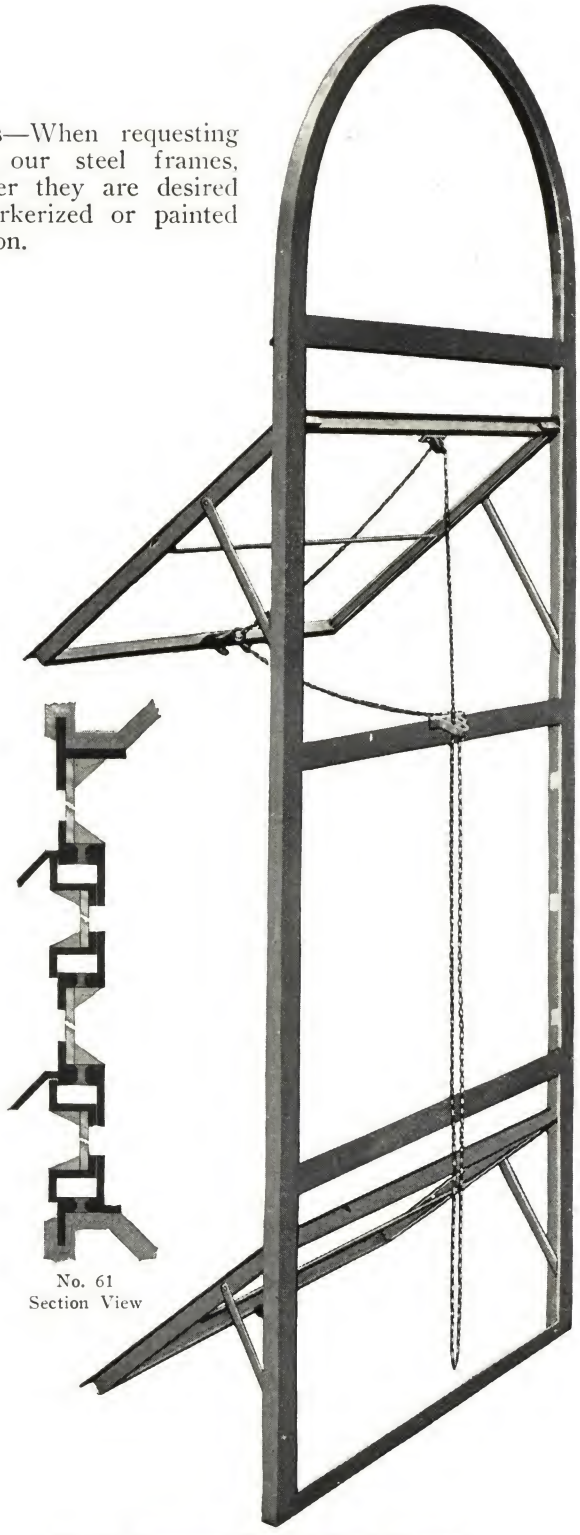
Frame can be furnished in either round top gothic head or square.

Estimates—When requesting estimates on our steel frames, specify whether they are desired galvanized, parkerized or painted after fabrication.



No. 60
Section View

No. 60 Improved Built-in Steel Frame



No. 61
Section View

No. 61 Improved Built-in Steel Frame

S. H. POMEROY CO. INC.

Double Hung Metal Windows in Steel and Bronze

280-296 East 134th Street, NEW YORK, N. Y.

LOCAL REPRESENTATIVES

ATLANTA, GA., George Dowman & Co., 462 Highland Avenue, N. E.
BIRMINGHAM, ALA., J. O. Burks, 1008 Martin Building
BOSTON, MASS., Skillman & Sunderland Co., 1042 Little Building
BUFFALO, N. Y., Wm. Kraetz, 505 Delaware Avenue
CHARLOTTE, N. C., W. Fred Casey & Co., 507 No. Tryon Street
CHICAGO, ILL.
CINCINNATI, OHIO, L. D. Zellner Co., 622 Broadway
CLEVELAND, OHIO, Mills Co., 965 Wayside Road
COLUMBUS, OHIO, Alvan Tallmadge, 63 Parkwood Avenue
DALLAS, TEX., Pinkston-Mason Co., 710 Construction Building
DETROIT, MICH., J. W. Rollinson Specialties Co., 2270 Penobscot Building
MINNEAPOLIS, MINN., John F. Hurley Co., 711 National Building
NEW ORLEANS, LA., J. T. Mann & Co., Inc., 319 Dryades Street
PHILADELPHIA, PA., Thos. S. Gassner Co., 4545 Wayne Avenue
PITTSBURGH, PA., Norman C. Brown, Park Building
RICHMOND, VA., James S. Archer, 202 Davis Building
ST. LOUIS, MO., John Wasson Co., Paul Brown Building
SAN FRANCISCO, CAL., H. E. Root, 639 Howard Street
TAMPA, FLA., Stovall & Archer, 1009 Peninsular Telephone Building
WASHINGTON, D. C., A. B. Gilbert, 1427 Eye Street, N. W.

IN CANADA: Cresswell-Pomeroy, Ltd., 3989 St. Ambroise Street, MONTREAL, P. Q.

STANDARD TYPE DOUBLE HUNG WINDOWS



University of Montreal, Montreal, Canada

ERNEST CORMIER, Architect — DAMIEN & BOILEAU, Contractors

Nearly 5700 Integral weatherstripped "Standard Type" double hung steel windows installed in this building. This we believe to be the largest double hung metal window contract awarded in the British Empire

A Pioneer Manufacturer of Metal Windows

The S. H. POMEROY CO. INC., is a pioneer manufacturer of metal windows. It has been engaged in perfecting window design and adaptability for over 30 years, during which time many prominent installations have been made. It now offers its—

"Standard Type" Double Hung Window

Rust-resisting Metal—This window is made throughout of hot dipped galvanized copper-bearing steel. It is painted with a special galvanized iron primer made to our order.

Note: Committee A-5 American Society for Testing Materials:

"We have now reached a point where we may definitely conclude that copper-bearing metal shows marked superiority in rust-resisting properties as compared to non-copper-bearing metal of substantially the same general composition . . . under atmospheric exposure."

Distribution of Metal—Structural and wearing portions of frame and sash of 14 and 18-gauge metal, viz.: sill, 14-gauge; pulley stiles, head and sash stiles, 18-gauge; jamb boxes and rails of sash, 20-gauge.

Weathering—Two-point contact inside and out entire perimeter of both sash, making double weathering.

Light—Due to small sash and frame members, maximum sight glass area is obtained. Width of standard muntin 1 in., Underwriters' muntin 1¾ in.

Appearance—Compare the slender lines, the simplicity, dignity of design and workmanlike finish with other metal windows. Note the absence of rivet and screw heads, bolts, etc. All exposed screw heads on interior are countersunk.

Economy—In the "Standard" window we offer to the building public, wherever located, a double hung metal window of unsurpassed merit and at a price so surprisingly close to wood windows that their use must now become universal.

Sample Window on display at Architects Sample Corp., 101 Park Avenue, New York, N. Y.

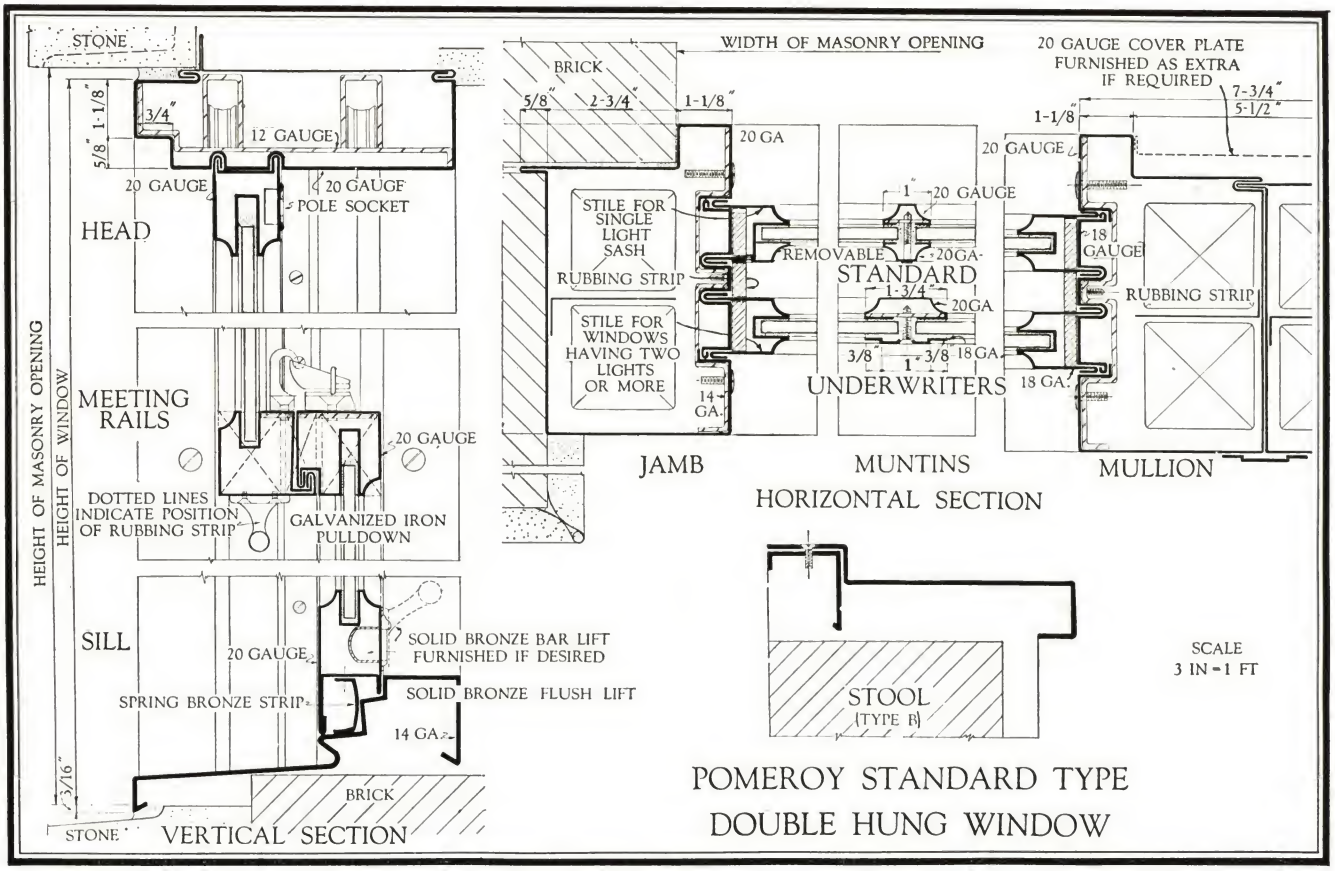
Air Infiltration

This window has been designed and constructed with the idea of insuring against excessive infiltration of air.

Subjected to test made at the University of Wisconsin by Professors Edward Anderson and G. C. Wilson, under the supervision of Professor G. L. Larson, in a manner similar to that described in the Journal of the American Society of Heating and Ventilating Engineers, June, 1924, the amount of infiltration of air through a standard double hung window proved to be less than two-thirds of a cubic foot of air per foot of sash perimeter per minute when subjected to static air pressure equivalent to air pressure exerted by a wind of twenty-five miles per hour.

This minimum amount of infiltration of air is accomplished without any added weatherstripping, device or appliance, with their additional cost.

This amount of air leakage is not discernible to a person standing on the room side of a window without the aid of a mechanical recording instrument.



Specification for Standard Type Double Hung Metal Window

Scope—Furnish and install, where shown on drawings, double hung Standard Type windows as manufactured by S. H. Pomeroy Co. Inc., of New York City.

Material—All windows to be constructed throughout of copper-bearing hot dipped galvanized steel. Sills shall be of 14-gauge, jambs of 20-gauge, pulley stiles 18-gauge, heads 18-gauge, side rails of sash and inside muntin caps 18-gauge, cross rails of sash 20-gauge.

Frame Construction—Head, sill and jambs shall be rolled and formed as shown of one piece of metal, exclusive of pulley stiles and closure strips at head. All members shall be formed straight and true, neatly mitered, lapped and properly interlocked to their respective intersecting parts. The hanging stile shall be flat and 1⅛ in. in width. The interior jamb face shall be flat and 3⅜ in. wide. Depth of frame from inside to outside of hanging stile shall be 6⅝ in. Pulley stiles shall be formed with deep weathering grooves and shall be removable to permit of access to weight boxes and pulleys, and held in position by flat head countersunk screws. These screws, and two others on each jamb face, shall pass through heavy reinforcing plates spanning the inside of jamb box. With the exception of these screws no other screw heads, nuts, bolts or rivets shall appear on frame.

Sash Construction—Sash shall be moulded and of tubular design 1¼ in. thick. Stiles shall project not more than 1¼ in. beyond the inner face of the jamb, making the total distance from masonry jamb to sight line of glass 2½ in. Stiles and rails shall be constructed of one piece of metal moulded and neatly mitered, lapped and properly welded and interlocked. Side rails shall be of open construction with each flange being formed with a returned edge projecting into and operating in the weathering grooves of pulley stiles. Top sash rail shall be formed with flanges which shall engage in weathering grooves in soffit of the head. The bottom rail shall be equipped with a spring bronze weatherstripped member as shown making positive contact between same and sill. Meeting rails shall not be more than 1¾ in. deep and constructed with flanges forming interlocking contact. Glass rabbets in side and bottom rails shall be ¾ in. deep. Those occurring in top rails of upper and lower sash shall be 1⅜ in. deep. Where sash are to be glazed with one light of glass, side rails shall be constructed with removable inside glazing beads which shall be held in place with flat head countersunk machine screws.

Muntins—Exterior muntin bar shall be moulded and reinforced with 14-gauge steel lugs. Interior caps shall be flat or moulded and held in place by flat head countersunk machine screws passing through the reinforcing lugs of exterior member.

Hardware Equipment—Frames shall be equipped with solid steel bronze bushed pulleys, contained in 12 and 14-gauge steel housings. Sash shall be hung on substantial sherardized steel sash chain and properly counterbalanced by cast iron weights. Sash shall be equipped with one pair of projecting or flush bronze lifts, one malleable iron bronze plated sash lock. One bronze pull down on lower rail of upper sash or pole socket in top rail of upper sash.

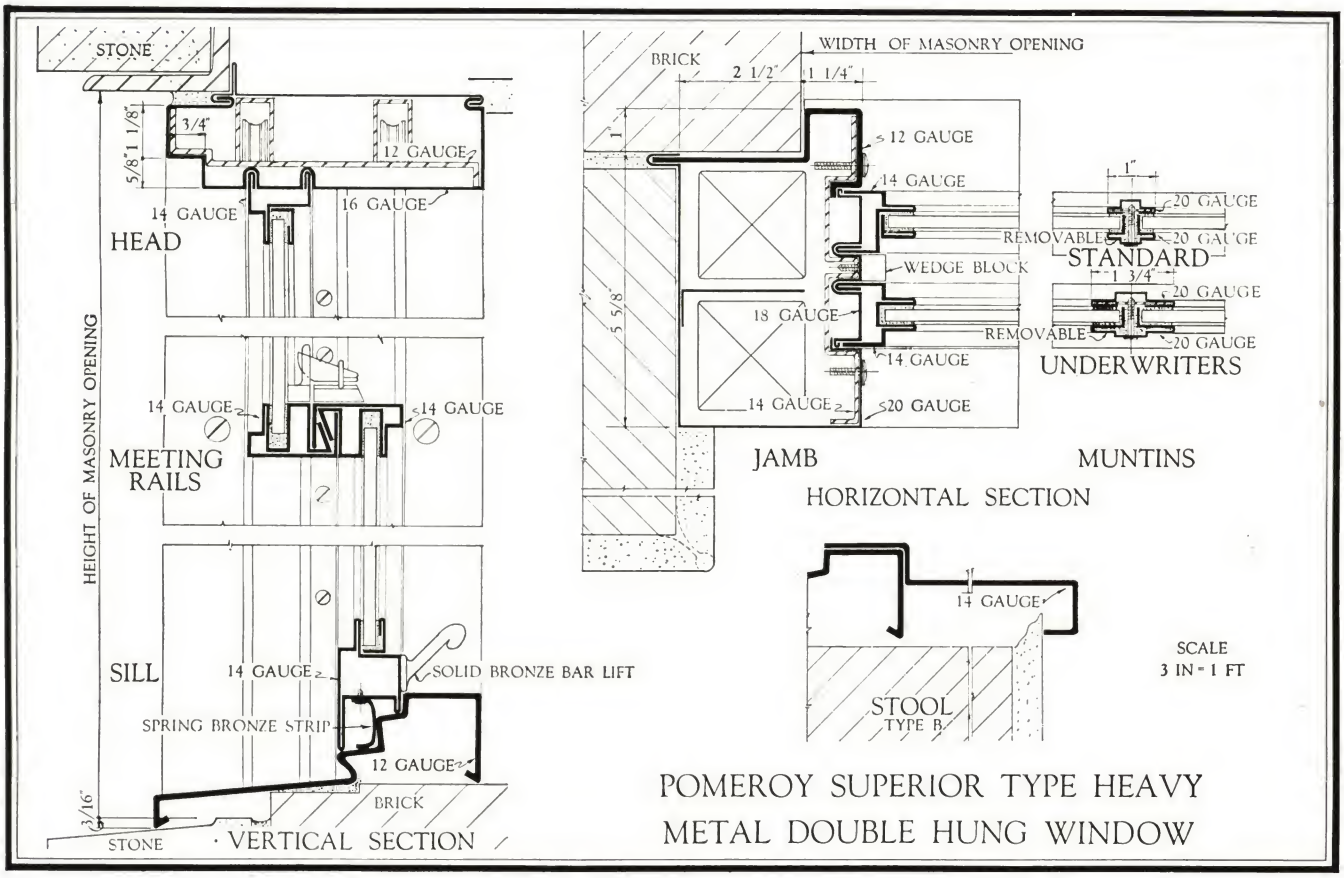
Painting—Frames and sash throughout shall be given one shop coat of manufacturer's specially prepared metallic primer baked on before delivery.

Note: If Underwriters' label is desired the following should be incorporated: "Windows shall be constructed in accordance with requirements of the National Board of Fire Underwriters and shall bear their label of approval, as well as label of the manufacturer."

Note: If it is desired to construct this window of bronze, please write for specification, giving gauges of metal, etc.

POMEROY SUPERIOR TYPE DOUBLE HUNG WINDOW

New Heavy Metal Window—Pomeroy announces its new houble hung *heavy metal* integral weatherstripped "Superior Window." A window architecturally correct in design and appearance, affording maximum light and ease of operation. "The Aristocrat of the Window World"—which hesists *time, wind, water, dust* and *fire.*



Specification for Superior Type Heavy Metal Double Hung Window

Scope—Where shown on drawings, windows are to be Double Hung Heavy Metal Integral Weatherstripped "Superior" Type, as manufactured by S. H. Pomeroy Co., Inc., New York, N. Y.

Material—All windows to be constructed throughout of copper-bearing hot dipped galvanized steel. The sill, hanging stile and exterior wall face of jamb box shall be of 12-gauge, head 16-gauge, pulley stiles 18-gauge, interior jamb box 20-gauge, stiles and rails of sash 14-gauge, muntin bars and caps 20-gauge.

Frame Construction—Head, sill and jambs shall be rolled and formed as shown of one piece of metal, exclusive of pulley stiles and closure strip at head. Sill to be of the easy cleaning type, formed as shown with two vertical risers making three-point contact with sash rail, and in addition to have undercut wash to quickly dissipate water. All members shall be formed straight and true, neatly mitred, lapped and properly interlocked to their respective intersecting parts. Hanging stile shall be flat and 1¼ in. width. Interior jamb face shall be flat and 3⅞ in. wide. Depth of frame from inside to outside of hanging stile shall be 6⅞ in. Pulley stiles shall be formed with deep weathering grooves and shall be removable to permit of access to weight boxes and pulleys and held in position by flat head countersunk screws. These screws and two others on each jamb face shall pass through heavy reinforcing plates spanning inside of jamb box. With exception of these screws no other screw heads, nuts, bolts or rivets shall appear on the frame.

Sash Construction—Sash shall be rolled straight and true, forming moulded design 1¼ in. thick. Stiles to project not more than 1¼ in. beyond inner face of jamb to sight glass line. All sash members shall be made of one piece of metal neatly mitred, lapped and properly welded and interlocked, making a workmanlike finish. Sash stiles shall be of open construction as shown with the metal of the weathering flange returned upon itself affording a rounded traveling surface engaging and operating in deep weathering grooves of pulley stiles. Top sash rail shall be formed with flanges which shall engage in weathering grooves in soffit of the head, and bottom rail shall be equipped with a spring bronze weatherstrip member as shown, making positive contact between same and sill. Meeting rails shall not be more than 1⅛-in. depth forming an interlocking 3-point contact type. Glass rabbets in stiles and rails of sash shall be not less than ¾ in. deep. Where sash are to be glazed with one light of glass, the glass shall be held in place by, and sash members so constructed to receive, inside glazing beads, which are to be held in place by clips, eliminating use of screws.

Muntins—Exterior muntin bar and interior cap shall be rolled straight and true and moulded as shown. Exterior bar being reinforced with 14-gauge steel lugs and the interior cap held in place by 19/24 oval head machine screws passing through the reinforcing lugs of the muntin bar.

Hardware Equipment—Frames shall be equipped with solid steel self-oiling bronze bushed pulleys contained in 12 and 14-gauge steel housings. Sash shall be hung on substantial sherardized steel sash chain of standard manufacture and properly counterbalanced by cast iron weights. Sash shall be equipped with one pair of solid bronze projecting type lifts, one solid bronze sash lock and one bronze pulldown on lower rail of upper sash, or pole socket at top rail of upper sash—with exception of where windows are to bear the Underwriters' label of approval, then the sash locks are to be malleable iron bronze plated.

Painting—Frames and sash throughout shall be given one shop coat of manufacturer's specially prepared metallic primer baked on before delivery.

Note: If Underwriters' label is desired the following paragraph should be incorporated:

"Windows shall be constructed in accordance with requirements of the National Board of Fire Underwriters and shall bear their albel of approval, as well as label of the manufacturer."

Note: If it is desired to construct this window of bronze, please write for specification.

RICHEY, BROWNE & DONALD, INC.

Manufacturers of the Browne Window
52-15 Flushing Avenue
MASPETH, CITY OF NEW YORK

REPRESENTATIVES

ATLANTA, GA., Geo. Dowman & Co., 462 Highland Ave., N. E.
BALTIMORE, MD., Frank E. Black, 1116 Lexington Bldg.
BOSTON, MASS., J. Lincoln Collins, 120 High Street
CHICAGO, ILL., Charles L. Morse, 2309 Commonwealth Avenue
CINCINNATI, OHIO, Durbrow & Otte, 206 West Court Street
CLEVELAND, OHIO, Vance Hives & Co., 1240 East 135th Street
COLUMBUS, OHIO, B. M. Freeman Co., 42 East Gay Street
DALLAS, TEX., Universal Building Products Co., 304 Construction Bldg.
DES MOINES, IOWA, Tower Materials Co., 522 Hubbell Bldg.
DETROIT, MICH., Wm. T. Nelson, 1209 Francis Palms Bldg.
HARTFORD, CONN., Bidwell Hardware Co., 1293 Main Street
HOUSTON, TEX., Bayer-Voigtlander Co., 1112 Wood Street
KANSAS CITY, MO., E. C. Marqua Co., Fairfax Bldg.
LOS ANGELES, CALIF., C. P. Helpman, 722 Story Bldg.
LOUISVILLE, KY., Thos. L. Barret, 112 So. 2nd Street
MIAMI, FLA., Metal Products Co., 60 Northeast 27th Street
MILWAUKEE, WIS., S. A. Smith, 1012 No. 3rd Street
PHILADELPHIA, PA., Morrell G. Biernbaum, 920 Stephen Girard Bldg.
PITTSBURGH, PA., J. Willis Dalzell Co., 725 Grant Bldg.
ST. LOUIS, MO., H. C. Uhlenhaut, 2144 Railway Exchange Bldg.
ST. PAUL, MINN., Roy E. Milham, 2128 Berkeley Avenue
SAN FRANCISCO, CALIF., Gates-Tatterson Co. Inc., 557 Market Street
SEATTLE, WASH., Harris-TeRoller, Inc., Marion Bldg.
SYRACUSE, N. Y., Roesch & Asso., Inc., 938 University Block
VANCOUVER, B. C. (Canada), Wm. H. O'Neil Co., Ltd., 530 Howe Street

BROWNE WINDOWS OF COPPER BEARING STEEL, EXTRUDED ARCHITECTURAL BRONZE AND EXTRUDED ALUMINUM ALLOY

Fireproof, Weatherproof and Dustproof

Operation of Browne Windows—Built on principles that produce positive results in operation and in overcoming air leakage. The windows may be in groups of one or more pair of sash as desired.

Browne Fire Windows—Same in general appearance, and bearing labels of Underwriters' Laboratories, Inc.

Browne Psychiatric Type Windows—With tee-bar muntins and stops to limit opening. These eliminate need of restraint bars or guards.

Other Types of Browne Windows—These windows are made in a wide range of types and sizes appropriate for office buildings, hospitals, school and university buildings, public buildings, department stores, industrial buildings, apartments, hotels, homes, etc.

Samples—Browne Windows are on display at the following places:

Architects' Samples Corp., New York, N. Y.
Architects' Exhibit Corp., Boston, Mass.
Architects' & Builders' Exhibit, Buffalo, N. Y.
Architects' Exhibit, Inc., Cleveland, Ohio.
Architects' Exhibit, Inc., Detroit, Mich.
Metropolitan Builders' Exhibit, Seattle, Wash.

GENERAL DESCRIPTION OF BROWNE WINDOWS

Sash are firmly hinged together to open (outwardly) and shut under symmetrical control of hinged arms attached to a stationary vertical bar. The arms afford absolutely rigid support. A simple catch fastens sash when window is closed.

Heavy felt weatherstripping is an integral part of the construction.

Every window is assembled at factory, tested for accuracy and shipped a complete unit including weatherstrips.

Browne windows require no special skill for setting and are readily glazed after installation.

Hardware—Furnished by us. Bronze handle shipped loose to be applied at the job by contractor.

Glass—Should be furnished and set by glazing contractor.

Painting—All steel parts receive one shop coat of paint before shipment.

All finishing coats should be applied by the painting contractor.

BROWNE WINDOW ADVANTAGES

Maximum Light and Vision—Sash are continuous from sill to head with no obstruction from horizontal meeting rails.

Ventilation—Ideal changing of air without drafts. The sash control forms flue that draws out all impure air, which is automatically replaced with fresh air. A pleasant quality of ventilation is obtained by bowing sash open to maximum of seven or eight inches. This gives fresh air intake at bottom, exhaust at top, with no opening at sides.

Weather Protection—The airtight and dustproof qualities of the windows have been established under laboratory test.

Noiseproof—Thick felt contact cushions practically shut out street noises when window is closed.

Safety—All parts of the sash are accessible from the inside. The expense and danger of outside window cleaning and painting are eliminated.

Simplicity—No track mechanism for the accumulation of dirt and water. No weight boxes to invite drafts and annoyance from noise; no chains, weights or pulleys to get out of order; no rattling of parts when open or closed.

Contact—No metal to metal weathering contact. The contact in all cases is metal to felt.

Service—Continuous and lasting, with no danger of sagging, warping, racking or wearing off paint.

Operation—Smooth, easy, noiseless; with slight physical effort the sash may be opened to any desired angle. Releasing catch handle, pushing sash partly open and a slight pull at the edges of sash towards center opens window full extent. Pushing edges of sash away from center brings handle within easy reach for closing and locking. The handle is a most convenient latch attachment and is intended for this use only. Where windows can not be reached from the floor, our standard

operator may be applied, locking window in any position.

Strength—All parts are sturdy and substantial; the greatest care is taken in the construction and assembling to insure rigidity and permanence.

Curtains, etc.—Curtains, shades, Venetian blinds, and inside screens may be applied as for ordinary sash.

Economy—Minimum cleaning and maintenance costs; assurance of maximum results from heating arrangements; and fuel saving due to dependably tight openings are prominent features.

SPECIAL FEATURES OF BROWNE WINDOWS

Felt Weathering Cushions—Permanent, resilient, waterproof, pure wool felt weathering cushions securely held and cemented in deep recesses. A metal to metal weathering contact can never develop. All weathering contacts are, and will remain, metal to felt. Rubbing contacts cannot develop. All are butt contacts with sash members deeply seated into felt cushions.

Roller Latch and Handle—Made of bronze for steel and bronze windows; of aluminum for aluminum windows. The handle is located on the sash at convenient height and engages with a free operating roller latch secured to center bar. These insure easy locking of the window with nothing to get out of order.

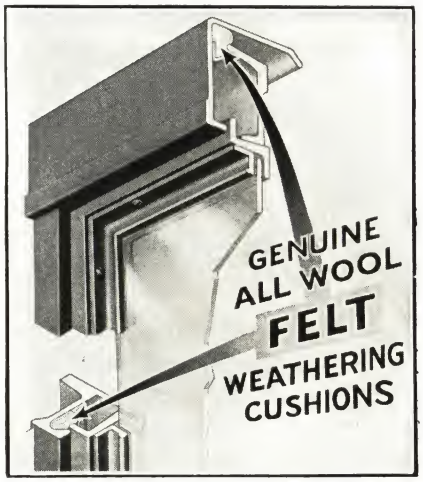
Holdfast Hooks—Three staunch holdfast hooks are located within easy reach and are designed to hold sashes open in bowed position at varying degrees as required by weather conditions. With these hooks engaged, there is air intake at bottom, exhaust at top, and no openings at sides.

Guide Members and Rails—Guide rails are located at head and sill members of frame and rustproof guides are secured at each outward corner of sashes, making contact with guide rails. These are permanently adjusted at factory to secure ease of operation without rattling.

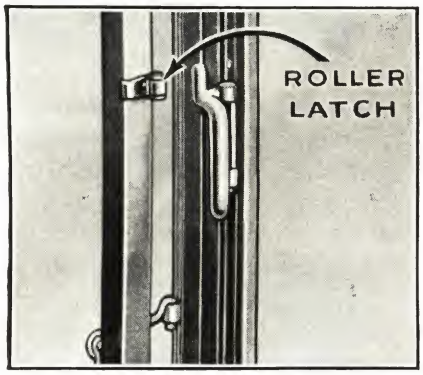
Center Bar, Hinge Arms and Butt Hinges, the Essence and Individuality of the Browne Window—The frame is of specially designed sections with a substantial center bar to which the drop forged hinge arms are attached. The ends of these hinge arms are pivotally attached to the center of the sash rails top and bottom. The two sashes are hinged together with heavy butt hinges.

This assembly gives perfect and permanent alignment and symmetrical control of the sashes. These features are the *essence* and *individuality* of the Browne Window principle.

Full size details, specifications and complete information furnished on request



Left:
Position of Permanent Felt Weathering Cushions

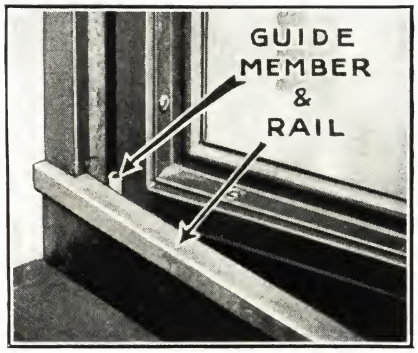


Roller Latch and Handle Insure Easy, Trouble-free Locking

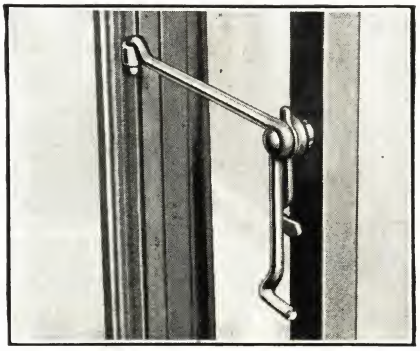


Typical Office Building Installation

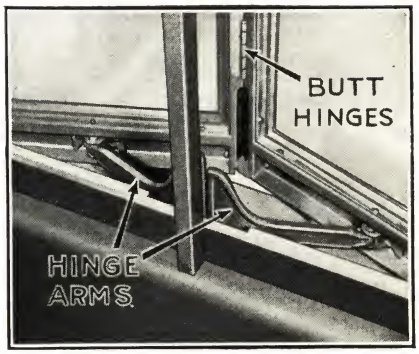
Browne Window bowed-open to extent of longest holdfast hook—giving fresh air intake at bottom, exhaust at top—and no opening at sides to disturb draperies, etc.



Guide Member and Rail Insure Quiet, Easy Operation



Holdfast Hooks for Adjusting Sashes



Center Bar and Hinge Arms Insure Symmetrical Control

SOULÉ STEEL COMPANY

LOS ANGELES, CALIF. SAN FRANCISCO, CALIF. PORTLAND, ORE. HOUSTON, TEXAS

SALES OFFICES IN PRINCIPAL CITIES

Member Solid Section Steel Window Industry

Products

Residence Casements
Residence Casement Screening
Patented Weatherstripped Windows
Casement Doors
French Doors
Heavy Section Windows
Office Type Windows
School Windows
Subframes
Double Hung Windows
Horizontal Pivoted Windows
Commercial Projected Windows
Underwriters' Labeled Windows
Architectural Projected Windows
Continuous Top Hung Windows
Fire Escape Windows
Entrance Doors
Basement Windows
Operating Devices
Industrial Doors (swinging and sliding types)
Underwriters' Fire Doors
Airplane Hangar Doors
Folding Doors and Gates
Bifolding Doors
Sheet Metal Skylights
Sheet Metal Vent Ducts

Standardized Industrial Windows and Doors

As members of the Solid Section Steel Window Industry (listed in Manufacturers' Index), we manufacture our commercial products in conformity with the standardization and simplification program of the United States Department of Commerce. This standardization expedites service and greatly reduces the cost of producing steel windows of the highest quality.

Specialized Windows and Doors

In the following pages we have attempted to give sufficient data about some of our specialized windows to enable the architect and the builder to select the types most suitable to their purposes. In addition to the information given here we have prepared a number of special catalogues, illustrated with photographs and drawings of typical installations, that give complete detailed information about all our products in each classification. These catalogues will be furnished on request.

In construction of distinctive character our engineering staff, through years of practical experience in meeting varied problems of the building industry, can often provide information that greatly facilitates the preparation of plans. This cooperation is always at your command.

Protection of Products

Before shipment all Soulé Windows and Doors are given a shop coat of high grade paint to protect the products until they are installed. After installation, we recommend that at least two coats of high quality mineral paint be applied by the painting contractor. Hardware is boxed securely and shipped with the units to which it is to be applied in the field.

Erection

We strongly recommend that we erect all important installations of our products, particularly specialized items. Our erection service is available throughout the country.

Standardized products may be installed without difficulty by any builder. We will furnish installation details free of charge with any of our products.

Glazing

Proper glazing of steel windows is a very important part of any satisfactory installation. Special steel window putty must be used to insure correct setting and strength. We recommend tinting the putty with dry colors instead of painting its surface. Spring wire glazing clips are furnished with all Soulé Windows unless screwed on glazing angles or beads are specified.

Screening

Efficient screens for commercial projected windows are manufactured by Soulé Steel Company to the following specification:

Specification—Windows where indicated on plans or hereinafter specified shall be provided with Soulé metal frame screens with 16-mesh copper-bronze wire cloth. Screen frame for projected out ventilators shall be built out to enclose the operating hardware and shall have recess and slot in sill to permit the operation of the ventilator through the bottom of the screen frame. Projected in ventilators shall have the screens attached outside with special clips and machine screws.

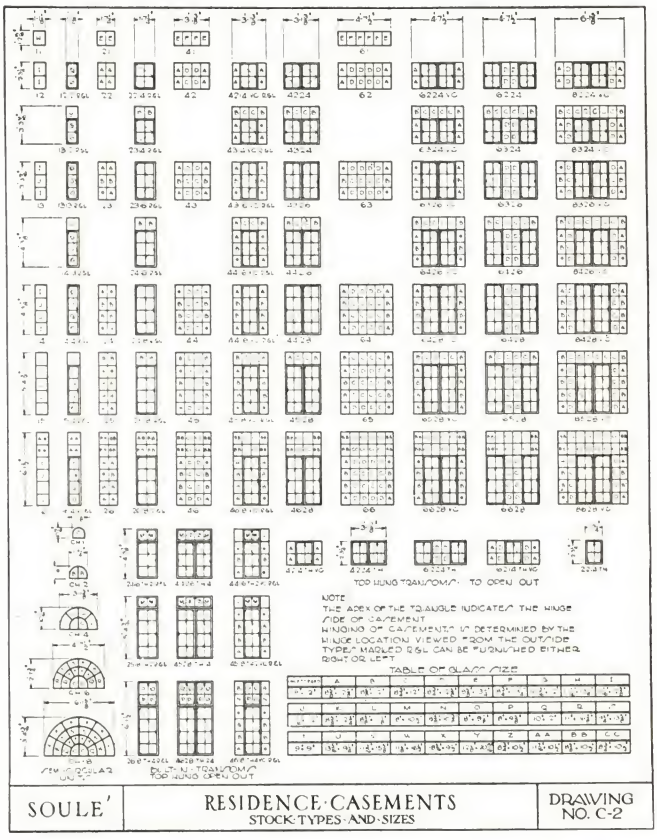
All screens shall be so attached to windows that they may be easily removed.

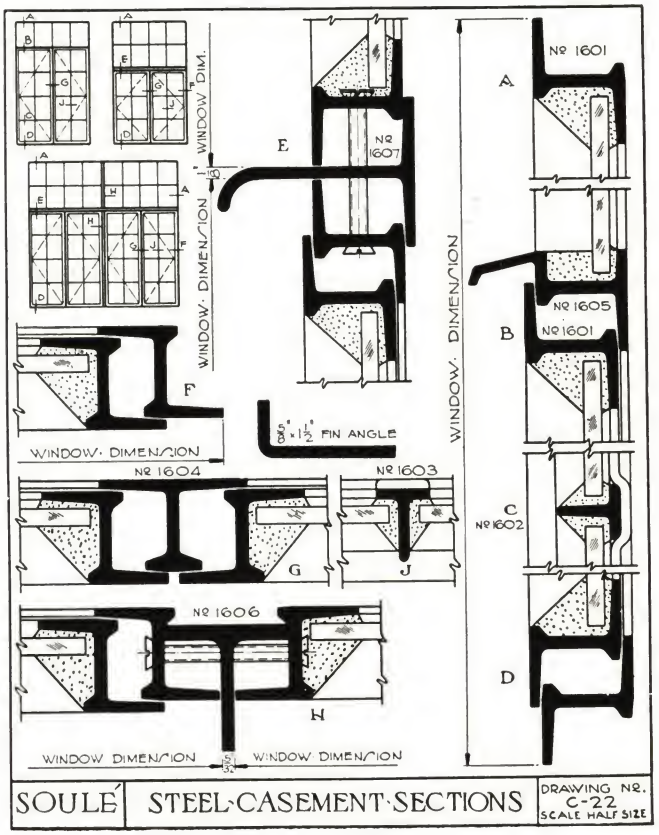
SOULÉ RESIDENCE CASEMENTS

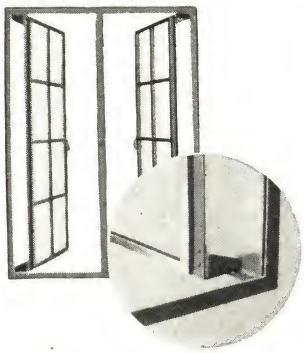
Soulé Standardized Residence Casements are especially desirable for buildings in the class of modern homes and apartment houses. Holes are provided near the top for attaching bracket for shades and draperies. Provision can be made for receiving, inside, either stationary flat screens or roller screens. Standard residence casements can be furnished either with muntins, as shown below, or, for leaded glass, without muntins.

A solid bronze casement fastener, in any finish preferred, will be furnished, if specifically ordered, instead of the die-cast casement fastener. Heavy steel tee mullions are supplied when windows consist of more than one unit.









Friction Cleaning Hinge

This extension hinge, rigidly riveted to casement and electrically welded to window frame, holds casement firmly in whatever position it is set. Cleaning of window and adjustment of friction are easily done from inside building



Casement Fastener No. 130 Furnished as Standard

Die-cast in statuary bronze finish; shipped separate with screws for attaching after casements are installed. (Supplies in solid bronze, in any finish preferred, when specially ordered)

SOULÉ WEATHERSTRIPPED WINDOWS

In this steel window with a weatherstrip built into the section and placed in the inside face of the window to preclude any danger of saturation, the SOULÉ STEEL COMPANY has patented one of the most successful devices for minimizing infiltration of air and dust that has been perfected in the development of steel windows for homes, commercial buildings, and monumental buildings.



Type "L" Window Weatherstripped

The practical advantages of this recent improvement, which have been thoroughly demonstrated in the field as well as in university laboratory tests, have been widely appreciated by the architectural profession, for whose clientele they satisfy requirements that have long been urgent. These advantages are virtually self-evident in the nature of the construction, and we therefore believe that the Soulé Weatherstripped Window will have an immediate interest for architects who are planning buildings in which the expense of heating installation is an important factor, or fine homes in which it is judicious to use every practical means of overcoming the nuisance of dust and soot drifting in upon fine fabrics and furniture.

Practical Economy

While the convenience and greater efficiency of having the weatherstrip built into the section itself is instantly recognized, it is surprising to many builders to learn that the cost of Soulé Built-in Weatherstripping is less than one-fourth of the cost of applying weatherstripping after a window is installed. Yet any experienced builder can quickly verify this fact without resorting to pad and pencil. The Soulé Weatherstripped Window is therefore economical in first cost as well as a continuous economy in protection against the vagaries of the weather. Moreover, it is a beautiful window that is in harmony with the best modern design. As a collateral advantage of this construction, the weatherstrip forms a cushion upon which the window closes with velvety softness.

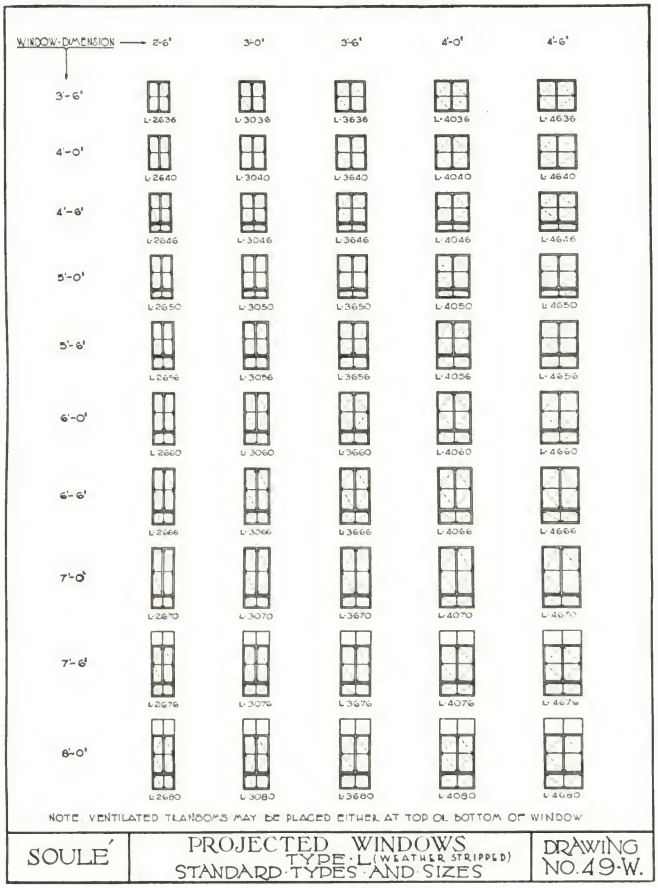


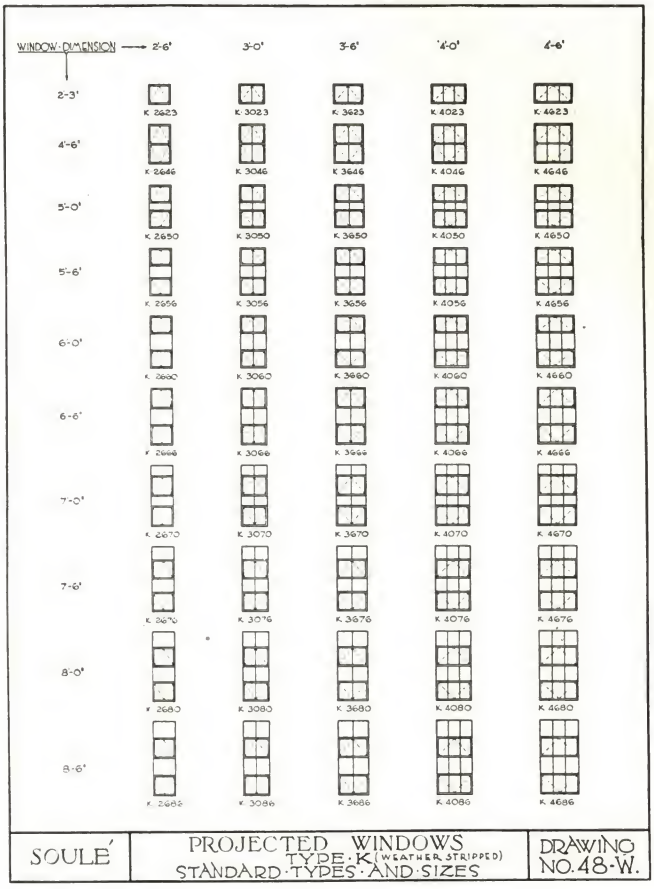
Type "K" Window Weatherstripped

Tested Efficiency

Recent tests made in university laboratories and subsequently checked with installations in the field show that the air infiltration through the Soulé Weatherstripped Window is one-fourth of that which normally occurs through other types of window. Reports from installations in monumental buildings indicate a material fuel saving and greatly enhanced protection from dust and moisture seepage.

We believe that the specification given on the following page covers all salient points of this notable improvement in steel window construction, but we should be pleased to have you call on our Engineering Department for any further data in which you may be interested. The advantageous position of the weatherstrip will undoubtedly enlist your attention.





SPECIFICATION OF SOULÉ WEATHERSTRIPPED WINDOW

Where shown on plans, furnish and install Soulé Weatherstripped Windows. The frames shall be of specially rolled steel, so formed as to have a dovetail-shaped slot on the inside contact for holding the special weatherstrip. Wool felt shall be inserted into the slot with special tools for the purpose, and shall be held with a special moistureproof cement.

Corners of all frames and vents shall be electrically welded and all the exposed surfaces cleaned of excess metal. Vents shall operate on Soulé Sliding Shoe Fixtures with pivoting arms made of spring steel and attached to both the ventilators and frames with brass rivets. The bronze sliding shoe shall fit in a brass track of special patented construction which diverts the shoe toward the inside and causes vents to be in tight contact when closed. Project-out-at-side ventilators shall be equipped with bronze casement fastener No. 116 or No. 130.

Project-out-at-bottom ventilators shall be equipped with casement fasteners No. 116 or No. 130 when within reach of floor, otherwise furnish No. 127 spring catch and transom eye No. 102.

Project-in top vents shall be equipped with No. 116 or No. 130 casement fasteners when within reach of floor, otherwise furnish No. 128 spring catch. All furnished hardware shall be solid bronze in light statuary finish.

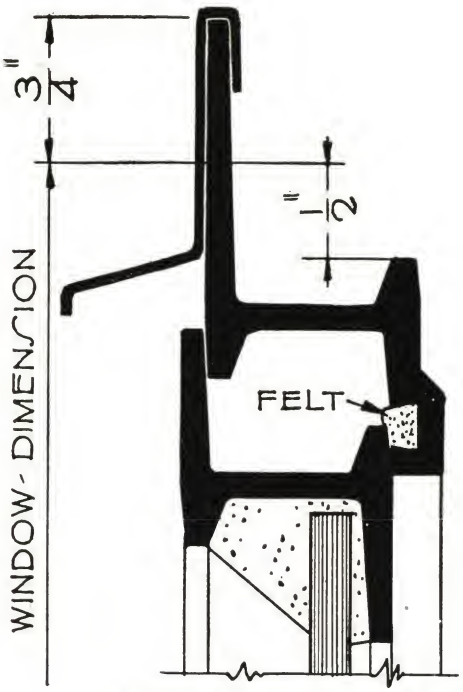


When two or more units are used for one opening, supply mullions and bolts for connecting units.

Paint windows and mullions one priming coat of gray paint at the factory.

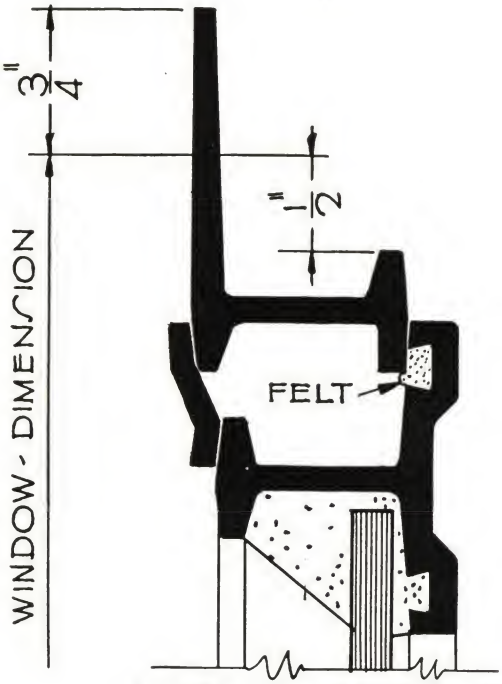
Windows shall be erected by manufacturer in openings prepared to the manufacturer's detail and shall be set plumb and true without distortion so that a weathertight installation is obtained.

Glass and glazing shall be supplied by another contractor, but the window manufacturer shall supply spring wire clips for holding glass in place. All windows shall be glazed from the outside.



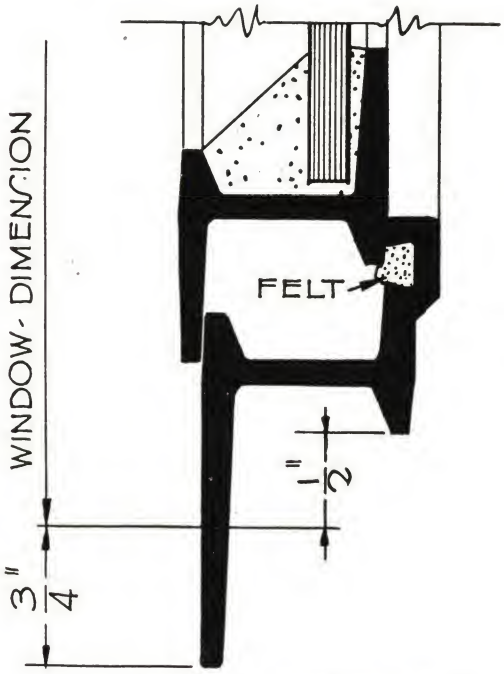
HEAD-DETAIL

FOR OUTSWING CASEMENTS AND PROJECT OUT VENTS
{JAMB DETAIL SIMILAR WITHOUT DRIP BAR}



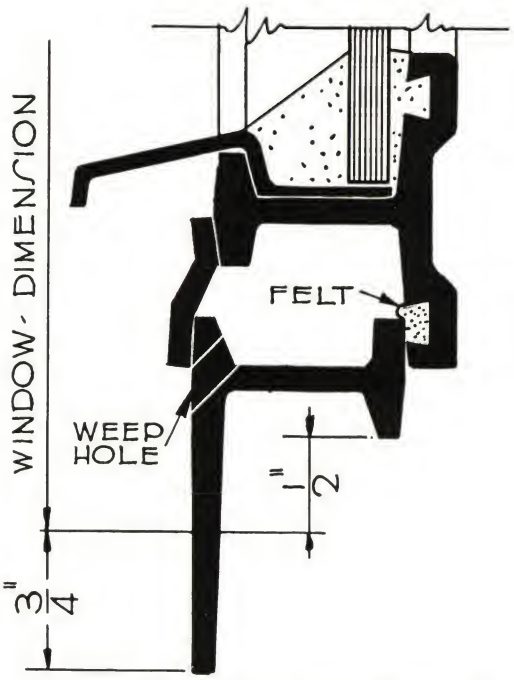
HEAD-DETAIL

FOR PROJECT IN VENTS
(JAMB DETAIL SIMILAR)



SILL-DETAIL

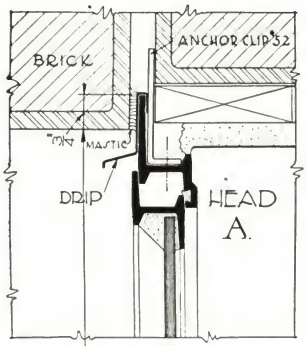
FOR OUTSWING CASEMENTS AND PROJECT OUT VENTS

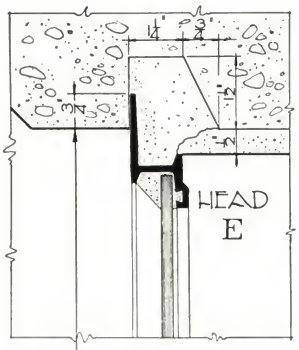


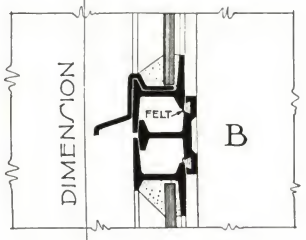
SILL-DETAIL

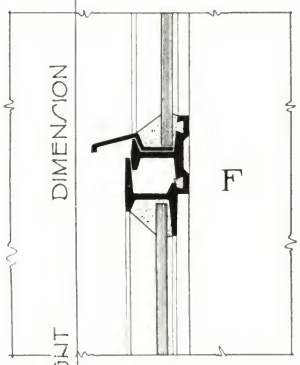
FOR PROJECT IN VENTS

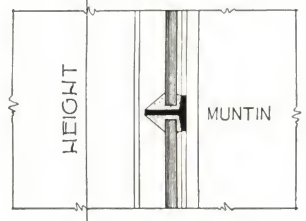
SOULE'	OUTSIDE-FRAME-DETAILS WEATHER-STRIPPED-WINDOW	DRAWING NO. R. 87. SCALE: FULL SIZE

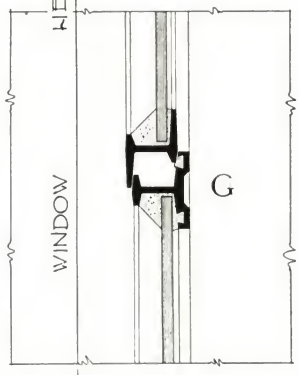


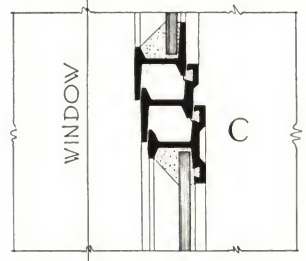


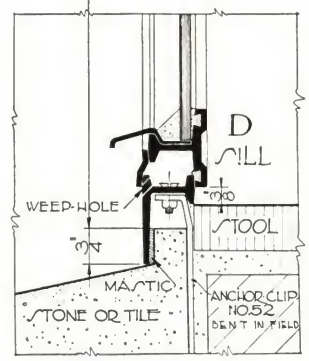


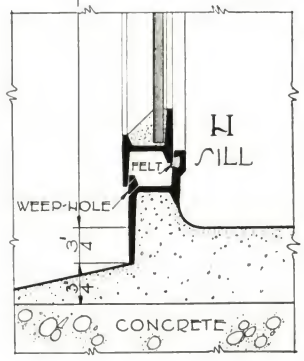




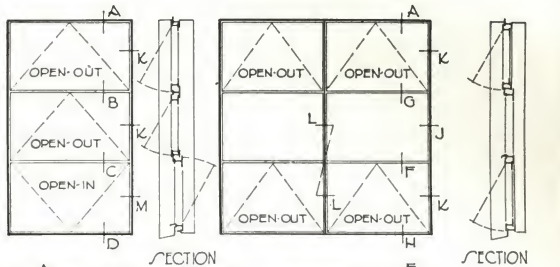








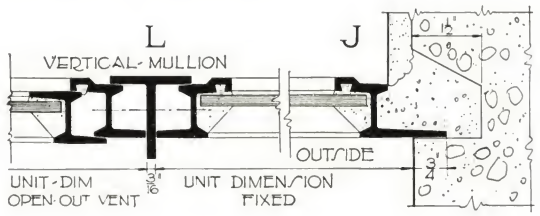
VERTICAL SECTIONS

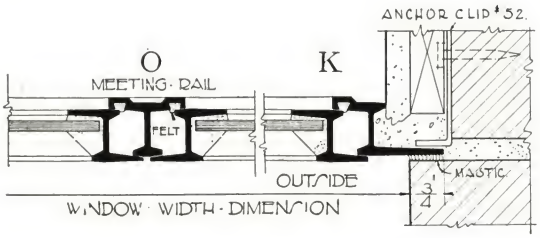


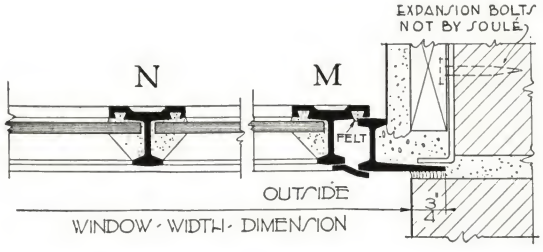
TYPICAL ELELVATIONS

MAXIMUM SIZES

WINDOW WIDTH 4'-6", WINDOW HEIGHT 8'-6", VENT HEIGHT 2'-3", CASEMENT HEIGHT 5'-0" IF OPENINGS EXCEED THE MAXIMUM SIZES MULTIPLE UNITS SHOULD BE USED WITH MULLIONS AND BOLTS FOR ATTACHMENT.







JAMB SECTIONS

SCALE: 3"=1'-0"

SOULE'	PROJECTED STEEL WINDOWS WEATHER-STRIPPED	DRAWING NO.83



Life Science Building, University of California, Berkeley, Calif.

GEO. W. KELHAM, Architect — DINWIDDIE CONSTRUCTION CO., Builders

Soulé Heavy Section Windows are installed on all exterior elevations. Soulé Type "K" Windows are installed in light courts

HEAVY TYPE WINDOWS

In addition to the detail on the following page, we have prepared for architects and designers a catalogue providing information of valuable assistance in the design of heavy section window openings of virtually every kind for use in monumental, office, school, hospital, and residential buildings; and we should be pleased to send this comprehensive catalogue to you on request.

Although, to effect important economies, we have standardized in the construction of windows and their preparation for hardware, we realize that in the type of building for which heavy section windows are used individuality must be given freedom of expression; and accordingly our service does not limit the architect or designer to standard sizes and designs.

Our salesmen are trained to give you the information you require for preliminary study, and our designing department will collaborate with you by preparing sketches without committing you to any obligation.

The quality of our workmanship in heavy type windows is exemplified in several recent buildings of national interest.

All our finish hardware is made of solid bronze and may be furnished to match any other finishes ordinarily used.

Mechanical operators are furnished as standard, but only when specified. Other means of operating windows are also employed, depending on the type of ventilating unit.

Maximum Sizes of Ventilators—

Projected casements, each leaf: width, 2 ft. 6 ins.; height, 6 ft.

Side hinged casements, each leaf: width, 2 ft. 9 ins.; height, 8 ft.

Project out or in ventilators: width, 5 ft.; height, 3 ft. 6 ins.

Specification

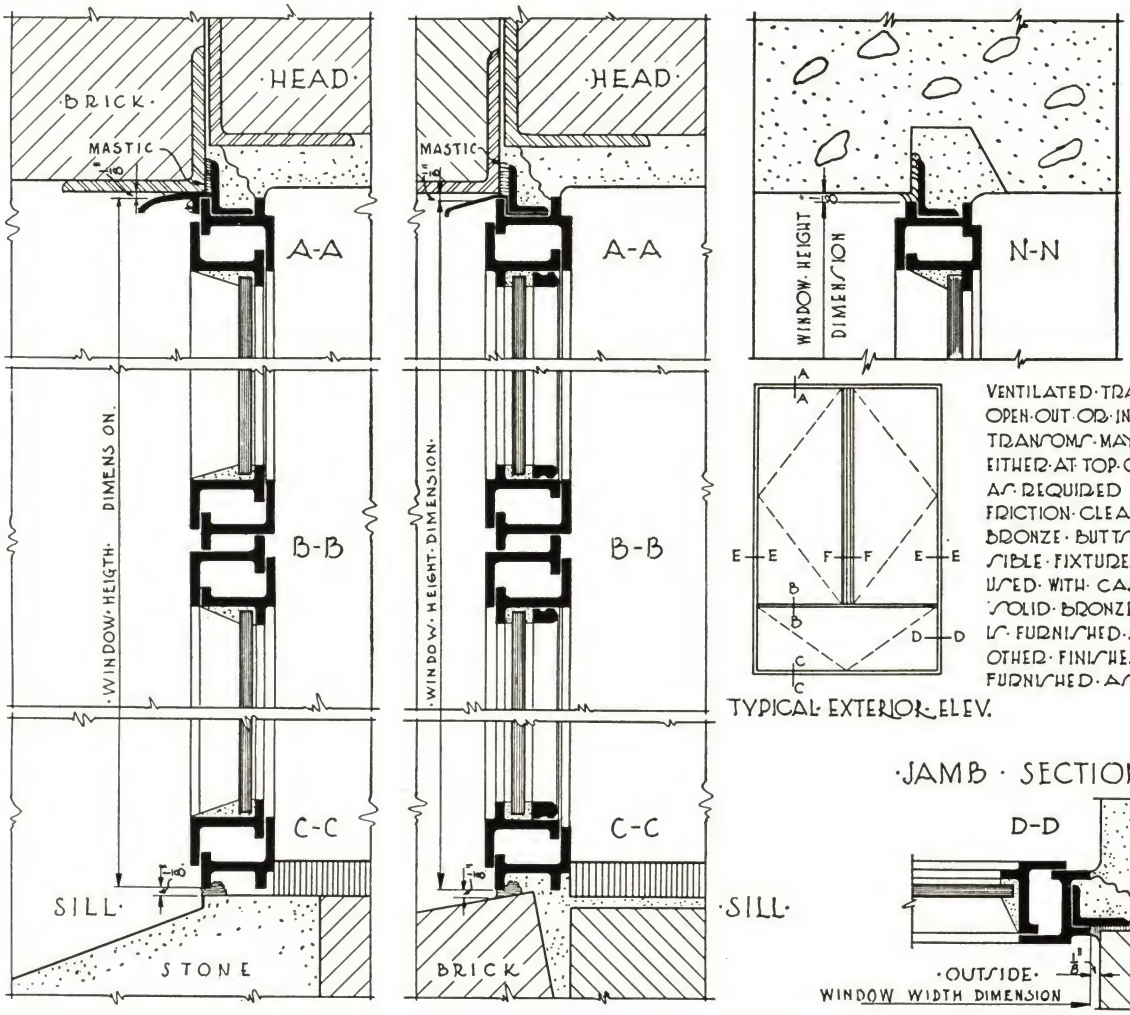
All windows shown on plans shall be Soulé Heavy Section Windows with ventilators to swing as indicated. All corners of frames and ventilators shall be electrically welded and ground smooth. Ventilators shall be carefully fitted into the frames to insure perfect weather tightness and easy operation.

Projected Casements and Ventilators—Where called for, projected casements and ventilators shall operate on SOULÉ sliding cleaning hinge, so that they may be cleaned from the inside. When vent is in a closed position no part of the hinge shall project either inside or outside of the plane of the window.

Hinged Casements and Ventilators—Where called for, casements and ventilators shall be mounted on extruded bronze hinge No. 124, with stainless steel pin. Supply solid bronze adjuster No. 161, one for each hinged casement leaf.

Glazing Beads—Moulded steel glazing beads shall be supplied for holding glass in place. Miters at corners shall be neatly and accurately fitted. (Miters of solid rolled beads may be butt welded at additional cost.)

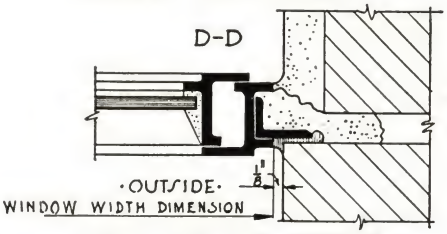
Hardware—All casements not over 5 ft. high shall be furnished with single casement fasteners. Casements over 5 ft. high shall be furnished with two-point casement fasteners. All open in or out transoms out of reach of floor shall be supplied with transom catches.



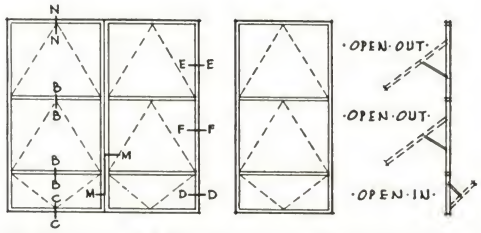
·SECTION·WITH·PUTTY·OUTSIDE· ·SECTION·WITH·GLAZING·BEADS·

TYPICAL EXTERIOR ELEV.

·JAMB · SECTIONS·

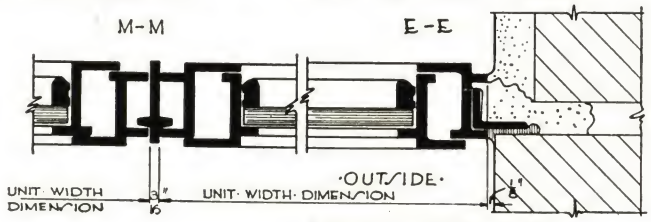


·FOR· IN·WING ·VENTS·



·TYPICAL·ELEVATIONS·&·SECTIONS·

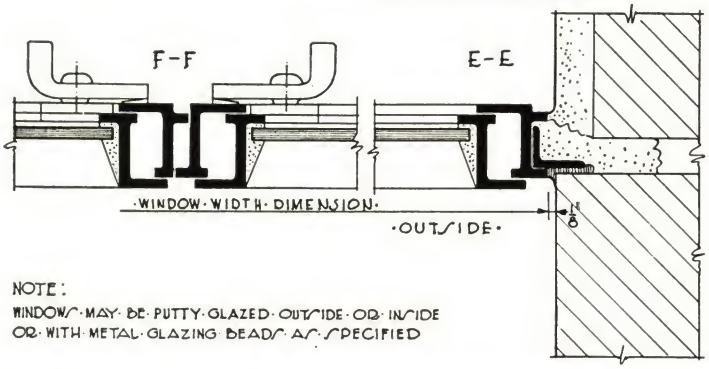
·OTHER·COMBINATIONS·OF·
·VENTILATORS·MAY·BE·USED·



·FOR·OUT·SWING·VENTS

·STANDARD·FEATURES·

·SOULÉ·HEAVY·PROJECTED·WINDOWS·
·ARE·MADE·WITH·VENTILATORS·OPENING·
·EITHER·IN·OR·OUT·
SOLID·BRONZE·HARDWARE·IS·
·FURNISHED·AS·STANDARD·
·HARDWARE·OF·OTHER·DESIGNS·OR·
·FINISHES·IS·FURNISHED·AS·AN·EXTRA·



NOTE:
WINDOWS·MAY·BE·PUTTY·GLAZED·OUTSIDE·OR·INSIDE
OR·WITH·METAL·GLAZING·BEADS·AS·SPECIFIED

SCALE: ONE·FOURTH·FULL·SIZE

SOULÉ	HEAVY·SECTION·WINDOWS	DRAWING No. H.C.9.S.

J. S. THORN COMPANY

Manufacturers of Steel Windows, Steel Casements, Operating Devices, and Vertical Lift Doors

Allegheny Avenue and Twentieth Street, PHILADELPHIA, PA.

SALES REPRESENTATIVES IN PRINCIPAL CITIES

Member Solid Section Steel Window Industry

Products

PIVOTED WINDOWS, PROJECTED WINDOWS, CONTINUOUS WINDOWS; OPERATING DEVICES; BURVETT VERTICAL LIFT DOORS.

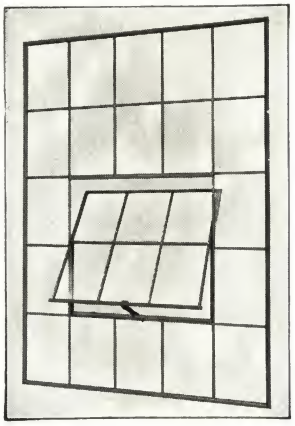
THORN CASEMENTS.

Also Skylights, Double Hung Windows, Steel Doors.

Pivoted Windows

Designed for use in all types of industrial buildings and constructed of solid steel sections 1⅜ in. deep. They are of substantial construction having all muntin joints welded. The Underwriters' label can be furnished when specified and as an extra. When labels are required no unit shall exceed 7x12 ft. and ventilators shall not exceed 4x5 ft.

Standard windows are furnished only in 12x18 and 14x20-in. glass sizes, except in the lights of vents where it is 1 in. less on each outside edge.



Thorn Pivoted Window

WINDOW OPENING DIMENSIONS

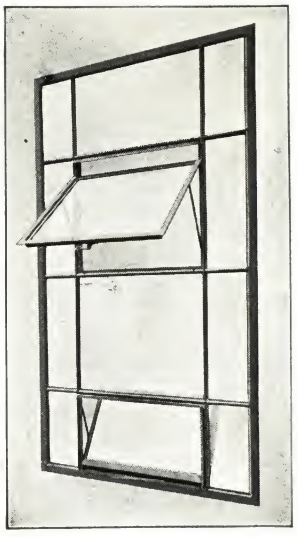
Lights	Width		Height	
	12″	14″	18″	20″
2	2′1⅝″	2′5⅝″	3′1⅝″	3′5⅝″
3	3′2″	3′8″	4′8″	5′2″
4	4′2⅜″	4′10⅜″	6′2⅜″	6′10⅜″
5	5′2¾″	6′0¾″	7′3¾″	8′6¾″
6	6′3⅛″	7′3⅛″	9′3⅛″	10′3⅛″
7	....	....	10′9½″	11′11½″

For multiple openings add window opening dimensions plus 2 ins. for each mullion to determine opening size.

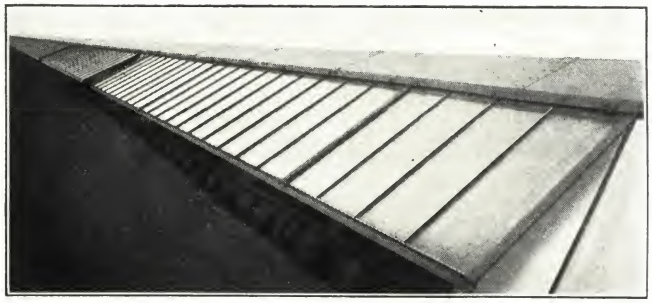
Projected Windows

Economical office windows for industrial buildings, offices, schools, hospitals, etc., where screens and shades are necessary. Made of the same steel members and the same welded construction as Thorn pivoted windows.

They are made in commercial and architectural designs. The commercial type contains equal lights of 12x18 or 14x20-in. glass and is similar to pivoted window standards. The architectural type is made with combinations of large and small lights similar to typical window shown.



Thorn Projected Window



Thorn Continuous Windows

Continuous Windows

For use in roof construction. When properly incorporated in roof design they will perfectly daylight and ventilate buildings of great widths and lengths, increasing the efficiency of the workers and the quality of the product.

Controlled by long lines of the powerful Thorn tension operator they are particularly effective in quickly carrying off smoke, gases, etc. They form a great glass awning when open, the unbroken line of steel and glass permitting ventilation regardless of weather conditions. Stationary storm panels will be provided at the ends when ordered.

Tension Operator

Designed for long and heavy lines of windows and is a smooth working mechanism free from friction. Practically the entire load is carried by compound lever arms, eliminating strain on the tension line. Manual or motor operation.

Burvett Vertical Lift Doors

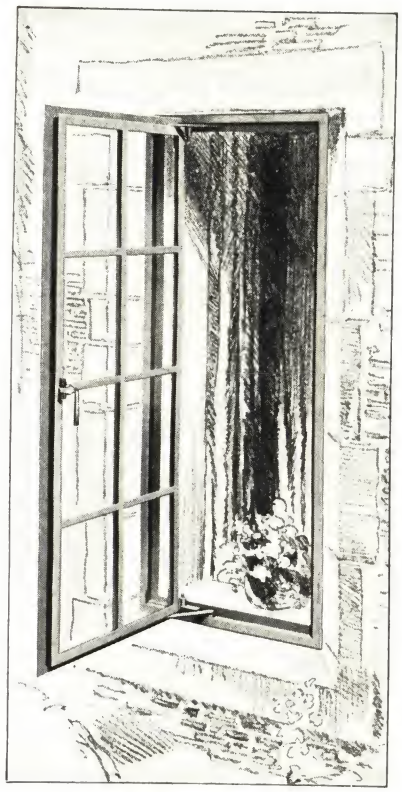
The improved Burvett Vertical Lift Door, manufactured by J. S. THORN COMPANY, is, we claim, the most modern development in steel door construction. It is built of a series of 16-gauge galvanized steel plate interlocking panels, which lift vertically, telescoping into a compact group to the height of a single panel and requiring a head clearance of about only 24 ins. when completely raised.

The great utility of door and ease with which plates can be removed and repaired make it desirable for warehouses, piers, freight stations, loading platforms, garages, factories, aeroplane hangars, etc., for it is built to stand hard usage.



Burvett Vertical Lift Doors

THORN CASEMENTS



Thorn Residence Casement

Residence Casements

Made of specially rolled solid steel casement sections and designed to produce a most rigid construction.

At all corners the sections are mitered, electrically butt-welded and ground to a smooth finish. Casements are equipped with iron handles and iron extension friction hinges unless otherwise specified.

They are economical, costing no more than a good quality wood casement and are more reasonable in price than double hung windows. They need not be weatherstripped because of their weathertight construction. They cannot warp, shrink, or swell.

Standard sizes are as follows:

Lights	Width	Height	Lights	Width	Height
1	11 7/16"	....	4	3' 3"	4' 1 5/8"
2	1' 8 9/16"	2' 11 1/2"	5	....	4' 11 5/16"
3	....	3' 13/16"	6	4' 10"	5' 10 3/4"

Add ¼ in. to above for clear opening.

Manor Casements

A standardized casement of the finest quality combining the very best of materials and workmanship.

Good, substantial, carefully designed $1\frac{5}{16}$-in. sections are employed, and although much heavier than Residence type the lines are neat and pleasing. As in all Thorn casement construction the corners are electrically butt welded, resulting in a strong solid unit.

The sections are especially designed for neat putty glazing with short bevels. Vertical and horizontal sight lines are maintained in ventilated and fixed sections. The famous patented Thorn friction hinge of forged steel and bronze is standard equipment, except if otherwise specified.

Standard sizes are as follows:

Number of lights, 2	Number of lights	2	3	4	5
Width, 1'7 7/8"	Height	2'1 5/16"	3'5/8"	3'11 15/16"	4'11 1/4"

The above are window dimensions—add ¼ in. to determine opening sizes.

Heavy Casements

Constructed of heavy 2-point specially rolled steel casement section with great care and accuracy. Glazing may be provided for by the use of putty only, or glass may be held in place with drawn steel glazing beads. Solid bronze hardware is used throughout.

Where desired, Thorn heavy type metal casements may be provided with a pressed metal subframe which is built in and the casements placed after openings are prepared.

They are custom built, can be made side hinged, projected or pivoted and permit great flexibility of architectural design.



TYPICAL INSTALLATION OF THORN CASEMENT IN STEEL SUB FRAME

Office Type Windows

Made of heavy casement sections and standardized in projected vent types for school and hospital construction, also in types having a combination of side hinged and projected vents for office and administration buildings.

They are fitted with friction hinges and solid bronze hardware.

The sizes are in multiples of 6 ins. the minimum width being 2 ft. and the maximum 5 ft. The minimum height is 3 ft. and the maximum 9 ft.

French Casement Doors

Made of heavy casement sections solidly welded at the corners, the lower section of the door arranged with a small kick panel. The threshold is of heavy extruded bronze riveted and brazed into the jamb members. They are fitted with beautiful bronze hardware including cremone bolts and friction adjusters at the head.

The standard type is made to fit an opening 3 ft. 7¾ in. x 6 ft. $10\frac{3}{16}$ in. and can be arranged to open in or out.

Screening

All standard casements can be fitted with special hardware to permit the operation of the leaves or vents without opening or removing the screens. Roll type screens may also be applied to all casements.

Literature

Catalogues and other literature fully describing any of the various types of Thorn Casements or other products will be mailed on request.

LIONEL VALLAS

Manufacturers of Sheet Metal Products

2846-50 West Lake Street, CHICAGO, ILL.

See Manufacturers' Index for our Hollow Metal Doors, Roof Flashing, Skylights and Ventilators

LIONEL HOLLOW METAL WINDOWS

Products

LIONEL HOLLOW METAL DOUBLE HUNG WINDOWS.
Also 16-gauge Hollow Metal Pivoted, Hinged, Casement and Stationary Windows (mullions furnished in connection with any type).

Construction and Materials

The sill of Lionel Hollow Metal Windows is made of 12-gauge galvanized iron, the head, jambs, parting strips and muntin bars are all made of 16-gauge galvanized iron. All glass recesses ¾ in., muntin 1¾ in. over-all All joinings are thoroughly spot-welded or interlocked. There is a brass rubbing plate on each jamb at end of matting rails. All windows are weatherstripped throughout. Sash weights are single unit castings attached to galvanized steel chains. Windows are made of aluminum, bronze or any other material. Windows made in any size desired.

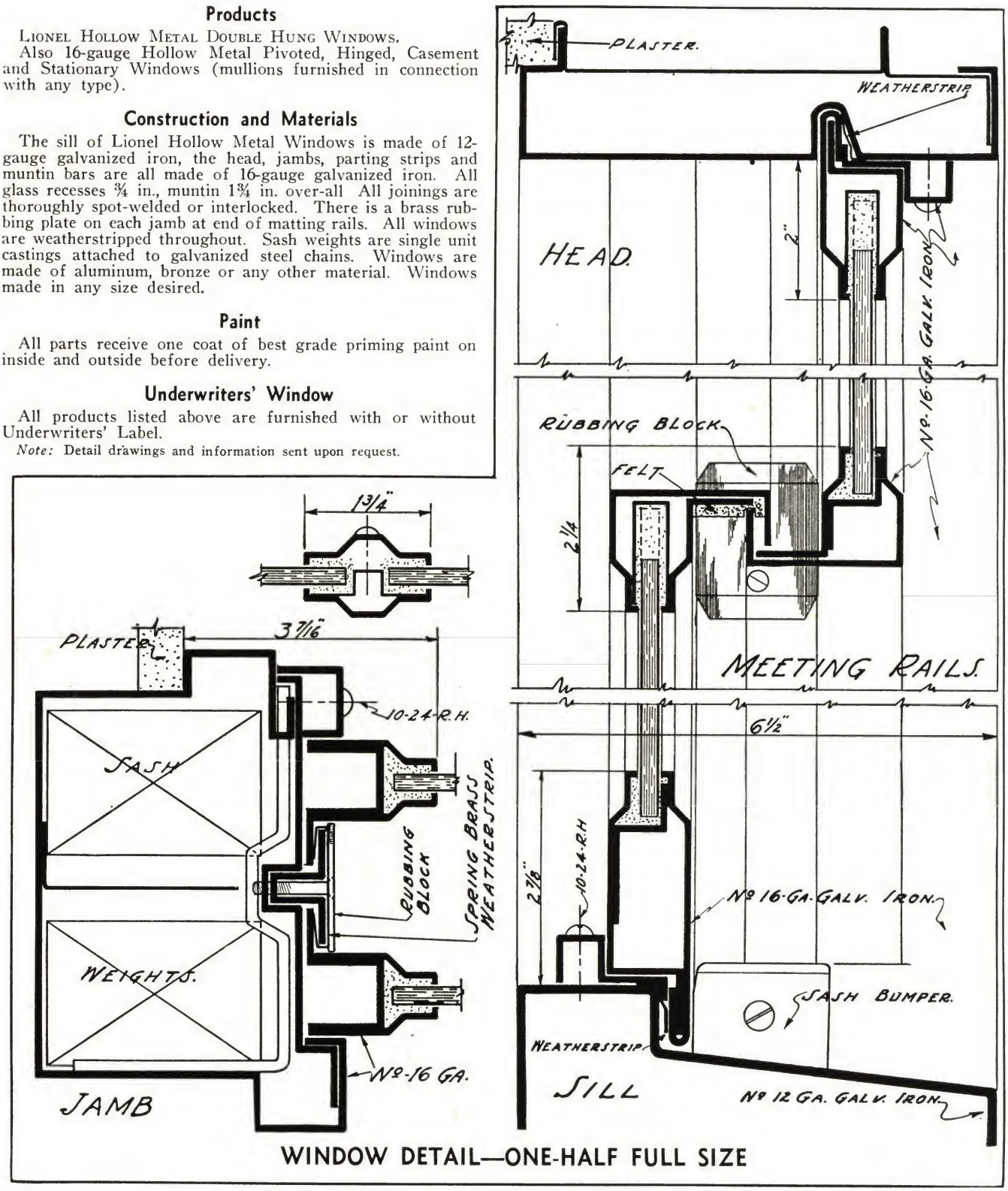
Paint

All parts receive one coat of best grade priming paint on inside and outside before delivery.

Underwriters' Window

All products listed above are furnished with or without Underwriters' Label.

Note: Detail drawings and information sent upon request.



WINDOW DETAIL—ONE-HALF FULL SIZE

TRUSCON STEEL COMPANY

Manufacturers of a Complete Line of Steel Windows

YOUNGSTOWN, OHIO

OFFICES (*) AND WAREHOUSES (†)

*ALBANY, N. Y.
*ALTOONA, PA.
*ATLANTA, GA.
*†BALTIMORE, MD.
*†BIRMINGHAM, ALA.
*†BOSTON, MASS.
*†BUFFALO, N. Y.
*CHARLESTON, W. VA.
*CHATTANOOGA, TENN.
*†CHICAGO, ILL.
*†CINCINNATI, OHIO
*†CLEVELAND, OHIO
*COLUMBUS, OHIO
*†DALLAS, TEX.
*DAYTON, OHIO
*DENVER, COLO.
*DES MOINES, IOWA
*†DETROIT, MICH.
*ERIE, PA.
*FT. WAYNE, IND.
†GARDEN CITY, N. Y.
*†GREENSBORO, N. C.
*HARRISBURG, PA.
*†HOUSTON, TEX.
*†INDIANAPOLIS, IND.
*†JACKSONVILLE, FLA.
*†KANSAS CITY, MO.
*†LOS ANGELES, CALIF.
†LONG ISLAND CITY, N. Y.
*LOUISVILLE, KY.
*LUBBOCK, TEX.
*MADISON, WIS.
*MEMPHIS, TENN.
*†MILWAUKEE, WIS.
*MINNEAPOLIS, MINN.
*†MOUNT VERNON, N. Y.
*†NEWARK, N. J.
*NEW HAVEN, CONN.
*NEW ORLEANS, LA.
*†NEW YORK, N. Y.
*†NORFOLK, VA.
*OKLAHOMA CITY, OKLA.
*†OMAHA, NEB.
*†PHILADELPHIA, PA.
*PHOENIX, ARIZ.
*PITTSBURGH, PA.
*†PORTLAND, ORE.
*RICHMOND, VA.
*ROCHESTER, N. Y.
*ROSWELL, N. M.
*SALT LAKE CITY, UTAH
*SAN ANTONIO, TEX.
*†SAN FRANCISCO, CALIF.
*†ST. LOUIS, MO.
†ST. PAUL, MINN.
*SCRANTON, PA.
*SEATTLE, WASH.
*SOUTH BEND, IND.
*SYRACUSE, N. Y.
*TAMPA, FLA.
*TOLEDO, OHIO
*TULSA, OKLA.
*WASHINGTON, D. C.
*WICHITA, KAN.
*†YOUNGSTOWN, OHIO

Member Solid Section Steel Window Industry

Products

STEEL WINDOWS.

For other Truscon products see pages in this edition on Concrete Reinforcing Steel; Steeldeck Roofs; Standardized Buildings and Structural Steel; Steel Doors; Steel Joists; Metal Lath and Accessories; Channelplate and Teegrid floors; Safety-Tread Steel, as listed in Manufacturers' Index.



General

The complete line of Truscon Steel Windows includes types for every kind of building and purpose. Design, materials, construction, workmanship and equipment are the finest, assuring the ideal combination of highest quality products and types selected because of their especial fitness for particular installations. A further benefit accrues from the fact that all Truscon Windows are available in standard types and sizes, thus simplifying the architect's task of designing and permitting decided economies in manufacture. As a result, the purchaser obtains maximum values on the investment.

Window Service

Although the windows shown on the following pages are standardized in design, the wide range of types and sizes offers a broad latitude in architectural application. The objective of Truscon Window Service is to co-operate with architects to secure the most satisfactory window installation. Individual requirements, investment value, easy operation, simple installation, maintenance and permanence are important considerations.

Because Truscon manufactures all types of windows, recommendations can be made without bias, based solely upon intimate knowledge and vast practical experience in window applications. Should conditions arise where special windows are required, Truscon engineers co-operate fully in the design and production of a type to fit the exact need.

Erection

To assist architects, contractors and owners in obtaining dependable results, Truscon mainains an organizaion of experts to undertake completely the erection and adjustment of steel windows. With this erection service, the TRUSCON STEEL COMPANY assumes entire responsibility for the window installation, including fabrication, delivery, erection and adjustment.

Literature

Steel window Handbook, A. I. A. filing size, 200 pages, contains details and drafting room standards for the complete line of windows. Separate catalogues on each type, A. I. A. filing size, sent free to architects.

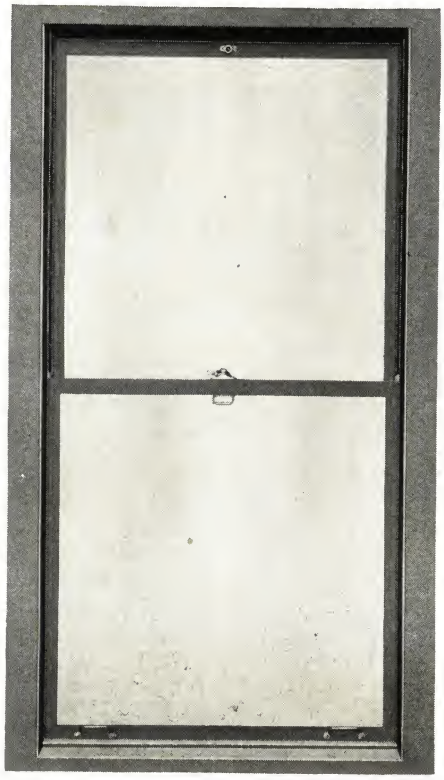
TRUSCON DOUBLE-HUNG STEEL WINDOWS

Counterweighted Model No. 28

Model No. 28 Truscon Double-Hung Steel Windows meet the modern demand for artistic design and quality workmanship. They are equally satisfactory in the practical advantages of easy operation and enduring, care-free service.

Their narrow, clean-cut members add to the attractiveness of any building and increase the daylighting of interiors. Their solid steel construction provides fire protection at the most vulnerable part of the building. The galvanizing of all parts prevents corrosion. The spring bronze weather stripping shuts out draughts and insures constant easy operation. Frames are made in one unit and are solidly welded at corners.

The details of construction, finish and hardware have been so perfected that Truscon Double-Hung Steel Windows are in harmony with the finest buildings, even though their cost under efficient Truscon manufacturing methods is so moderate that they are practical for general use.



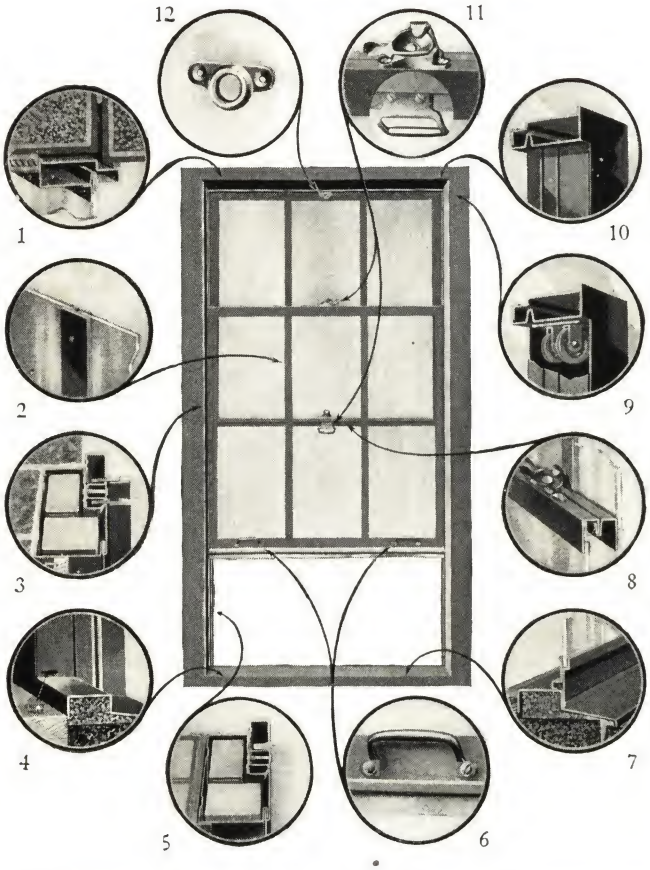
Catalogue containing complete installation details furnished on request.

Counterbalanced Steel Windows

Similar in design to the Model 28 Double-Hung, combining beauty and high quality with ease of operation, unusual fire-resisting qualities and weathertightness. Made in a variety of models, Truscon Counterbalanced Steel Windows can be furnished simply with two counterbalanced sash, with two sash and projected type transom, with two sash and projected type bottom ventilator and with more than two sash. They may be arranged in bays or in a number of ways to meet building requirements.

TRUSCON DOUBLE-HUNG STEEL WINDOWS (Continued)
Counterweighted Model No. 28

Construction Details and Hardware



(1) Section Through Head of Frame—Showing one-piece channel construction with recess to receive upper sash rail; staff mould formed from two thicknesses of metal and head cover welded to frame section.

(2) Muntin Bars—When desired, can be furnished horizontally and vertically to secure small glass-light effects.

(3) Section Through Jamb—Illustrating the dual function of the jamb frame, as weight box and sash guide. Proper weathering is secured through spring bronze weatherstripping attached to the sash stiles.

(4) Concealed Grout Holes—Assure a firm and weather-tight bed for the window.

(5) T-Shaped Mullions—For joining two or more windows in a single opening. Held in place by means of concealed steel straps.

(6) Pair of Lifting Handles—Tap-screwed to the bottom rail of the lower sash.

(7) Section Through Bottom of Window—Showing double contact weathering between sash and sill.

(8) Section Through Meeting Rail—Showing interlocking contact between the upper and lower sash, and the spring bronze weatherstripping on upper rail of lower sash.

(9) Cutaway View of Jamb Frame—Showing the bronze-bushed, pressed steel chain pulleys that turn on hardened steel pins in heavy, pressed steel housings.

(10) Section Through Head of Window—Showing adaptability of head section to any type of construction and positive contact between sash and frame.

(11) Combination Sweep Lock and Pull-down Handle—The sweep lock is adjustable to secure proper contact and locking.

(12) Pole Socket—Attached to the top rail of the upper sash facilitates opening and closing this sash.

Note: Standard Hardware is sherardized malleable iron. Solid bronze can be supplied when bronze hardware is specified.

Condensed Specifications

(1) General—All window openings shown on drawings, unless otherwise specified, shall be equipped with solid steel, plate type (galvanized and weatherstripped) Model "28" Double-Hung Windows, as manufactured by the TRUSCON STEEL COMPANY, of Youngstown, Ohio.

(2) Material—All windows throughout shall be constructed of TRUSCON special hot-rolled new billet steel, galvanized. Sills shall be of 12-gauge; weight boxes, jambs, pulley stiles, heads and head covers 16-gauge; rails and stiles of sash 12-gauge; inside glazing strips at jambs 14-gauge, and at top and bottom rails 12-gauge.

(3) Construction—Frame members: head, sill and jamb construction, each one piece of metal exclusive of parting stop, weight box cover and head cover; all members formed straight and true with welded joints ground smooth; staff bead formed on exterior of frame of double thickness of metal.

(4) Pulley Stiles shall be formed with deep weathering and the pulley stile and weight box cover held in place with one line of oval head screws passing through a heavy reinforcing piece on inside of jamb. Adjustment of sash and frame shall be secured by these screws which hold the pulley stile and weight box cover. The weight box cover shall run the full height of the jamb from sill to head, and shall be removable.

(5) A brass check plate shall be attached at meeting rails to insure proper weathering.

(6) A window stop shall be provided to prevent air entering room from slot under upper sash.

(7) Sash members shall be so designed that the distance from masonry opening to glass line at jambs and head will be $2\frac{1}{2}$ in.

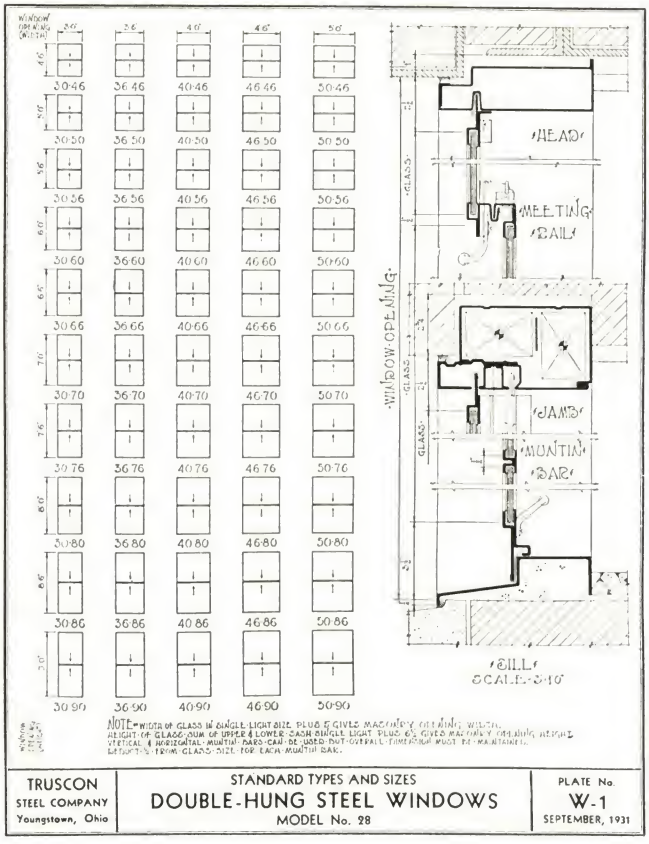
(8) Corners of sash shall be welded and ground smooth.

(9) Where muntin bars are required they shall fit into the sash members and be so welded that a flush surface is secured at joints and intersections.

(10) The meeting rails shall be formed so as to interlock.

(11) Glazing strips secured with oval head screws permit inside glazing.

(12) Weatherstripping—Weatherstripping shall be provided of spring bronze and applied to sash members at sill, jambs, meeting rails and head. A spring bronze closure shall be applied to lower half of outer sashway.



TRUSCON DOUBLE-HUNG STEEL WINDOWS (Continued)
Including Aluminum and Bronze Windows

Segmental or Curved Head Units

Segmental or curved head units for double-hung windows can be provided in almost any radii or design. The inside of the window is finished either square or round at the head. The square head facilitates the use of shades and drapes and provides for the practical approach of the sash without interference with the exterior masonry treatment.

Double-Hung Window Units with Transoms

Transoms, when required, are incorporated in the main frame of the standard double-hung window. They are not a separate unit. This develops a window of great strength, compactness and neat appearance. All hardware is of standard design and finish. Muntin bars can be supplied in accord with individual specifications. Transom heights may be variable, depending upon requirements.





Aluminum and Bronze Double-Hung Windows

The increasing demand for ultra-fine windows for monumental buildings has been answered by Truscon with a line of beautiful windows in extruded aluminum and bronze, embracing every known refinement and being flawless in workmanship. These windows require no adjustment, for the extruded metal has a variation of only plus or minus .002 in., making it as accurate as a steel section machined by milling. Frame and sash sections are complete units, the jambs, heads and bottom rails being one-piece sections. A feature is the weathering at the sills where there is a double contact weathering between the sash and sill sections, plus an additional contact with the use of a weathering strip, which is entirely concealed in the bottom member of the lower sash.

For sheer architectural beauty, these windows have no equal. The sections are perfectly proportioned, having the weight of metal to assure architectural harmony. Air infiltration is reduced to the lowest possible minimum. Architects interested in these quality windows are invited to write for complete data.

Units with Weightless Mullions

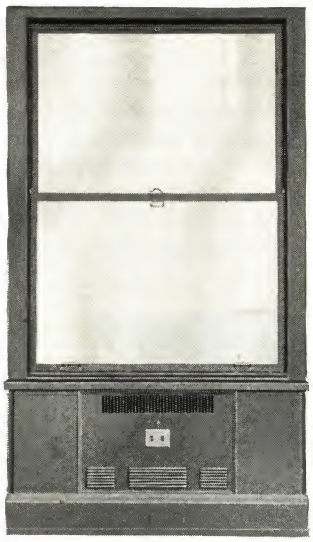
Weightless mullions may be used in combinations of not more than two units. In this construction, by an ingenious arrangement of the sash chain and pulleys only one weight is used for each sash located in a box built in the masonry. This eliminates the weights in the mullion, reduces their width and effects a pleasing appearance.

The dimension of the mullion is reduced by 5 in.



Unit with Weightless Mullions

Double-Hung Window and Heating Recess, Model No. 31-HR



Heating Unit with Motor Fan

In keeping with the modern conceptions of efficient building design, Truscon has developed a complete unit consisting of a high grade double-hung window and a heating recess, encased in a rigid steel frame.

Aside from economies due to efficient design and manufacture, these units simplify erection and permit the utilization of much expensive floor space which otherwise would be occupied by unsightly radiators which block off the most valuable part of the room, i. e., that part in front of the window.

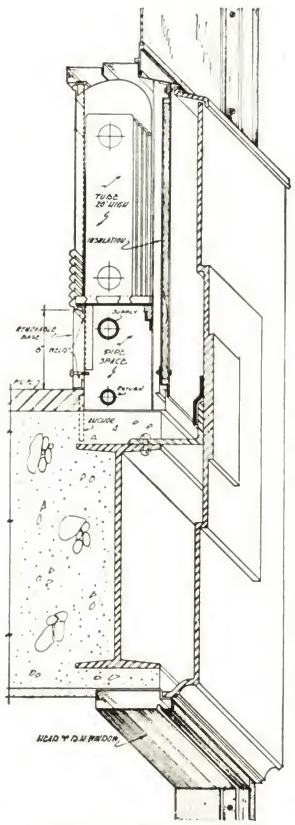
The width and height are variable to suit the architectural treatment and story height. Spandrels of metal, stone Terra Cotta or other material are readily attached, extending from the sill of one unit to the head of the one below. The complete unit of window and heating recess may be placed and anchored in position immediately after the structural concrete is poured.



Recess for Any Standard Radiator

Widths and depths of the heating recess are variable to accommodate the standard makes of concealed radiators. The space under the window is insulated so that light, thin spandrels may be used.

Outlets from the heating recess may be through the window stool, through the front panel or through both. The front of the recess may be any of a number of materials and designs—plaster in its many forms, art metal, etc.



Left:
Typical Detail, Showing Metal Spandrel Applied

TRUSCON DOUBLE-HUNG STEEL WINDOWS (Continued)

Model No. 32

Foreword

The Model No. 32 Double-Hung Window has been developed to meet the demand of architects for steel windows having an architectural treatment along the lines of the conventional wood window, where weight is not as important as detailed appearance. However, the design of the sections of the Model 32 Windows is such that maximum strength is obtained, making the product exceptionally solid and substantial.

All parts are electro-galvanized and bronze weatherstripping at head, jambs, rail and sill assures weather-tightness, eliminates rattle and reduces air infiltration to a minimum. Frames are made in one unit and are solidly welded (not bolted) at all corners.



Salient Features

Galvanized Steel—All parts are electro-galvanized to give added protection against corrosion. Before shipment, the window is given a dip coat of special protective paint.

Welded Frames—Frames are made in one unit and solidly welded (not bolted) at all corners, insuring weather-tightness, solidity, rigidity and perfect alignment. They will not get out of square.

Specially Designed Sash Rails and Stiles—Built of specially designed, cold-rolled sections. All surfaces, inside and out, offer no objectionable features in appearance; cleaning and painting are accomplished easily.

Muntin Bars—Specially designed sections, constructed to give proper bearing for the glass. They are interlocked and welded at all intersections.

Deep, Rigid Sills—One-piece sill of depth and stiffness to prevent bowing, bending or leakage. All flat surfaces, with no pockets or grooves.

Weatherstripping—Spring bronze weatherstrips are attached to sash at head, meeting rails, jambs and sill. This insures positive weather-tightness, eliminates rattle and reduces air infiltration to a minimum.

High Quality Hardware—All hardware is bolted, tapscrewed or welded, insuring rigidity and strength. Chain pulleys are pressed steel with bronze bushings and turn on hardened steel pins in heavy pressed steel housings. Sash chains are easily accessible.

Deep Weight Wells—Wells are deep, straight and true. The jamb will not warp or get out of line; its perfect alignment reduces friction to a minimum in opening and closing the window.

Condensed Specifications

(1) General—All window openings shown on the drawings, unless otherwise specified, shall be equipped with solid steel, plate type (galvanized and weatherstripped), Model No. 32 Double-Hung Windows, as manufactured by the TRUSCON STEEL COMPANY of Youngstown, Ohio.

(2) Material—All windows throughout shall be constructed of Truscon Special hot-rolled, new billet steel, galvanized. Sills shall be of No. 14 gauge; weight boxes, combination jamb, cover plate and parting strip 18 gauge; rails and stiles of sash 18 gauge; inside glazing strips at jambs 14 gauge; head cover plate 24 gauge; head 16 gauge.

(3) Construction—Frame Members: head, sill and combination jamb, cover plate and parting strip constructed each of one piece of metal, exclusive of weight box cover and head cover; all members formed straight and true with welded joints ground smooth; staff mould formed as separate piece.

(4) Combination jamb, cover plate and parting strip (removable) formed with deep weathering. Weight box cover held to jamb member. Weight box cover shall run the full height of the jamb from sill to head.

(5) A brass check plate shall be attached at meeting rails to insure proper weathering.

(6) Sash Members: Sash members shall be so designed that the distance from masonry opening to glass lines at head will be 2½ in.; at jambs 1⅞ in.

(7) Corners of sash shall be welded and ground smooth.

(8) Where muntin bars are required, they shall fit into sash members and be so welded that a flush surface is secured at intersections.

(9) The meeting rails shall be formed so as to interlock.

(10) Glazing strips shall be secured with oval-head screws to permit inside glazing.

(11) Weatherstripping—Weatherstripping shall be provided of spring bronze and applied to sash members at sill, jambs, meeting rails and head.

(12) Hardware Equipment—Frames shall be equipped with pressed steel pulleys and pressed steel housings, with hard steel pins in a brass bushing. Sash shall be hung on No. 130 Galvanized Steel Sash Chains, exposed and properly balanced with cast iron weights.

(13) Sash shall be equipped with one pair of lift handles, one sweep lock, and one pole socket; all of galvanized malleable iron.

Note: Special steel or lead weights shall be supplied where cast iron weights are not sufficient to balance sash properly.

Note: Hardware is furnished in bronze, where so specified, at an additional cost.

(14) Painting—All windows shall be given a dip coat of Truscon Special Protective paint after assembly (in addition to galvanizing) and before shipment, covering all surfaces, inside and outside, weight boxes and other concealed spaces.

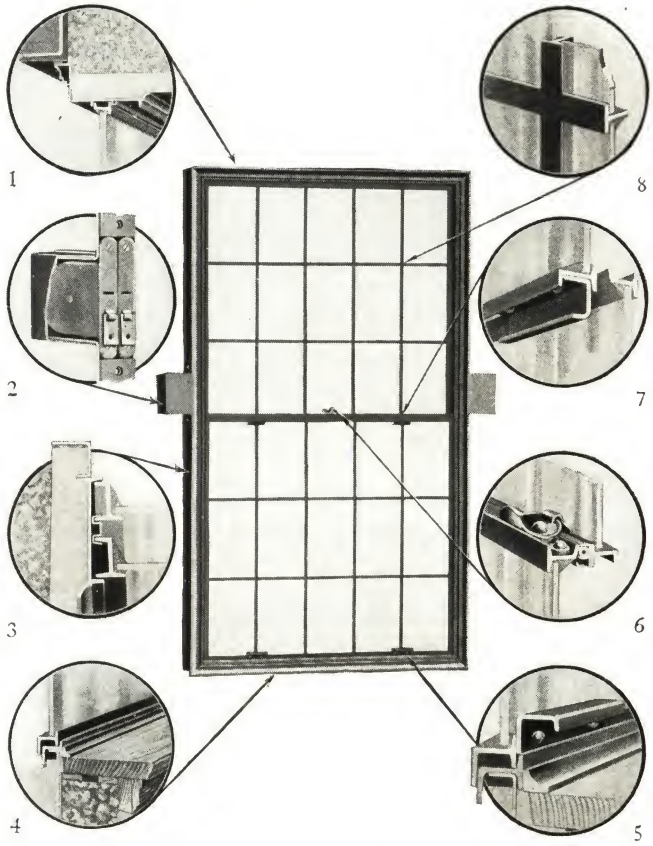
TRUSCON DOUBLE-HUNG STEEL WINDOWS (Continued)

Light Weight Spring Balanced

Foreword

This window has achieved great popularity for governmental work, especially in the many new Veterans' Hospitals. The narrow, trim lines and very economical price of the Light Weight Spring Balanced Window make it a practical installation for residential and similar light-duty construction.

Although termed a "light-weight" window, the many features of the Truscon design impart a sturdiness and rigidness usually associated with much higher priced types. Frames are made in one unit and solidly welded at corners. Specially designed sash sections are mortised and tenoned and air-hammer riveted. A special feature is the frame section, 3¾ in.



over all, which includes an integral moulding that imparts an exceptionally well finished appearance to the window on the inside, adds rigidity to the frame and simplifies erection.

Weathering is provided by means of a specially designed combination weathering and parting strip of bronze at the jambs; a special rubber tubing encased in a metal housing at the meeting rail intersection; and double contact weathering at head and sill.

The window may be used either with single pane glass or divided into smaller glass sections by means of muntin bars which have mitered and mechanically interlocked joints that develop maximum strength and offer a neat, flush surface on the inside.

Construction Details

(1) Head Section—Cross section of outside frame showing inner moulded edge and sub-frame of 14-gauge metal, together with exterior moulding of 18-gauge metal.

(2) Spring Balances—Enclosed in metal housing securely attached to frame. Metal tapes attached to sash.

(3) Jamb Weathering—Specially designed of bronze, forming a parting strip and weatherstrip in the same piece.

(4) Sill Section—Showing double contact weathering.

(5) Lift Handles.

(6) Meeting Rail—Showing special sections, weathering block and special rubber tubing.

(7) Pull Down Handles—Attached to upper sash.

(8) Muntin Bar Intersection—Made with a mechanically interlocked joint having great strength and offering a neat, flush surface on the inside. Vertical and horizontal muntins are of the same size, affording a uniform putty face and permitting a satisfactory glazed installation.

Condensed Specifications

(1) General—All windows shown on drawings, or called for in Specifications, shall be Light Type Spring Balanced Double-Hung Windows, as manufactured by the Truscon Steel Company of Youngstown, Ohio. No substitution shall be permitted without the written approval of the architect or engineer.

(2) Material—Frames and Sash: Shall be constructed of hot-rolled new billet steel; sub-frames shall be of 14-gauge material; exterior moulding of 18 gauge.

(3) Construction—*(a) Frame Members*—Head and jamb members shall be of a special rolled section, depth of section to be not less than 3¾ in. including cove moulding, which is an integral part of the frame section.

Intersection of sections to be welded and ground smooth where necessary. When required, an exterior sub-frame and moulding may be applied to frame section (see detail).

(b) Sash—Shall be constructed of channel sections not less than 1 7/16 in. deep, the corners to be mortised and tenoned and air-hammer riveted.

(c) Muntins—Where required, shall be hot-rolled "Tee" sections. At intersections, there shall be a mechanical joint rigidly interlocking the muntins flush with each other. Joints of muntins and frames, stiles and rails shall be tenoned, mortised and air-hammer riveted.

(4) Weathering—A specially designed combination weathering and parting strip of bronze shall be provided at the jambs. (See detail.) There shall be a weathering block provided at the meeting rail. Meeting rail intersection shall have a special rubber tubing encased in a metal housing to provide weathering.

(5) Hardware—*(a)* All units shall be equipped with one pair of steel lift handles, one pair of pull down steel handles and one malleable iron sweep lock with steel strike.

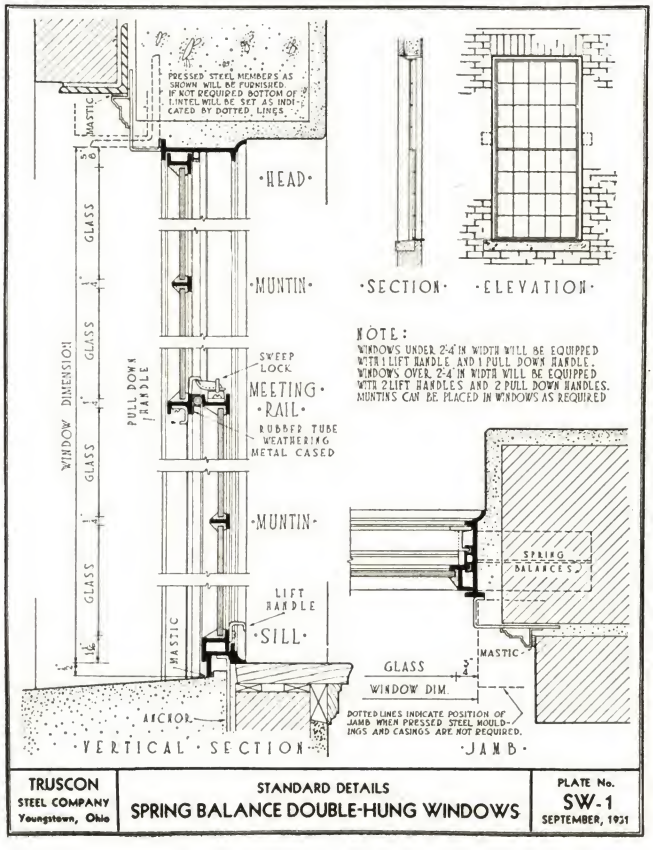
Note: All windows under 2 ft. 4 in. in width will be equipped with one lift handle and one pull-down handle.

(b) Each sash shall be suspended on two enclosed spring balances as furnished by Truscon Steel Company.

Spring balances shall be enclosed in a metal housing and securely attached to frame. Metal tapes shall be properly attached to sash and shall hang vertically and run freely at all times.

(6) Anchors—Units shall be equipped with strap anchors at jamb for attaching to building construction.

(7) Painting—All windows shall be given one coat of protective paint, before shipment.



TRUSCON DONOVAN AWNING TYPE STEEL WINDOWS

Model No. 29

Description

Daylight illumination without sun glare, and natural ventilation without draughts are provided for schools, hospitals, offices, hotels, apartments and public buildings by Truscon Donovan Awning Type Steel Windows. They are made of high quality steel and are superior in design, construction, workmanship and operation. Their moderate cost makes them practical for any building.

Simple, substantial and pleasing in appearance, the Donovan Window details have been carefully worked out to make possible the practical application of the latest and best principles of perfect ventilation and correct lighting.

Two or three superposed sash, supported in each sturdy frame, open outward in unison to provide all the benefits and weather protection of an awning, and accomplish the proper deflection of air currents upward and toward the far side of the room. Movement of the lower sash operates the upper, but by merely moving a lever, the lower sash may be opened or closed independently of those above.

An essential feature is the method of attaching shades, one to the lower rail of each sash, which makes it an easy matter, when the sashes are open, to shut out the direct rays of the sun without interfering with the daylight illumination or in any way obstructing ventilation.

The Donovan Window is easily cleaned from the inside with safety and economy, and costs no more than old-fashioned types. Its perfected form is the outcome of long experience, often making possible a saving of from ten to fifteen percent in building costs by removing the necessity of expensive plenum systems.

The Donovan Window Catalog is available on request.

Construction Details

(1) The Head Construction—Utilizes a heavy Tee section as a bearing against which the top ventilator makes a two-point contact that is positive and weathertight. An angle welded to the Tee bar provides an anchorage fin that insures a tight installation in the wall.

(2) The Meeting Rails—Are Tee sections which provide a two-point flat contact bearing for the bottom rails of the ventilators to which drip strips are welded for further weatherproofness. Note that the shade bracket is placed close to the ventilator to prevent infiltration of light.

(3) The Bottom Ventilator Pivots—Are ruggedly constructed. When the bottom ventilator is released from the others, the pivot pins are pulled and the bottom ventilator guided by shoes, as shown. Spring pressure snaps the pins back into position for regular operation.

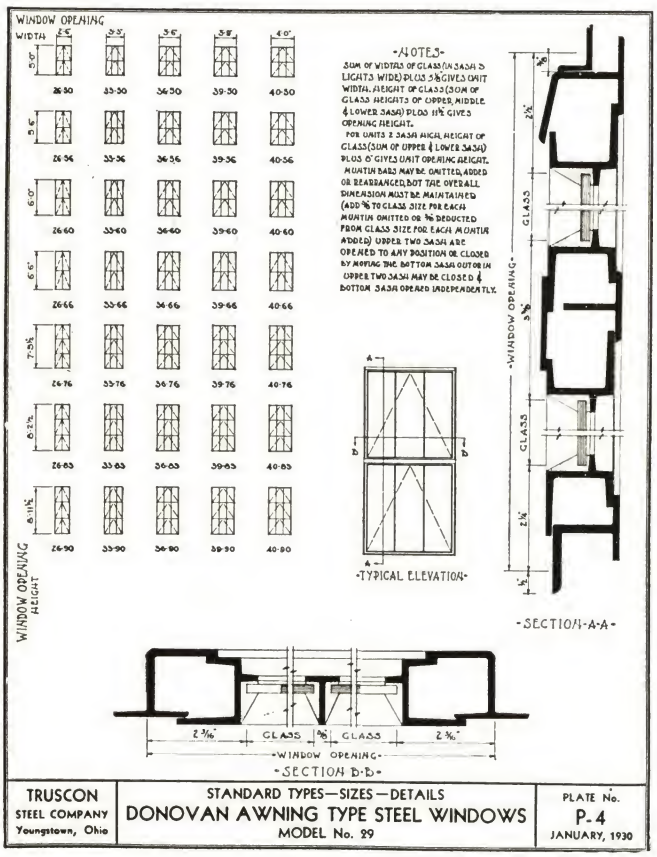
(4) The Sill—Also utilizes two-point flat contact construction to assure weather-tightness, and in addition, the longest leg of the sill member is placed on the outside to make weathertight contact with the masonry.

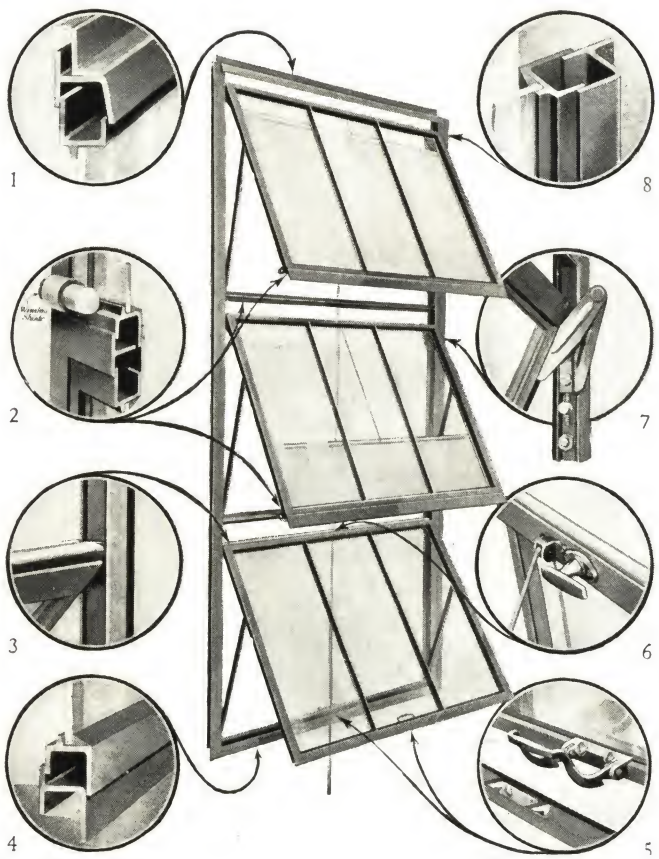
(5) The Locking Handle and Strike—Permit the window to be locked by a simple down and inward pull, practically automatic. The handle is shaped and placed so that the knuckles of the operator cannot be scraped on the sill. This handle provides complete operation of all superposed sash.

(6) The Releasing Handle—Disconnects the bottom ventilator from the others so that each ventilator may be moved separately and left in any desired position without reference to the positions of the others.

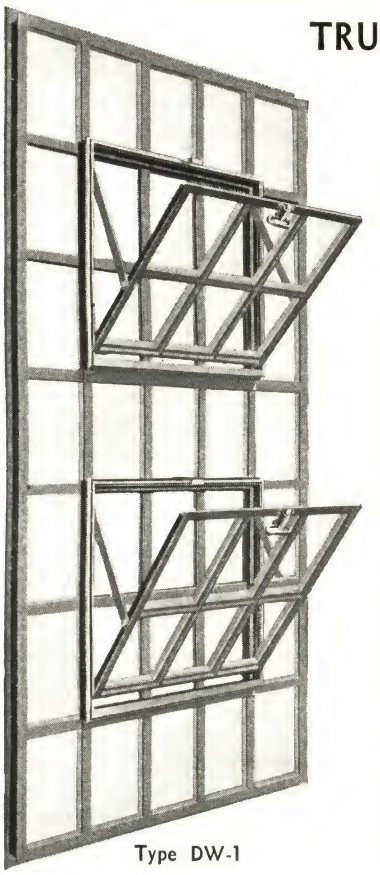
(7) The Upper Ventilator Hinges—Are fastened to the connecting bars by screws and to the ventilators by welds. The tightness of the ventilators can be increased or relieved by moving these hinges up or down on the bars. The adjustment is easily made with a screwdriver.

(8) The Jambs—Also utilize the two-point flat contact weathering system, the same Tee section being used here as at the head and sill, providing exceptionally fine contact with the walls or mullions.





TRUSCON DETENTION STEEL WINDOWS



Type DW-1

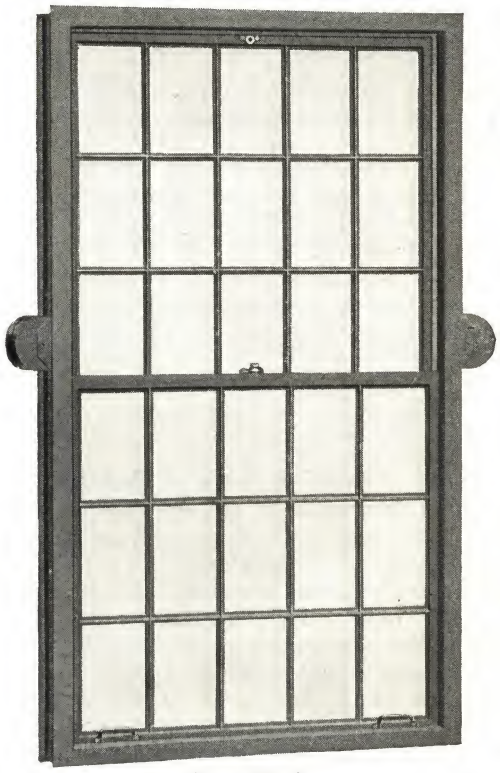
Description

In selecting windows for detention institutions such as prisons, reformatories and psychopathic hospitals, the designer requires a variety of types to conform to the different conditions found within the institution.

A window that provides adequate security for one class of inmates may be totally inadequate for a more desperate class. It was with the object of providing maximum efficiencies consistent with the degree of detention-security desired that the various types of Truscon Detention Windows were developed.

Included in the full line of Truscon Detention Windows are types which will meet all requirements for such institutions. Each type offers particular advantages—in some cases, maximum security; in others, such as those suitable for hospitals and minor psychopathic wards, maximum lighting and ventilation.

These windows are quality products throughout, constructed with great care, of high grade materials and smoothly finished. All screws are riveted so as to be non-detachable and all bars, adjusters and other parts are irremovable.



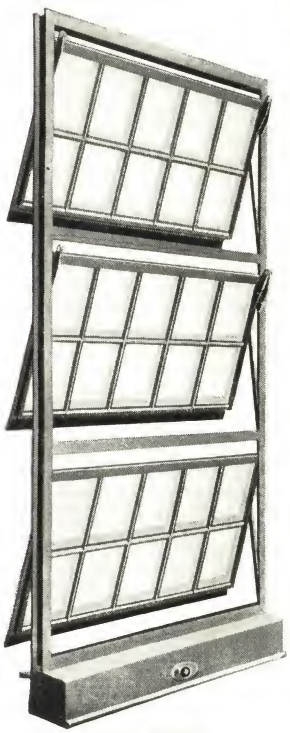
Type DW-2

Lockbar Type DW-1

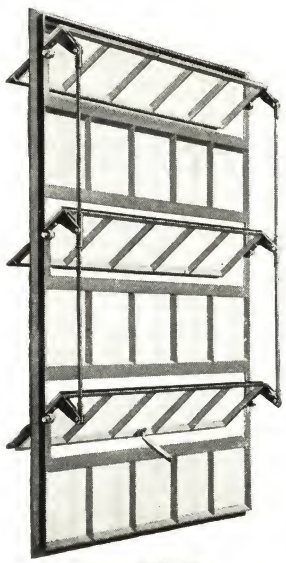
This type provides the maximum detention qualities available in modern steel window construction. Vertical muntin bars weigh 2.10 lb. per linear ft. and horizontal bars weigh 1.98 lb. per linear ft. The design offers maximum resistance to sawing. Ventilators are of the projected type, opening up and in. Bronze friction shoes and bushings insure against corrosion and wear. Screens may be installed between the vents and the continuous outside bars.

Spring Balanced Type DW-2

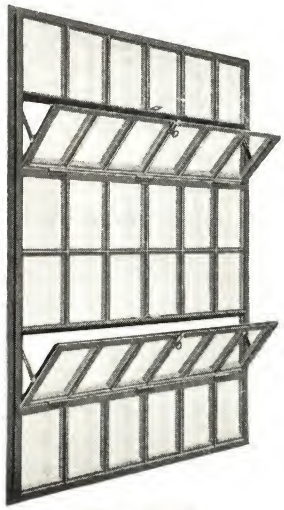
Where the exterior and interior simplicity of ordinary institutional construction is the desirable feature, these windows are excellent. A pressed steel frame provides an architectural effect both inside and out. Each sash is balanced on two spring balances, designed so that the tension can be adjusted easily, with neither the balance nor the tape exposed. Extent of opening is governed by a stop, removable only by a special key; jamb locks also may be provided. Two point weathering at head and sill and spring bronze weatherstripping at jambs afford effective weathering. Hardware may be either malleable iron or bronze. Ventilation may be obtained at both top and bottom.



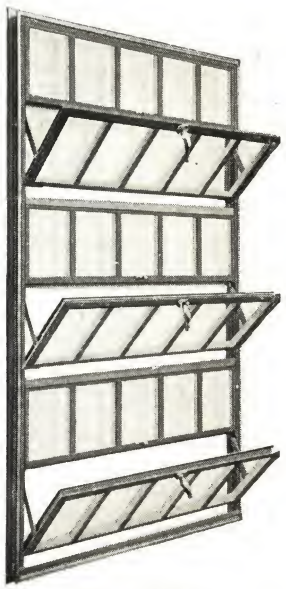
Type DW-6



Type DW-10



Type DW-9



Type DW-7

TRUSCON DETENTION WINDOWS (Continued)

Spring Balanced Type DW-3 and DW-3A

These windows provide the same ventilation, light and detention advantages as Type DW-2, but are different in construction. The frame of the DW-3 window is constructed of hot-rolled steel. Stiles, rails and muntins also are hot-rolled new billet steel. The DW-3A window is generally similar in design except that heavy rolled steel sections, welded at all intersections, are used where strength and rigidity demand. Mouldings and casings are formed steel, and the sill is designed for use with auxiliary stone and concrete.

Weathering is provided by two-point contact and bronze weatherstripping. Each sash is balanced on two spring balances, adjustable without removing from jamb. Extent of opening governed by stop removable only by a special key. Jamb locks may be supplied. There are no detachable parts, for all hardware is screwed to the sash and riveted. Hardware is of good design and may be either malleable iron or water-rolled bronze.

Spring Balanced Type DW-4

This type of window provides excellent detention qualities and may be used in corridors of cell blocks and other buildings where supervision is possible. It has a fixed frame section on the outside with bars continuous from jamb to jamb and head to sill. The fixed frame and bars are backed up with a sliding sash at the lower half of the window. The sliding sash and the portion of the fixed frame above the sash are glazed, whereas that part directly in front of the sash remains unglazed. This gives the desired ventilation and retains detention qualities.

The sliding ventilator is equipped with two spring balances that are enclosed in a pressed steel box, concealed in the masonry when installed, and adjustable for tension without removing from jamb. Weathering is provided by two-point contact at sill, interlocking meeting rail and spring bronze weatherstripping at jambs. Jamb locks may be provided and all hardware is riveted in place to be irremovable.

Donovan Awning Type DW-5

This type provides maximum light and 100% ventilation and is particularly advantageous because all ventilators may be operated by hand as a unit from the floor. The stop at the jambs, removable by authorities with a special key, prevents the opening of the window greater than a predetermined maximum at any point. The stop may be removed to permit the easy washing from the inside of the building. The window is constructed of heavy sections, has no removable parts to be used as possible weapons and no pole is needed for operating. This window is desirable for psychopathic wards and curative institutions, but when maximum detention qualities are wanted, this security can be obtained by means of permanent bars in the masonry. It is a standard type of window adaptable to institutions where minimum labor for correct ventilation is desirable. Screens are easily applied to the inside and proper weathering is obtained through two-point contact throughout.

Donovan Awning Type DW-6

The Donovan Awning Type Window DW-6, has all the features and details of the hand-operated Donovan Window DW-5, but is mechanically operated by a removable crank which is in the possession of the authorities. This permits the desired ventilation but prevents inmates from adjusting the ventilation contrary to the desires of those in charge.

This window is particularly advantageous for use in tuberculosis and similar institutions.

The crank operation may be extended to provide mechanical operation from remote control and thus be used for forced ventilation in cells for solitary confinement. In such cases there should be a wire screen, of $\frac{3}{16}$-in. wire and not more than $\frac{3}{8}$-in. opening, between the prisoner and window.

Projected Prison Type DW-7

For detention purposes the glass area is limited to 6x9 in., with muntin bars sufficiently heavy to prevent rapid escape by the use of contraband tools. Due to the limited height of the glass, the ventilator cannot open to a sufficient degree to permit escape and ventilators cannot be removed from frame.

The DW-7 Window is built from heavy casement sections, but of a design that is economical to fabricate, with the vents projecting up and in. Individual screens may be applied to each ventilator or one large screen may be used for the entire window. It is possible to wash the outside of the window from the inside if the ventilators are properly placed.

Effective weathering, due to $\frac{3}{8}$-in. flat double contacts throughout, is provided. The vents are held in any desired position by two supporting arms and bronze friction shoes. Hardware may be either malleable iron or solid cast bronze.

Hinged Type DW-8

This type provides excellent detention qualities and is suitable for use in outside cells even where supervision is not possible except from a corridor. The amount of ventilation depends upon the size of the openings and the number of lights in units.

The bars in the fixed portion are continuous from jamb to jamb and head to sill. Vertical bars are spaced 6 in. on centers, and horizontal bars 9 in. on centers. These bars are backed up with bottom-hinged ventilators which are glazed, the portion of the fixed frame directly in front of the ventilators remaining unglazed. Ventilators may have small lights or one pane of glass.

All sections are constructed of Truscon specification, hot-rolled steel, giving maximum resistance to shock and great resistance to bending. There are no detachable parts, as the hardware and supporting arms are riveted to the window. This window may also be supplied with ventilators to project up and in. Screening is accomplished by fastening the screens directly to the outside fixed portion which remains unglazed.

Bottom-Hinged Type DW-9

The detention characteristics of this window are the same as the interior projected window, and it is preferred by many architects and engineers over the latter. For detention purposes the glass area is limited to 6x9-in. lights, preventing sudden escape by the mere breaking of the glass; although the muntin bars are not of the heaviest type, they prevent sudden escape by the use of contraband tools.

Ventilators, which are limited in number to every alternate glass height, are hinged at the bottom with heavy steel butt hinges; one leaf being welded to the vent and the other riveted to the frame. Steel pins of the hinges are welded to one leaf of the hinge. The vents can be opened six in. at the head and are held in position with supporting arms that are concealed within the sections when closed.

Weathering is very effective, having two-point contact at all points. Screens are applied to the outside.

Horizontally Pivoted Type DW-10

This is another of the various types of Truscon Windows available for use in detention institutions. The horizontally pivoted window is limited to 6x9-in. lights for detention use, preventing sudden escape by mere breaking of the glass. The vents are operated simultaneously in one unit by connecting bars operated by the bottom vent. The window allows 50 per cent ventilation, for it is possible to have ventilation at each alternate glass height.

These windows, as variously designed by architects, are suitable for workshops or exterior wall windows in interior cell block construction, preferably in institutions with surrounding walls, and may be varied to suit requirements.

TRUSCON RESIDENCE CASEMENTS

Series 5

Foreword

The increasing preference for Truscon Residence Casements is due largely to the inherent beauty, architectural harmony, simplicity, fine quality and superior craftsmanship which go to make these modern windows. Constant effort toward their improvement has resulted in many changes; the sections are of better design, the hardware is artistic and beautifully finished, weathering is positive and screening has been developed so that the complete casement presents an ultimate degree of refinement.

Single and combination casements in a large range of sizes, with or without sill ventilators or transoms, and with several fine screen solutions available, permit the selection of the exact type to meet individual requirements.



Casement Doors

Truscon Steel Casement Doors make a practical installation in conjunction with the Residence Casement. Handsome in appearance, mechanically and architecturally correct, they are adaptable to many styles of buildings, including homes, city and country clubs and apartments with private porches.

These doors are made in one standard size, each leaf 2-lights wide and 6-lights high, with a steel panel at the bottom. They conform perfectly to the Residence Casement, having the same sections. etc.

Condensed Specifications, Truscon Residence Casements, Series 5

(1) General—All Window openings shown on drawings unless otherwise specified shall be fitted with a standard type of casement as manufactured by the TRUSCON STEEL COMPANY of Youngstown, Ohio.

(2) Construction—*(A)*—All casements and standard combinations shall be manufactured in complete units at factory. The nominal glass size shall be 8x12 in.

(B)—All frames and stiles and rail members of swing leaves shall be Zee bars. All corners to be mitered and electrically butt welded. Exposed faces at welds to be ground smooth.

(C)—All muntins shall be Tee bars with a ⅝-in. face and a depth of ⅞ in., and shall be continuous between rails and stiles. At intersections there shall be a mechanical joint rigidly interlocking the muntins flush with face on the inside. Joints of muntins with frames, stiles and rails shall be tenoned, mortised and air-hammer riveted. Horizontal muntins shall be punched for glazing clips.

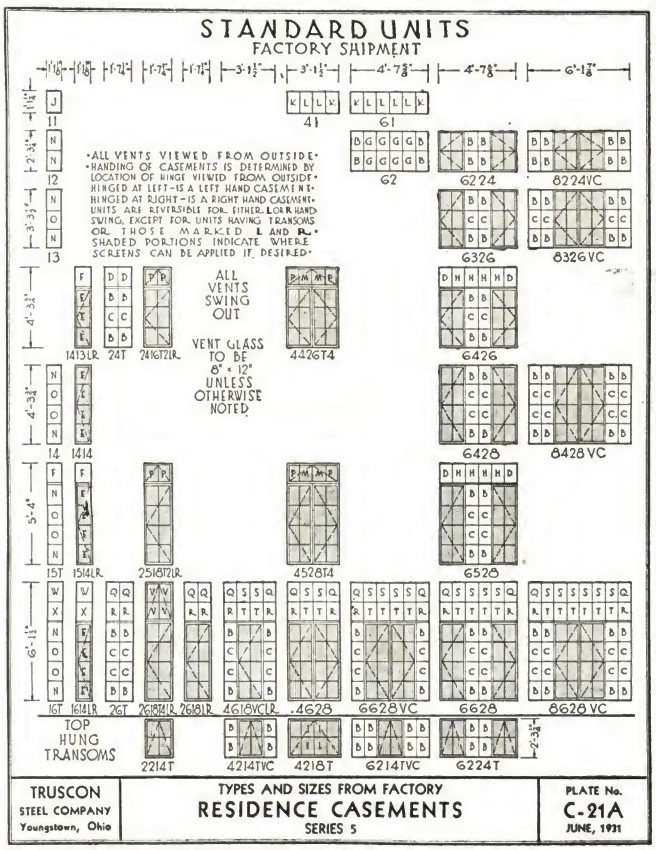
(D)—All side hung swing leaves shall open outwardly and be equipped with heavy extension (cleaning) hinges that are securely riveted to rails of sash and electrically welded or riveted to frames.

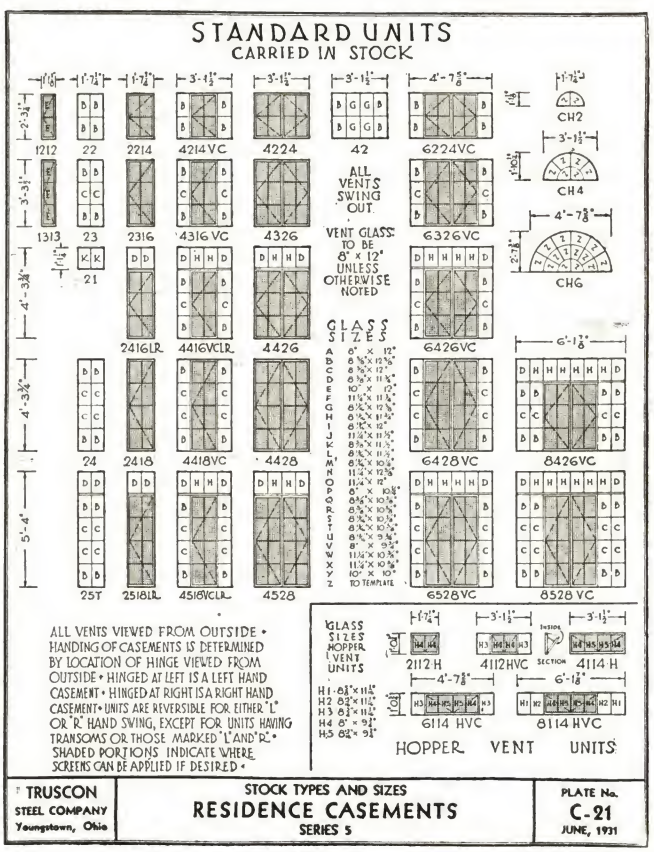
(E)—Hinges shall be of the special Truscon friction type, designed to hold window open in any desired position.

(F)—Windows shall be hinged to swing right or left as indicated. Continuous double contact weathering between swing leaves and frame shall be provided.

(G)—Where combinations of standard units are required for any single opening, vertical and horizontal mullions shall be used to join them.

(H)—A continuous drip strip shall be provided on transom bars of all standard swing leaf combinations.





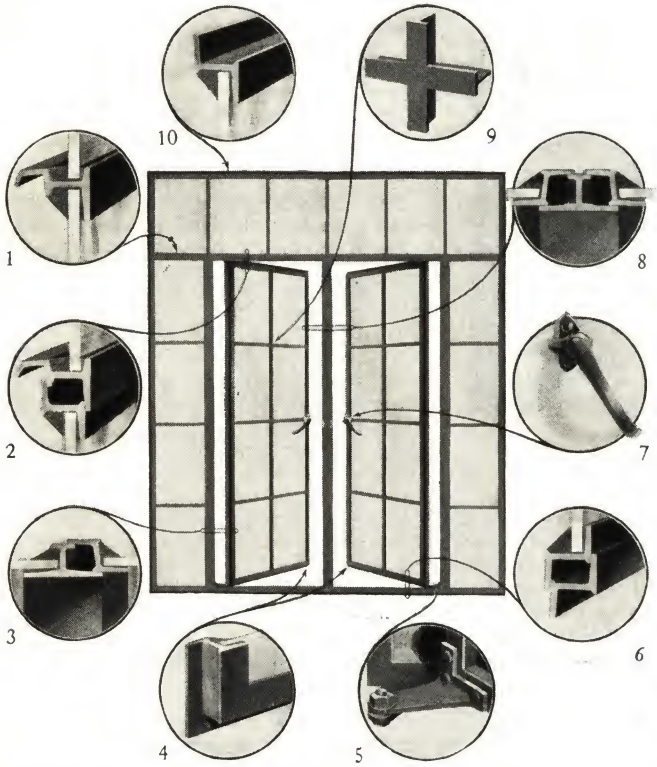
TRUSCON RESIDENCE CASEMENTS (Continued)

Construction Details of Residence Casements

(1) Transom Bar Section—Showing shape and position when used in unit.

(2) Ventilator Head Section and Transom Bar—Drip is an integral part, affording protection to ventilator below. Continuous from jamb to jamb.

(3) Interior Supporting Member for Ventilator—Heavy Tee section forming jamb for ventilator, with double contact weathering and insulating air space.



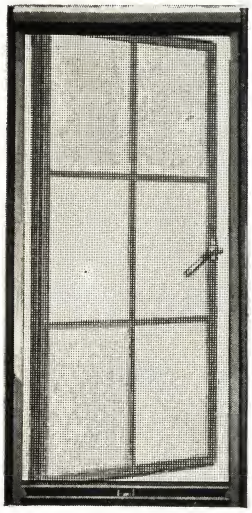
(4) Corners of Frame and Ventilators—Mitered, electrically butt welded and ground smooth.

(5) Friction Type Extension Hinge—Has the proper amount of friction to hold ventilator in any desired position. Allows easy cleaning.

(6) Sill Section of Zee Bars—Showing the wide double contact weathering.

(7) Artistic Handle—Standard black lacquer finish; also chromium, Butler nickel or solid bronze.

(8) Vertical Meeting Rail—Providing maximum weathering, insulating air space and rigidity.



(9) Muntin Intersections—Made with a mitered and mechanically interlocked joint with a neat, flush surface on the inside. Vertical and horizontal muntins are of the same size.

(10) Zee Bar Sections—Used for outside frame members of all combinations and around swing portion of casement.

Casement Rol-up Screens

The Truscon Rol-up Screen is a handsome, efficiently operating, durable accessory that rolls up out of sight when not in use, thus protecting the screen against wear, the elements and possible damage and does not obstruct the light. It is economical in cost and with proper care will give a lifetime of service.

The screen fits flush against the casement frame and requires no cutting, special moulding or fitting. Installation requires merely the drawing up of 6 screws in the casement frame and the screen can be removed just as easily. Rol-up Screens are thoroughly in keeping with the architectural beauty of the casement. Inconspicuous slender guides and a small housing blend in perfectly.

Condensed Specifications—

(1) Screen Material—(A) All sheet metal parts shall be hot galvanized steel.

(B) Bearings, where required, shall be solid bronze.

(C) Wire cloth shall be 16-mesh antique finish bronze.

(2) Screen Construction—(A) Housing shall have chamfered corners formed from 22-gauge galvanized steel with neatly fitting end caps. End caps shall carry telescoping projections snugly fitting into upper ends of guides to provide adjustability of length.

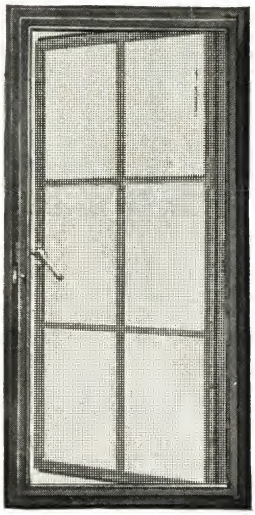
(B) Guides shall be $\frac{11}{16}$ in. wide by $\frac{33}{64}$ in. deep, made of 20-gauge steel and designed to interlock with the bottom rail of screen.

(C) Bottom rail shall be equipped with a positive locking device and have a Flexo Rubber Cushion for stool contact.

(D) Roller mechanism shall be all metal, with a $\frac{3}{8}$-in. solid steel mandrel running entire length of roller, special bronze bearings and "music wire" tension spring capable of maintaining a sufficient and constant pull.

(3) Screen Painting—Screens shall be finished in blue-black Duco.

Side-Hinged Screens



For hospitals, offices, apartment hallways and general screening purposes, where low cost, performance and simplicity of operation are all required, the Truscon Side-Hinged Screen makes an excellent installation. Screens fit flush against the casement frame so that no special window construction is necessary, and no special fitting, carpenter work or mouldings are required.

Truscon Side-Hinged Screens are made in standard sizes, with the result that screens for similar sized openings are completely interchangeable. They are removed and replaced without the slightest effort and are extra sturdy to resist possible damage.

Condensed Specifications—

(1) Screen Material—(A) Frame shall be made of cold-rolled galvanized steel.

(B) Wire cloth shall be 16-mesh, antique finish, solid bronze.

Frames of aluminum or bronze and wire cloth of aluminum, Monel or bronze other than 16-mesh can be furnished.

(2) Screen Construction—(A) Screen shall be of standard flat type.

(B) Screen frames shall be of tubular construction; all corners shall be reinforced or welded.

(C) Removable spline shall be provided so as to permit re-screening.

(D) Pivot rods shall be provided at each end. The lower pivot shall be of plunger adjustable type so that the screen can be removed easily.

(3) Screen Hardware—Bronze spring catch and extended keeper, together with pivot brackets, shall be supplied and shipped with all screens.

(4) Screen Painting—All casement side-hinged screens shall receive one standard shop coat of paint.

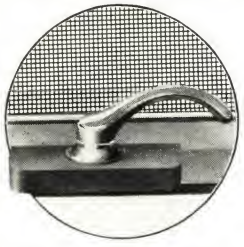


Artex Under-screen Operator Installed

Note how inconspicuous it is, and how convenient its size and location

Artex Under-screen Operator

An exclusive automatic device for the positive operation of the casement through the screen. It is compactly built so that no part of it protrudes beyond the sill to become an obstruction when restricted ventilation is required. Operation is so simple and efficient that merely a turn of the handle gives the desired degree of ventilation; at the same time, the casement is automatically locked in any open position and can be moved only by means of this handle. The bronze screen used with the Artex Operator is standard in construction and is held in place by special clips. A cam locking handle is applied directly to the casement frame, engaging between the frame and the vent.



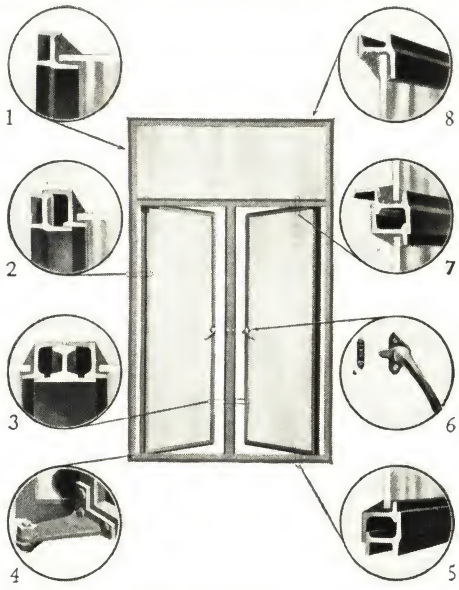
TRUSCON ARCHITECTURAL CASEMENTS

Series 15

Foreword

The Architectural Casement, Series 15, has been designed to fill the need of a heavier type of casement for better class residential and apartment work. These windows lend themselves to the latest architectural developments and can be adapted to meet any desired specification.

Units, when shipped to the job, are completely assembled and painted, ready to be set into the opening. Casements may be either single or double; the double units may be modified to include hopper vents or transoms or both. In any case, the casement is constructed within one complete frame, having continuous frame sections that are mitred and butt welded at the corners. All sections are copper-bearing steel and perfect double flat contact weathering is maintained throughout of not less than ⅞ in. between sash and frames.



Construction Details

(1) Jamb Section—Cross section of continuous frame member at jambs. All corners of frame are mitred, butt welded and ground smooth before assembly.

(2) Jamb Section Through Frame Member and Ventilator Section—Showing positive ⅞-in. double contact weathering.

(3) Vertical Meeting Stile Between Swing Casements—Note Heavy Tee section, flush on inside with frame, compact assembly and ⅞-in. positive double-contact weathering.

(4) Extension Type Friction Hinge—Permits easy cleaning of windows, inside and out, and holds ventilator in any desired position without the use of an adjuster. Bronze bushings assure long wear.

(5) Sill Section—Cross section through bottom rail of ventilator and frame section, showing ⅞-in. positive double-contact weathering.

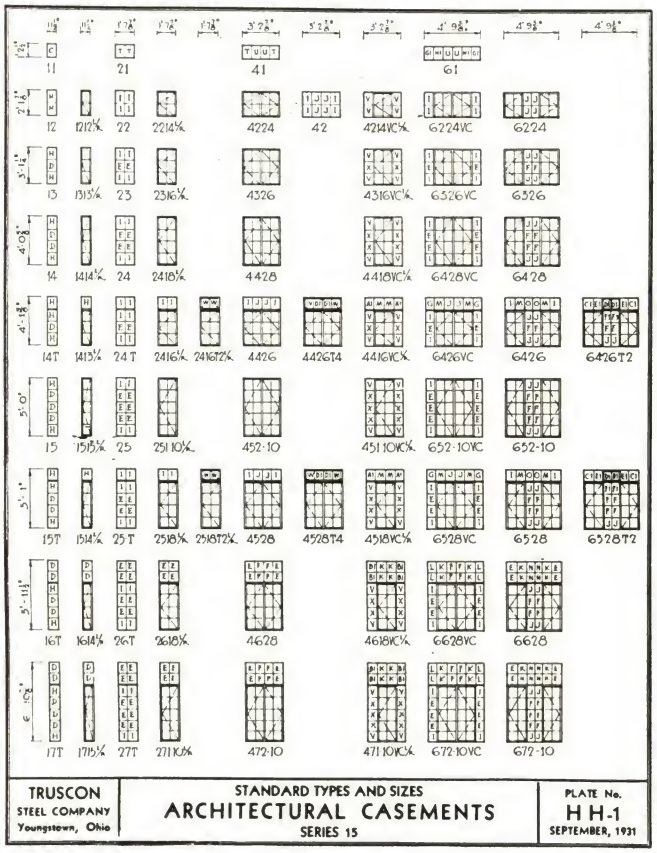
(6) Cam Latch Handle and Strike—For swing-out casements, in malleable iron, black finish; or U. S. Standard No. 11 cast bronze antique finish, at slight additional cost.

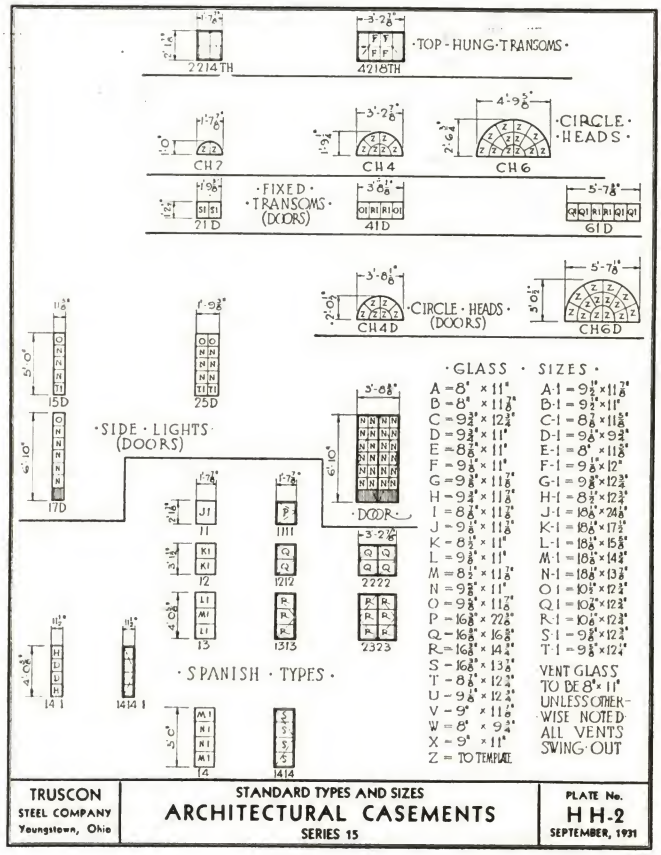
(7) Detail of Transom Bar—With fixed transom light above and ventilators below, showing ⅞-in. double-contact weathering.

(8) Head Section—Cross-section of frame at head when fixed transom light is required. Frame section continuous from jamb to jamb.

Aluminum Architectural Casements, Series 15

Where the character of the installation is such that only the very finest materials are desired, Truscon Aluminum Architectural Casements will be found most fitting. The sections are solid, one-piece extruded aluminum and the construction of the casements is of unsurpassed craftsmanship. Hardware is beautifully designed and finished in cadmium plate, or made of cast aluminum. The types, sizes and details are comparable to the steel Architectural Casements, although the sections are necessarily greater because of the difference in the tensile strength of the two metals. Thus, the architect has the same wide selection in aluminum as he has in steel.





TRUSCON MONUMENTAL CASEMENTS

Series 15-C

Foreword

The Monumental Casement, Series 15-C, is, as its name implies, a window suitable for installation in buildings of a monumental character. The sections are especially heavy and the entire window imparts a feeling of massiveness and strength thoroughly in keeping with the types of buildings for which it was developed. A wide application will also be found in fine residences, apartments, office buildings and public and educational buildings. Pressed steel frames, designed to harmonize with the architectural treatment of monumental buildings, are available when desired. Numerous arrangements are possible and they can be adapted to meet any desired specifications. Superior quality, fine workmanship and modern design are among the features.

Construction Details

(1) Head of Ventilation Transom—Cross section showing heavy thickness of metal with built-up baffle for weathering.

(2) Transom Bar Between Swing Casement and Transom—Cross section showing heavy Tee cross bar, compact assembly and correctly designed drip section.

(3) Jamb of Ventilated Casement—Cross section showing features similar to head section.

(4) Meeting Rail Between Hopper Vent and Swing Casement—Cross section showing special Tee cross bar, against which vent rails contact at two points each—four points in all. It is a compact assembly needing no drip section.

(5) Jamb of Hopper Vent—Cross section showing features similar to jamb just above, but with baffle and vent reversed.

(6) Sill of Hopper Vent—Cross section showing frame section similar to head. Hinge applied in the most direct and simple manner, half-concealed.

(7) Hinge—Direct view showing five-knuckle 3½-in extruded bronze hinge with $\frac{5}{16}$-in. cold-rolled steel pin. Hinge screwed to frame and ventilator so that no screw heads are visible.

(8) Vent Stop—Direct view of bronze vent stop, concealed in stile. Controls swing of hopper vent.

(9) Latch and Strike—Direct view of forged bronze latch and strike for inswinging hopper vent. Bronze flathead countersunk machine screws are used.

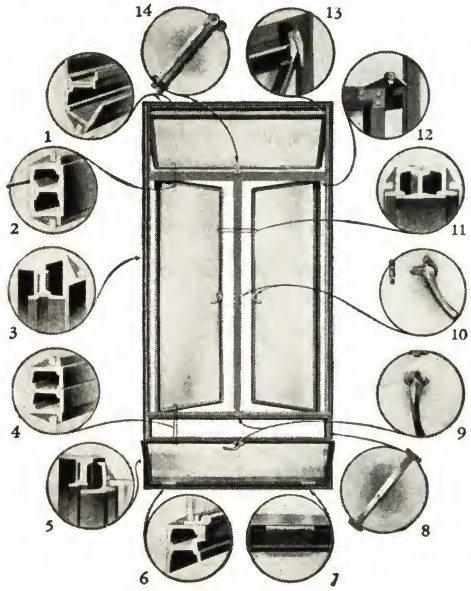
(10) Latch and Strike—Direct view of forged bronze latch and strike for out-swinging casements.

(11) Meeting Stile Between Swing Casements—Cross section showing heavy Tee section flush on inside with frame. Similar to transom bar.

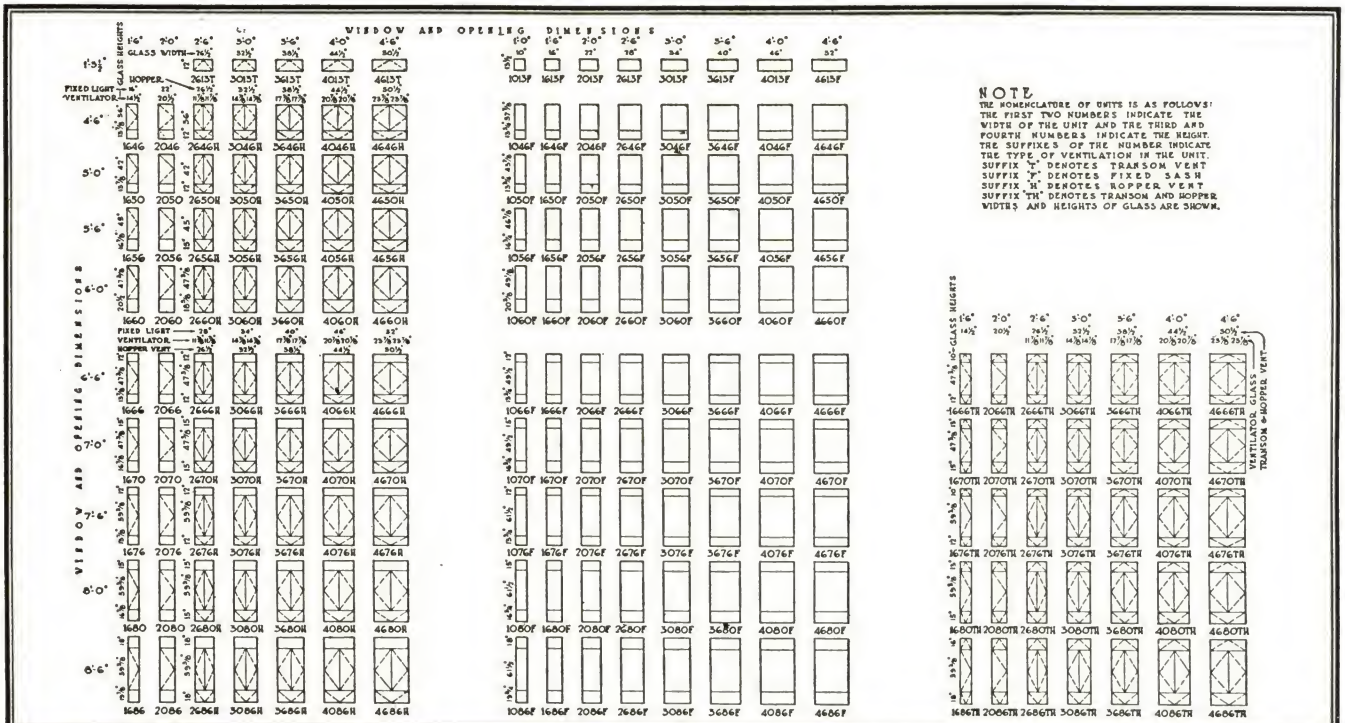
(12) Extension Type Friction Hinge—Bronze bushing holds the out-swinging casement in any desired position. Cleaning of outside of glass made easy.

(13) Short Friction Hinge—For transoms—welded to frame and riveted to vent. Steel friction bolt combined with bronze washers and cadmium plated spring steel washer. Holds transom in any desired position.

(14) Push Bar—For use with transom vents. Holds transom open in any desired position and may be operated with window pole. Bar support and bar are bronze.



Note: There is a $\frac{3}{8}$-in. double contact weathering between vent and frame. (1) At head. (2) At both top side and under side of transom bar. (3) At jambs of casement, at both sides of meeting stiles between swing casements. (4) At jambs of hopper vent. (5) At sill of hopper vent. (6) At both top and under side of cross bar of meeting rail between hopper vent and swing casement.



MONUMENTAL CASEMENTS

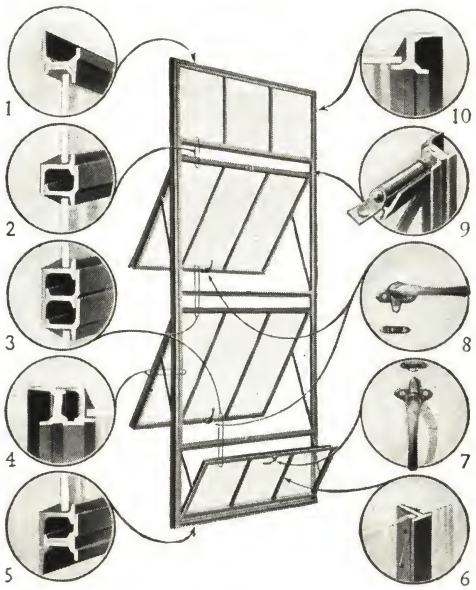
TRUSCON MONUMENTAL PROJECTED STEEL WINDOWS

Series 15-P

Foreword

These windows are especially adapted for use in buildings of a monumental type, and throughout the entire design there is an architectural harmony and mechanical perfection seldom found even in the most exclusive custom-built job.

Continuous frame sections in standard designs exclude the necessity of built-up assembled units, making a very rigid installation and preventing the possibility of bowing or misalignment. Hopper vents at bottom of window eliminate the need of window guards.



These windows give complete control of ventilation, for the ventilators may be set at any angle. Narrow steel members give the maximum amount of daylight possible from the masonry opening. The friction device that holds the vents open is of bronze, insuring against wear and corrosion, and is adjustable. Cleaning of the outside glass is easily accomplished from the interior.

All sections are made of hot-rolled copper-bearing steel. Units are square and true, with a perfect ⅜-in. flat double contact weathering maintained throughout between the sash and frame. All corners are electrically welded and ground smooth. Hardware is of artistic modern design, either made of U. S. Government specification No. 11, cast bronze or malleable iron, black finish.

Construction Details

(1) Head Section—Showing built-up section, similar for both head and jamb at fixed sash.

(2) Section Through Head of Vent—With fixed sash above and ventilator below showing ⅜-in. double contact weathering.

(3) Section Through Meeting Rail—Between two projected vents showing ⅜-in. double contact weathering in each case.

(4) Jamb Section Through Down and Out Vent—Showing built-up frame and ⅜-in. double contact weathering.

(5) Section at Sill with Hopper Vent Above—Showing built-up frame and ⅜-in. double contact weathering.

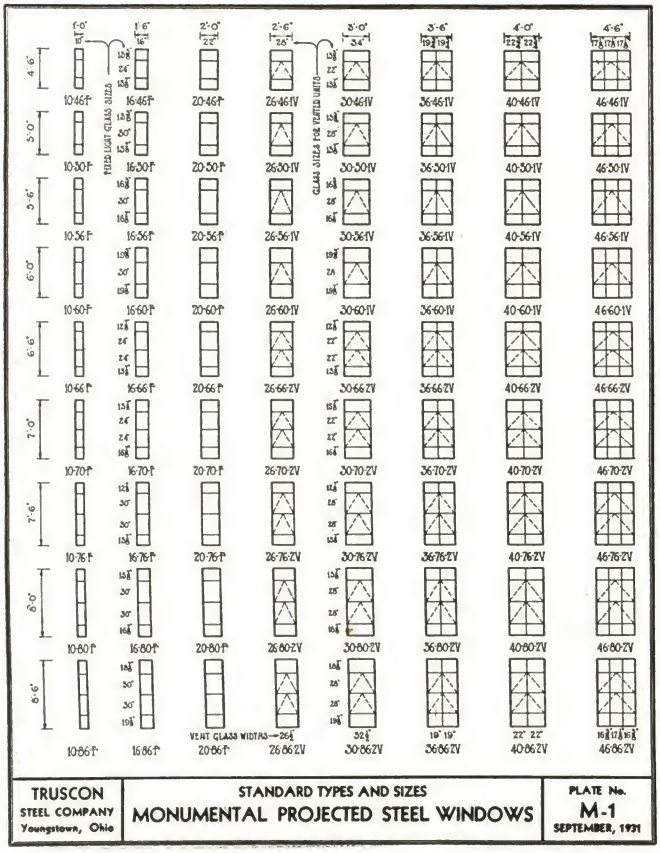
(6) Cross Section Through Tee Muntin Bars—Showing outside putty glazing with spring clips.

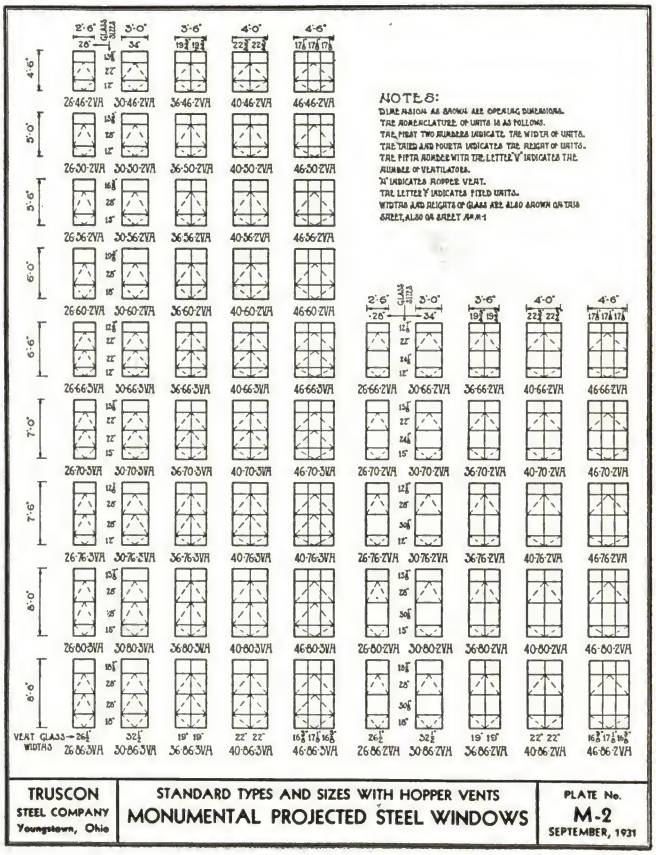
(7) Latch, Handle and Strike for In-Swing Hopper Vent—Showing standard bronze forgings (Assembly P-3300).

(8) Latch, Handle and Strike for Open-Out Ventilators—Showing standard bronze forgings (Assembly P-3301).

(9) Sliding Pivot—Showing vertical sliding adjustable brass friction shoe.

(10) Jamb Section at Fixed Lights—Showing built-up section.





TRUSCON ARCHITECTURAL PROJECTED STEEL WINDOWS

Foreword

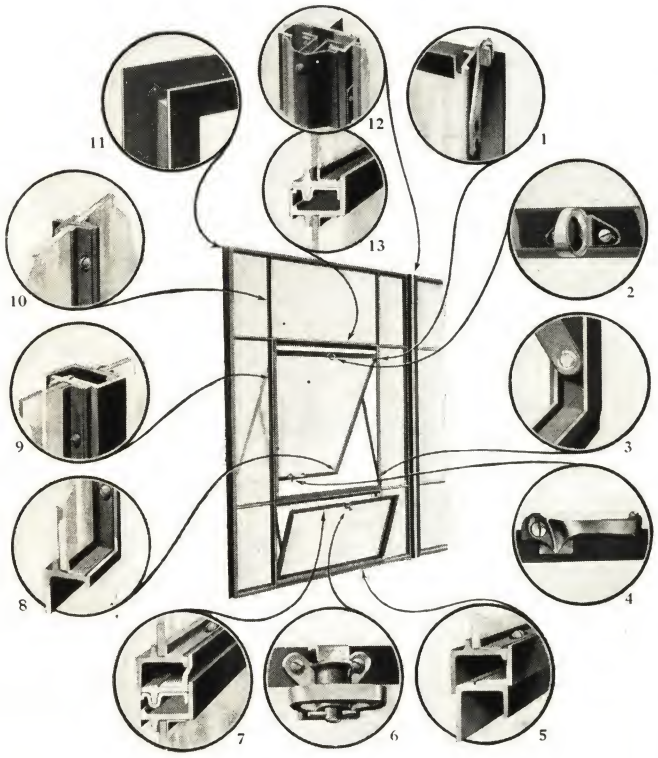
Truscon Projected Steel Windows—Architectural Type, are designed for appearance as well as practicability. They are furnished in a wide variety of types and sizes, combined as desired, enabling the architect to choose the exact window that will best harmonize with his building design.

By means of an outside frame that is formed of a heavy channel, these windows emphasize the massiveness that is basic in the design of so many modern buildings. Their slender steel muntin bars impart to projected windows a delicate beauty without sacrificing strength or daylighting.

Glazing angles, which are standard with Truscon Projected Windows—Architectural Type, also enhance the appearance of the window, as does the practice of using large glass sizes. Heavy bronze hardware completes the window's luxuriousness.

Ventilation is entirely controllable, as the ventilators may be opened to any desired degree. These windows, obtainable with either in-swinging or out-swinging ventilators, admit plenty of air and deflect it so as to protect the occupants of the room from draughts.

Weathertightness is assured by the rigid construction of the window and the Truscon double contact weathering.



Construction Details

(1) Solid Brass Sliding Pivot—Glazing ledge of sash section acts as guide, eliminating recess for collection of dirt and ice. Coil spring provides tension.

(2) Bronze Pole Hook Ring—Allowing operation of outswing ventilators, out of reach from floor, with window pole.

(3) Heavy Brass Bushed Pivot—$\frac{3}{16}$x1-in. supporting arms concealed when ventilator is closed.

(4) Locking Handle—Designed with strike plate of solid bronze.

(5) Double Contact Weathering—Through ventilator at sill.

(6) Automatic Spring Latch—Of solid bronze for ventilators opening in for hand or pole operation.

(7) Double Contact Weathering—Through sill of outswinging and head of in-swinging ventilators.

(8) Ventilator Frame—Rigid angle section, mortised and tenoned, electrically welded and ground smooth.

(9) Double Contact Weathering at the Jambs.

(10) Continuous Metal Glazing Angles—Glass is bedded in Truscon Steel Window putty and held in place with glazing angles attached to sash with brass bolts.

(11) Corners—Heavy frame members of unequal leg channels are mortised and tenoned, electrically welded and ground smooth.

(12) Vertical Mullions—Exterior Tee-bar with pressed metal interior cover to give rigidity and pleasing appearance.

Condensed Specifications

(1) General—All windows so indicated on the plans and elevations and called for in these specifications shall be the Architectural Projected Type as manufactured by the Truscon Steel Company of Youngstown, Ohio.

(2) Construction—All joints shall be mortise and tenon, and air-hammer riveted.

(3) The four corners of all ventilators and sash shall be welded and ground smooth.

(4) The intersection of horizontal and vertical muntins shall have a dovetail miter, rigidly interlocking the bars.

(5) No excess metal or projecting surfaces shall be permitted where muntin bars intersect.

(6) Muntin bars except where ventilators occur shall be continuous from head to sill and from jamb to jamb.

(7) Ventilators shall have double contact weathering on all four sides.

(8) The sliding pivots shall be constructed of forged brass.

(9) The outside section of the window shall be a heavy, solid rolled copper-bearing steel channel (210-A or 210-B section).

(10) The side of the window or ventilator frame shall act as a guide for the sliding pivot, and shall be constructed without recess or slot.

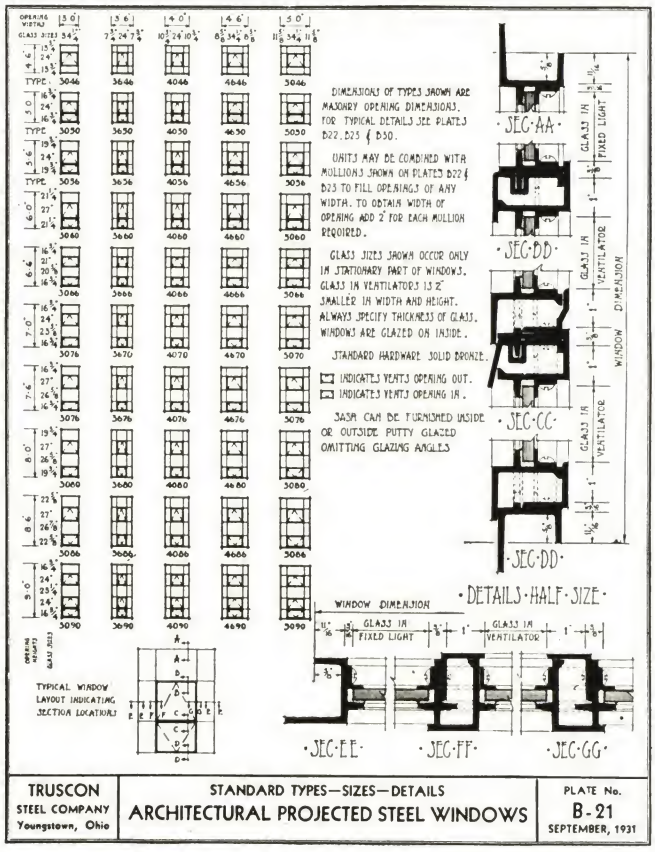
(11) Uniform tension to hold ventilators in any desired position shall be gained by the use of a spring applied between sliding pivot and ventilator.

(12) There shall be two heavy supporting arms attached to the ventilator and frame designed to be concealed when ventilator is closed. The rivet holes in supporting arms shall have brass bushing.

(13) Ventilators Projected Out when opened shall have no part of the ventilator projecting inside the normal plane of the windows.

(14) Ventilators Projected In shall not project outside the normal plane of the windows.

(15) Hardware shall be bronze throughout.



TRUSCON PROJECTED STEEL WINDOWS—COMMERCIAL TYPE

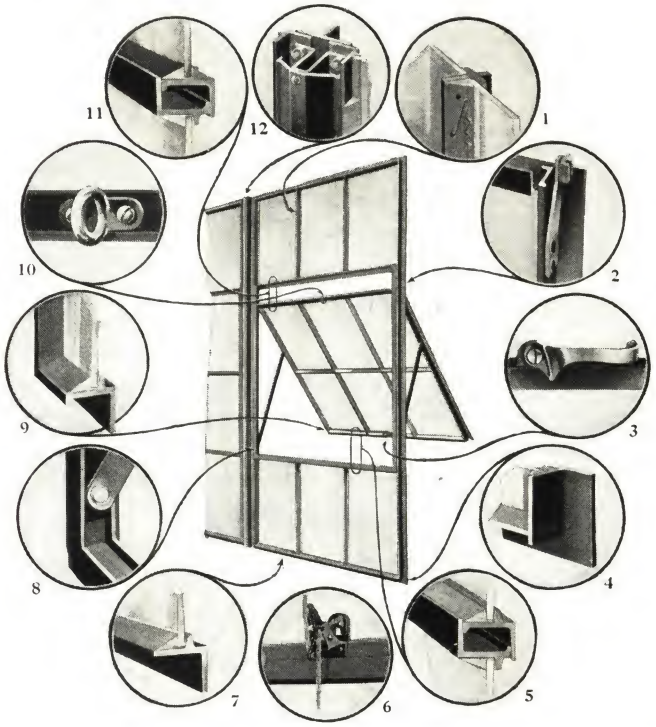
Foreword

Where neat design and economy are the keynote of the construction, architects will appreciate the quality, appearance, performance and low cost of Truscon Commercial Projected Windows.

These windows are widely used in garages, filling stations, printing plants, warehouses and shops of all kinds. The projected feature is especially valuable when ventilation depends upon the natural clearing off of vapor, smoke and stale air. The tilted ventilator acts as a deflector of the elements and can be kept open in all kinds of weather. Direct drafts are eliminated and a continuous change of air is obtained.

Because of the similarity between the appearance of the Commercial Projected and Pivoted Windows, the Projected Windows can be used in the office section of an industrial plant with complete conformity to the general design.

Twenty-nine standard types of Truscon Commercial Projected Window, as shown in the plate below, are available in either 12x18-in. or 14x20-in. glass size, many of which are carried in warehouse stocks. Types which open out can be supplied with the National Board of Fire Underwriters' Label.



Construction Details

(1) Glazing—Glass is bed and face puttied and held in place with clips; staggered holes and flexible clips allow various thicknesses of glass.

(2) Forged Brass Sliding Pivot—Glazing ledge of sash section acts as guide, eliminating recess for collection of dirt and ice.

(3) Locking Handle—Of malleable iron, sherardized.

(4) Corner Construction—Heavy frame members of unequal leg channels are mortised, tenoned and air-hammered.

(5) Weathering at Sill—Double contact weathering makes tight fit and assures weather-tightness.

(6) Automatic Chain Latch—Automatic kick-out allows operation by chain when ventilator is out of reach from floor.

(7) Frame—Heavy angle section at head, sill and jambs, mortised and tenoned, electrically welded and ground smooth.

(8) Supporting Arms—Heavy pivots are brass bushed. The $\frac{3}{16}$x1-in. supporting arms for ventilator are concealed when ventilator is closed.

(9) Ventilator Frame Corner—Heavy, rigid angle section, mortised and tenoned, air-hammer riveted and ground smooth.

(10) Pole Hook Ring—To be used with window pole.

(11) Weathering at Head—Provides double contact at two points.

(12) Vertical Mullion—Exterior Tee-bar to give necessary rigidity, with pressed metal cover on the inside to give pleasing appearance.

Condensed Specifications, Commercial Projected Windows

(1) General—All windows so indicated on the plans and elevations and called for in these specifications shall be the Commercial Projected type as manufactured by the Truscon Steel Company of Youngstown, Ohio.

(2) Construction—All joints shall be mortised and tenoned and air-hammer riveted.

(3) The corners of all ventilators to which pivots are attached shall be welded.

(4) The intersection of horizontal and vertical muntins shall have a dovetail mitre, rigidly interlocking the bars.

(5) No excess metal or projecting surfaces shall be permitted where muntin bars intersect.

(6) Muntin bars, except where ventilators occur, shall be continuous from head to sill and from jamb to jamb.

(7) The members of the windows shall not be bent or deformed during process of manufacture.

(8) Ventilators shall have double contact weathering on all four sides.

(9) The sliding pivot shall be constructed of screw stock brass.

(10) The side of the window or ventilator frame shall act as a guide for the sliding pivot, and shall be constructed without recess or slot in which dirt or ice may collect, to interfere with the free movement of the ventilator.

(11) Uniform tension to hold ventilator in any desired position shall be gained by the use of a spring applied between sliding pivot and ventilator.

(12) There shall be two heavy supporting arms attached to the ventilator and frame, designed to be concealed when ventilator is closed. The rivet holes in supporting arms shall have brass bushings.

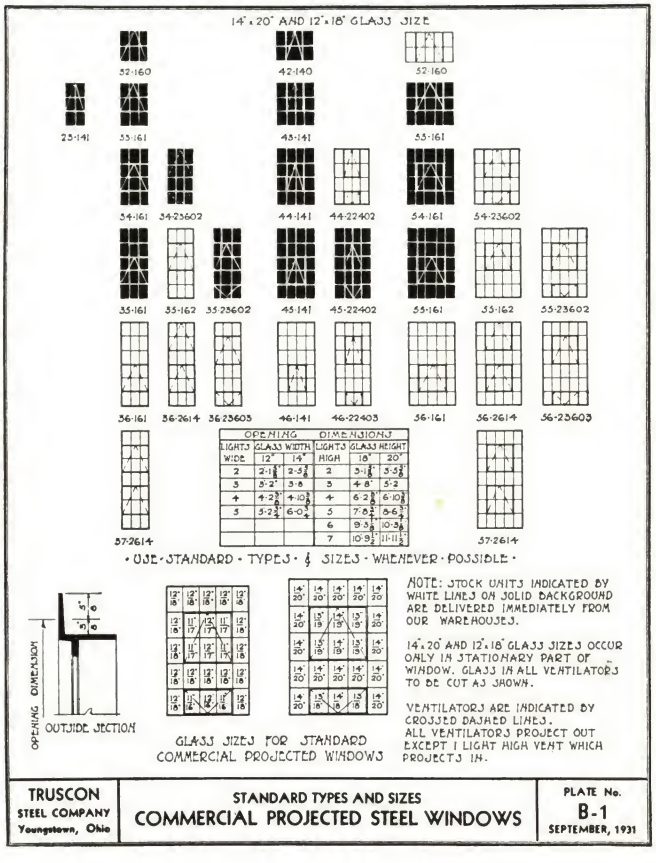
(13) Ventilators Projected Out, when open, shall have no part of the ventilator projecting inside the normal plane of the window.

(14) Ventilators Projected In shall not project outside the normal plane of the window.



Truscon Utility Steel Windows

An economical type of Projected Window made in one standard size, 3 ft. 3¾ in. wide by 3 ft., 7⅞ in. high. They are well designed, made of hot-rolled steel and have strength to withstand hard usage. Double contact weathering on all sides insures weather-tightness. Brass friction shoes rigidly hold the ventilator in any desired position, eliminating the use of chains or push bars; a cam latch handle being the only hardware required for opening, closing and locking the window.



TRUSCON CONTINUOUS STEEL WINDOWS

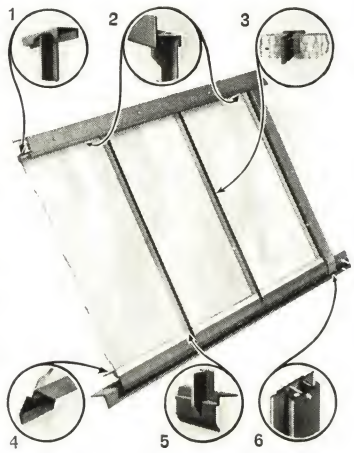
Foreword

Truscon Continuous Steel Windows are ideally suited for use in industrial plants where the nature of the factory work requires frequent and rapid ventilation of the building. They are also most practical for any buildings having monitors or saw-tooth faces, or where banks of windows reach considerable heights, necessitating remote control for operation, and are particularly valuable where large areas are enclosed which cannot be satisfactorily lighted through the side walls.

The scientific application of Continuous Windows to a building insures maximum daylight and gives absolute control of temperature and ventilation, resulting in a marked effect on increased efficiency and reduction of production costs. The quick opening and closing of glass areas by means of mechanical operation is invaluable to clear out gases, smoke and excessive heat and to protect against sudden change in weather.

Pressed Steel Frames

In structures such as power houses and pumping stations, the effect desired usually is that of massive strength. This is provided by Truscon Pressed Steel Frames, which are designed to harmonize perfectly with the massive lines of the building, and which have the strength, permanence and dependability suggested by their appearance.



Construction Details

(1) **Welded Mortise and Tenon Joint** — Prevents twisting.

(2) **Hinge Member**— Forms continuous bearing giving perfect weathering.

(3) **Glazing Clips** — Of heavy brass on vertical muntin bars.

(4) **Wide Flange** — For the attachment of mechanical operator.

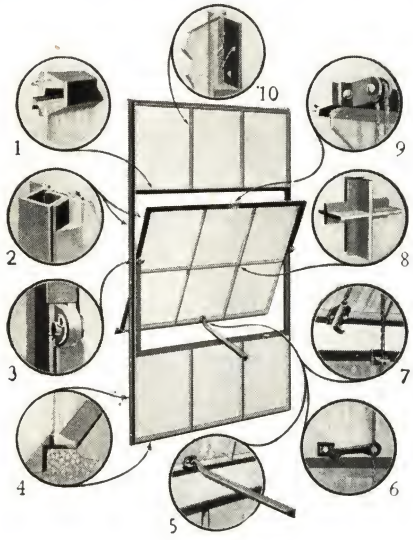
(5) **Mortise and Tenon Joint**—Showing welding.

(6) **Vertical Expansion Mullion.**

TRUSCON PIVOTED STEEL WINDOWS

Foreword

Proper light and flexible control of ventilation are obtained by use of Truscon Pivoted Steel Windows, adaptable to every type of industrial building. They are constructed of heavy, hot-rolled, rust-resisting steel sections, are permanent and fireproof, and will never stick, shrink or warp in any kind of weather.



The outside section is of angle shape to allow 5/8-in. anchorage at the masonry or mullion connection. The intersection of the horizontal and vertical member is a dovetail mitre rigidly interlocking the bars. Slender muntin bars admit maximum daylight.

Ventilator operates easily at the touch on a cam-acting push bar if accessible from the floor, and otherwise by means of a spring latch and chain. The cam-acting push bar is standard equipment for all ventilators accessible from floor, the opening being adjusted by means of notches in the lower edge of bar which engage in the edge of the weathering member at bottom of ventilator to hold it open at any desired angle. Gravity cam latch and chain is optional equipment. A pull of the chain releases cam latch and opens ventilator. The spring latch and chain is also optional equipment. The ventilator is held in any desired position by engaging the chain in the chain hook.

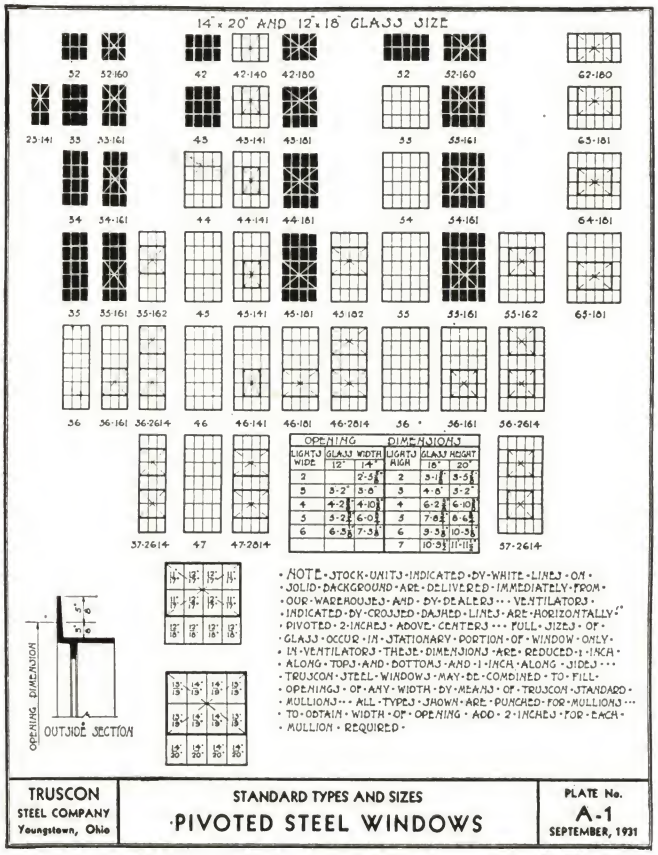
Truscon Pivoted Steel Windows are glazed from the inside and glazing clips are supplied with them. Double contact weathering is provided on all four sides of the ventilator.

These windows can be supplied in a wide range of standard sizes and can be combined with standard mullions to fit almost any size window opening. Glass size in stationary portion of sash is 12x18 in., or 14x20 in." all lights at top and bottom of ventilator are 1 in. shorter and all lights at sides of ventilators are 1 in. narrower than in stationary portion of windows. Twenty types of sash illustrated in black in diagram are available for quick delivery from Truscon warehouse stocks. The other types are available for prompt shipment from the factory.

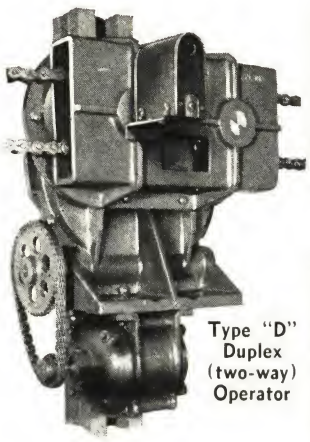
All windows are given one dip coat of protective paint before leaving the factory.

Construction Details

(1) Double Contact Weathering at Head.
(2) Double Contact Weathering at Jamb.
(3) Solid Steel Pivot with Removable Pin—Assures easy operation and durability.
(4) Heavy Angle Section at Sill and Jamb—Provides positive anchorage in masonry or mullion connections.
(5) Cam Acting Push Bar—Notched to engage edge of weathering member at bottom of ventilator and hold it open at any desired angle. The ventilator is securely locked by folding push bar back against sash and engaging in the cleat.
(6) Gravity Cam Latch and Chain—Tapped to bracket at sill of ventilator and securely held with a locking nut. A pull of the chain releases the cam latch and opens ventilator.
(7) Spring Latch and Chain—For use when ventilator cannot be reached from floor.
(8) Dovetail Mitre Joints at Muntin Intersections—Joists are skillfully fitted together and assure great strength and rigidity.
(9) Roller Bracket at Head of Ventilator—Used with chain operators.
(10) Spring Steel Wire Glazing Clips.



TRUSCON MECHANICAL OPERATORS



Type "D" Duplex (two-way) Operator

Truscon Mechanical Operators for opening and closing Truscon Continuous Steel Windows are furnished in either hand operated or power driven units. With the latter, a mere push of a button will instantly open or close a whole series of long run windows.

Type "G" Power Operator

Most frequently used for the control of long runs of Truscon Continuous Steel Windows. It is also used, however, with top and bottom hung continuous windows as well as with a side-wall tension operator, for the control of Center Pivoted Windows. This operator provides fast and smooth operation.

Type "GM"

The motorized form of Type "G" and has the advantage over the hand operated power of being more even and steady in operation, assuring preservation of all parts as well as adding to the life of the equipment and the sash itself.

Type "EM"

A heavy duty tension operator capable of handling continuous windows in runs up to 300 feet. Because of the additional load of long window runs, this model is designed for motor drive only.

Type "D"

Designed for the operation of especially long runs of continuous windows. It is mounted in the center of a run instead of at the ends, and controls the sash in both directions.

Master Control

Master control of groups of smaller stations is obtained by a switchboard which maintains temperature and ventilation under constant electric control.

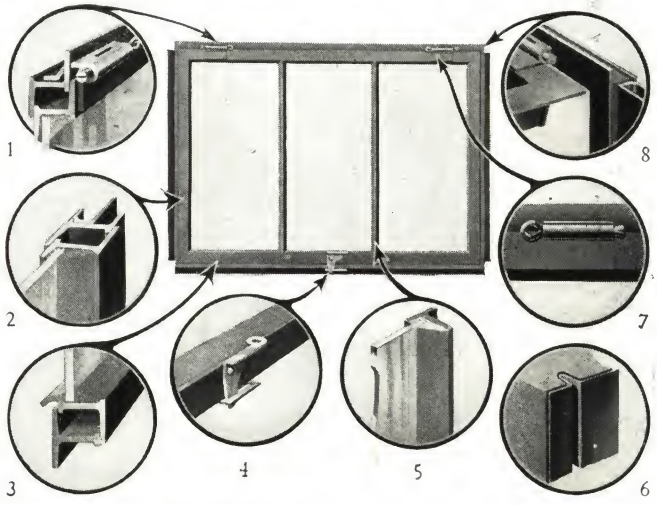
TRUSCON BASEMENT WINDOWS, COAL CHUTES AND LINTELS

Truscon Basement Steel Windows

Truscon Basement Steel Windows satisfy the demands for performance, permanence and economy. They are made from heavy, hot-rolled sections and furnished completely assembled and painted, with removable pin hinge and cam acting latch. Corners of both frame and ventilator are butt-welded, giving added strength and preventing distortion.

Their narrow, extra rigid frame admits more light and the continuous, double contact weathering (an exclusive feature) makes them storm tight. They cannot warp, swell or stick, and can easily be screened.

They may be installed in concrete, masonry or any other type of construction.



FOUR STANDARD SIZES OF TRUSCON BASEMENT STEEL WINDOWS

Window opening, in.	Lights wide	Glass size, in.
33½x15	3	10x12
33½x23	3	10x20
31¼x23	2	14x20
39½x21	3	12x18

Construction Details—*(1) Head*—Double contact between the ventilator and frame members assures absolute weathertightness when window is in closed position.

(2) Jamb—Double contact weathering, rigid Zee-bar section with additional channel section for anchorage. (Note how ventilator section holds putty in place.)

(3) Sill—Double contact weathering with additional projecting overhang drip absolutely preventing leakage.

(4) Cam Acting Latch—Operates free and easy, also assures positive lock and tight contact.

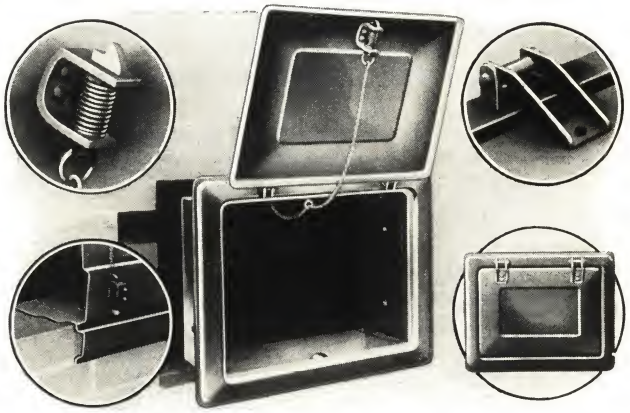
(5) Glazing—Putty on inside assuring security and pleasing effect from outside.

(6) End Plate—For use in concrete, making groove better to accommodate steel sash.

(7) Hinge—Removable pin type hinge specially formed to prevent rattling when closed. Hinges solidly welded to frame and ventilator.

(8) Corners—Zee-bar frame members and ventilator members are butt welded, making extremely rigid corners.

Truscon Pressed Steel Coal Chutes



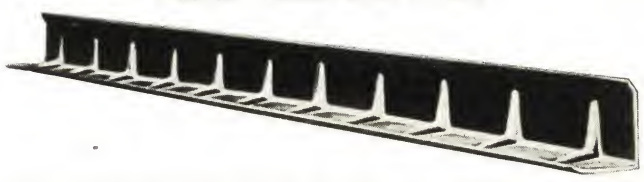
The Truscon Pressed Steel Coal Chute meets the demand for an indestructible, neat appearing, efficiently operating coal chute for home use.

Being made of pressed steel, the Truscon Coal Chute is unbreakable, weathertight, thief-proof and of simple construction. The door and frame design develops maximum strength while keeping the weight of the unit to a minimum. The door is pressed out of a single piece of steel and the entire frame is electrically welded into one unit.

TWO STANDARD SIZES CARRIED IN STOCK

Frame: 27x21¼ in. Door opening: 22x16 in. Depths: 8 or 12 in. Weights: 33 or 39 lb.

Truscon Pressed Steel Lintels



Truscon Pressed Steel Lintels are light in weight, easy to handle, have maximum load capacity and are low in cost. They are strong, durable and rust-resisting. The turned edges give a neat appearance, and cross ribs placed at proper intervals give the maximum degree of rigidness to the lintel and ample support to the masonry above it.

3½x3½ in. x 11 gauge, weight 2.72 per lin. ft.
Standard lengths: 2 ft. 6 in., 3 ft. 0 in., 3 ft. 6 in., 4 ft. 0 in., 4 ft. 6 in., 5 ft. 0 in.

4x4 in. x 9 gauge, weight 3.91 lb. per lin. ft.
Standard lengths: 5 ft. 6 in., 6 ft. 0 in., 6 ft. 6 in., 7 ft. 0 in., 7 ft. 6 in., 8 ft. 0 in.

VOIGTMANN METAL WINDOW CORPORATION

DIVISION OF CAMPBELL METAL WINDOW CORP.

Double Hung Metal Windows in Steel, Copper and Bronze

TELEPHONE 2-0156
All Departments

Reed and Fulford Streets, KALAMAZOO, MICH.

NEW YORK OFFICE: Campbell Metal Window Corporation, Pershing Square Building

CHICAGO OFFICE: 1912 Builders Building, 228 No. La Salle Street

DISTRICT REPRESENTATIVES

ATLANTA, GA., Luke Seawell, 144 Spring Street
BIRMINGHAM, ALA., D. P. Barrett Co., 339 Brown Marx Building
BOSTON, MASS., H. A. Seeley, 73 Tremont Street
BUFFALO, N. Y., Shults Engineering Co., Morgan Building
CINCINNATI, OHIO, A. W. Frank, 710 Broadway
CLEVELAND, OHIO, Walters-Seidel Co., 2341 Carnegie Avenue
DALLAS, TEX., Gilbert Mfg. Co., 510 Marvin Building
DENVER, COLO., Builders Service Bureau, 1413 Court Place
HARRISBURG, PA., O. L. Preble, Jr., 25 So. 3rd Street
INDIANAPOLIS, IND., Stackhouse Building Specialties Co., Hume Mansur Building
KANSAS CITY, MO., C. S. Hawley Co., 1012 Baltimore Avenue
LOS ANGELES, CALIF., Continental Building Specialties, Inc., 408 South Spring Street
MEMPHIS, TENN., Akers & Co., 242 Madison Avenue
NASHVILLE, TENN., Geo. W. Ruth & Co., 151 Fourth Avenue, No.
NEW ORLEANS, LA., Modern Appliance and Supply Co., 4300 Washington Avenue
OKLAHOMA CITY, OKLA., Bissell Builders Supply Co., 705 Golcord Building
OMAHA, NEB., Krauss & Trustin, 634 Paxton Block
PHILADELPHIA, PA., L. S. Lucus, 1524 Chestnut Street
PITTSBURGH, PA., Carlem Engineering Co., 6949 Lynn Way
ROCHESTER, N. Y., Francis Metal Door & Window Corp., 46 Cortland Street
SALT LAKE CITY, UTAH, S. A. Roberts & Co., 222 Dooley Building
SAN FRANCISCO, CALIF., Fire Protection Products Co., 1101 16th Street
SCHENECTADY, N. Y., Steel Supply Co., 110 Wall Street
SCRANTON, PA., A. D. Parsons, Cedar Avenue
SYRACUSE, N. Y., Arnold Metal Door & Window Corp., 315 Hills Building
ST. LOUIS, MO., Randolph Sales Co., 1104 Chemical Building
TOLEDO, OHIO, Chas. Haas Company, 228 Richardson Building
TULSA, OKLA., Murray R. Womble Co., 417 Thompson Building
WASHINGTON, D. C., William S. Graham, Investment Building
WICHITA, KAN., Lusco Brick & Stone Co.

Products

VOIGTMANN HEAVY SECTION STEEL WINDOWS, DOUBLE HUNG.

VOIGTMANN HOLLOW METAL WINDOWS, DOUBLE HUNG.

VOIGHTMANN COPPER OR BRONZE WINDOWS, DOUBLE HUNG.

Tested and listed as standard by the Underwriters' Laboratories, Inc.

Also Radiator Hangers and Supports, Stools, Underwriters' Labeled Fusible Links and Window Ventilator Brackets.

Improved Features

New double weathering at all points of contact between sash and frame, adjusted to give maximum weather tightness.

Sash operate in double guides, assuring extremely smooth and easy operation.

Elimination of all exposed screws and simplified method of hanging and adjusting sash.

Architecturally correct and new design throughout, combined with smooth finish and first-class workmanship.

Neat Appearance

Voigtmann windows have neat and slender lines and present very pleasing appearance.

More Light

Voigtmann windows give maximum exposed glass area, due to these slender lines and narrow margins.

Better Weathering

Spring bronze weatherstrips at sill and meeting rails and double integral two-point contact weathering throughout entire perimeter of sash.



R. E. Olds Bank and Office Building, Lansing, Mich.
HOPKINS & DENTZ, Architects HUTTER CONSTRUCTION CO., Builders

SPECIFICATIONS FOR DOUBLE HUNG WINDOWS

Scope—All windows where shown on drawings to be double hung heavy metal construction as manufactured by Voigtmann Metal Window Corporation, of Kalamazoo, Mich.

Material—All windows shall be constructed of hot-dipped galvanized steel, bronze or copper of gauges listed below.

Voigtmann Model 18V Heavy Metal Double Hung Windows—Sills shall be 14-gauge; pulley stiles, sash stiles and heads 18-gauge; jambs, sash rails and muntins 20-gauge.

Voigtmann Model 20V Double Hung Windows—Sills shall be 14-gauge; pulley stiles 20-gauge; jambs, heads, sash stiles, sash rails and muntins 24-gauge.

Voigtmann Model 20C Copper or Bronze Double Hung Windows—Sills shall be 32-ounce; pulley stiles 28-ounce; jambs, heads, sash stiles, sash rails and muntins 20-ounce, cold rolled copper or bronze.

Sash Construction—Sash shall be of moulded design. Sash stiles and rails shall be constructed of one piece of metal, closed construction, interlocked at seam, reinforced in tubular chamber by interlocking construction to insure great rigidity and uniformity. Joints between members shall be neatly mitred, lapped, spot welded and soldered absolutely watertight. Sash stiles and upper sash socket rail shall be formed to produce ¾-in. double interlocking flanges which shall engage in double weathering grooves. Meeting rails shall have channel flanges and interlocking spring bronze weatherstrip to insure weathertight contact. Lift rails shall be constructed with interlocked spring bronze weatherstrip to insure weathertight contact at sill. Glass rabbets in stiles and bottom rails shall be ¾ in. deep and those in top rails 1⅜ in. deep.

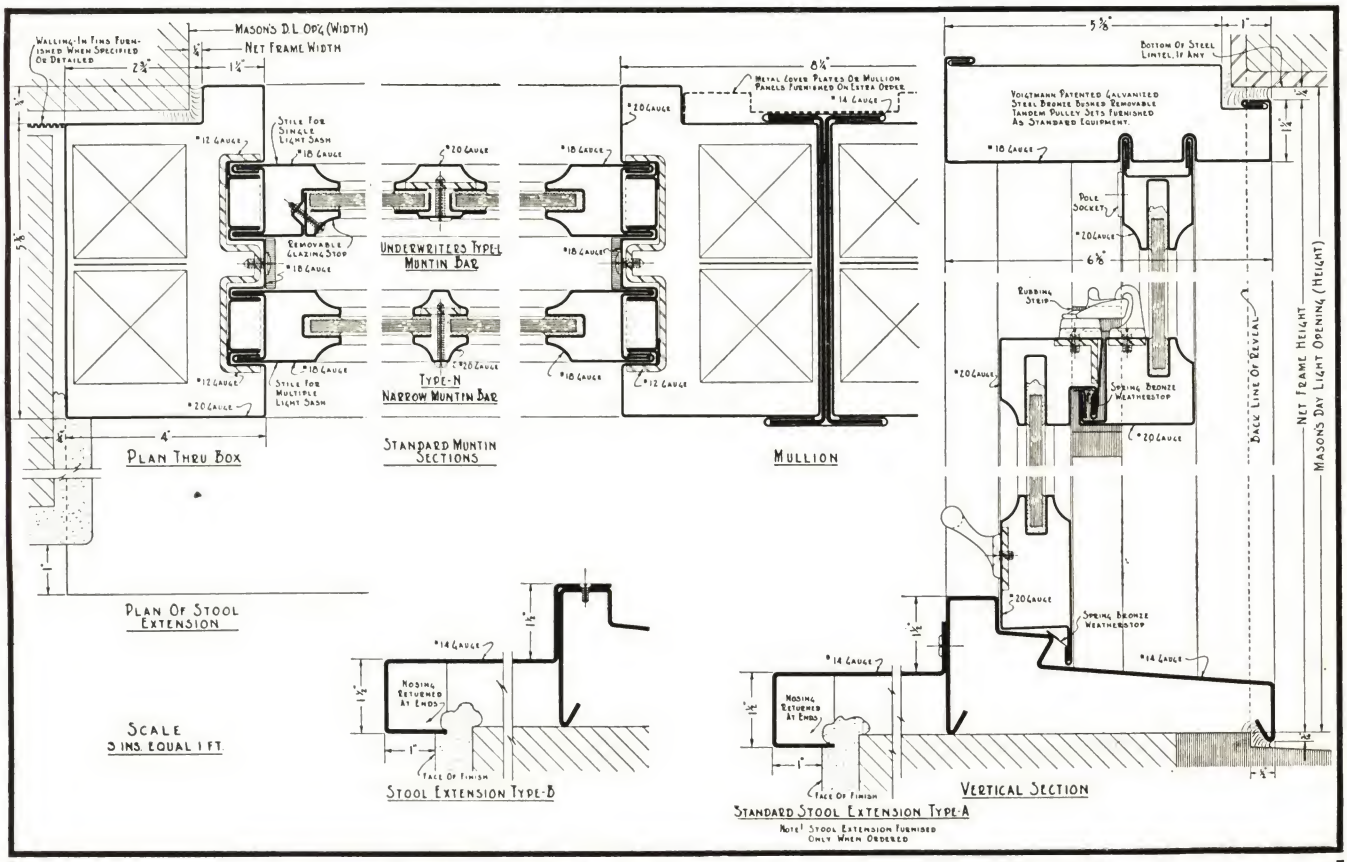
Frame Construction—Sills shall be formed with deep weather stops, ample drain pitch and without slots. Jambs, head and sill shall be constructed of one piece of metal exclusive of pulley stiles and closure strip. All members shall be formed true, neatly mitred, lapped, flush riveted and soldered watertight. Pulley stiles shall be rolled with ½-in. quadruple weather fins to form double slots and guides for each sash stile, removable to afford access to weight boxes and pulleys, and held in place with machine screws tapped to heavy adjustable reinforcing plates spanning the inside of jambs.

Muntins—Exterior muntin bars shall be moulded and reinforced with 12-gauge steel lugs. Interior removable caps shall be formed with offset bead and double flange putty stops.

Hardware Equipment—Frames shall be equipped with 12 and 14-gauge galvanized steel tandem pulley sets. Wheels shall be bushed with 16-gauge seamless bronze cylinders and rotate on ⅜-in. steel axles. Pulley sets shall be adjustable, removable from frame and secured in place with machine screws. Pulley stiles shall be equipped with adjustable bronze rubbing strips to secure weathertight contact at ends of meeting rails. Sash shall be hung on galvanized steel chain No. 130 and properly counterbalanced by cast iron weights. Sash shall be equipped with one pair of moulded bar lifts, one sash lock and pole socket, polished bronze or iron plated as required, of Voigtmann standard design.

Painting—Frames and sash shall be given one coat of Voigtmann special prepared metallic gray primer sprayed on to completely cover all surfaces.

Labels—Where Underwriters' approval is desired their label shall be attached in evidence of their inspection and acceptance.



DETAILS OF THE VOIGTMANN MODEL 18V DOUBLE HUNG WINDOW

Note: Design and details for Model 20V and 20C are the same as Model 18V

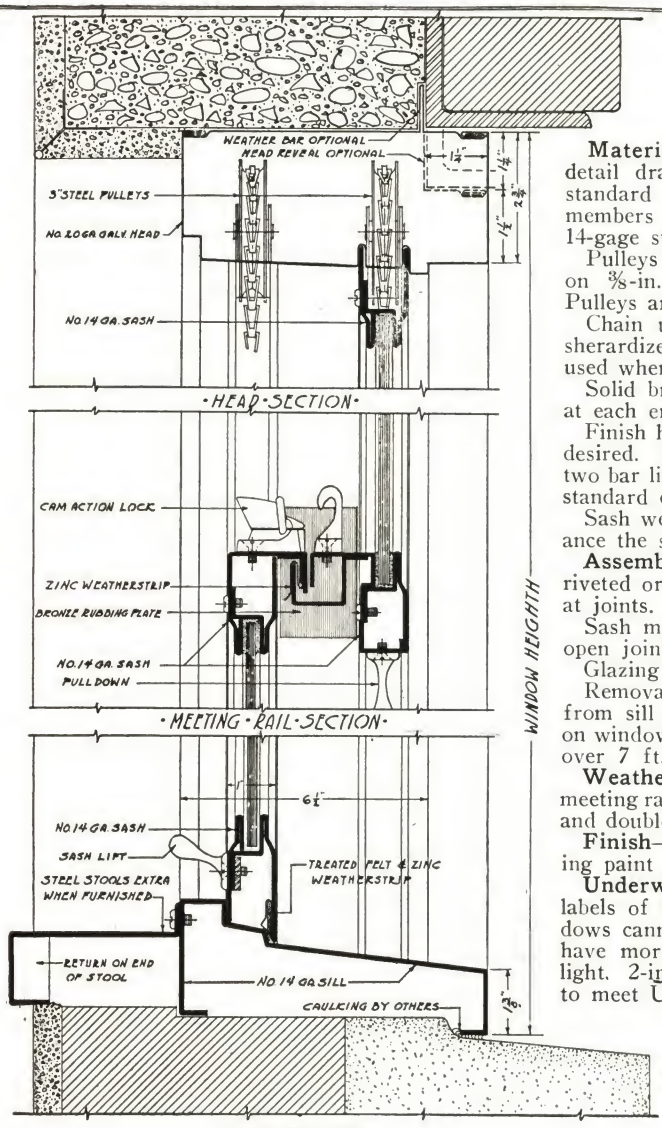
INCORPORATED 1891

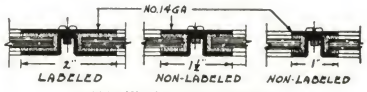
THE WILLIS MANUFACTURING COMPANY

Manufacturers of Double Hung Windows and Tin Clad Fire Doors

GALESBURG, ILL.

BRANCH OFFICES IN PRINCIPAL CITIES





Willis Paramount Double Hung Windows
No. 20-14 Double Plate Type

Materials—All parts are of gages and sizes as shown on detail drawings. Sills are of 14-gage galvanized steel as standard (12 or 16-gage when specified). Jamb and head members are of 20-gage galvanized steel, and sash are of 14-gage steel. All parts are fabricated from "Prime" sheets.

Pulleys have 3-in. pressed steel wheels with bronze bushings on ⅜-in. turned steel axles, and 14-gage steel housings. Pulleys are removable.

Chain used is American Chain Company's No. 130 with sherardized finish as standard. Other makes or finishes are used when specified.

Solid bronze rubbing plates are attached to running stiles at each end of meeting rails.

Finish hardware is solid bronze or iron, bearing any plating desired. Each window is equipped with one cam action lock, two bar lifts, and one outside pull down, or pole socket of our standard design.

Sash weights are cast iron in sizes to properly counterbalance the sash.

Assembly—Frame members are assembled with butt joints, riveted or welded together by means of heavy backing plates at joints.

Sash members are mitered and welded at corners with no open joints.

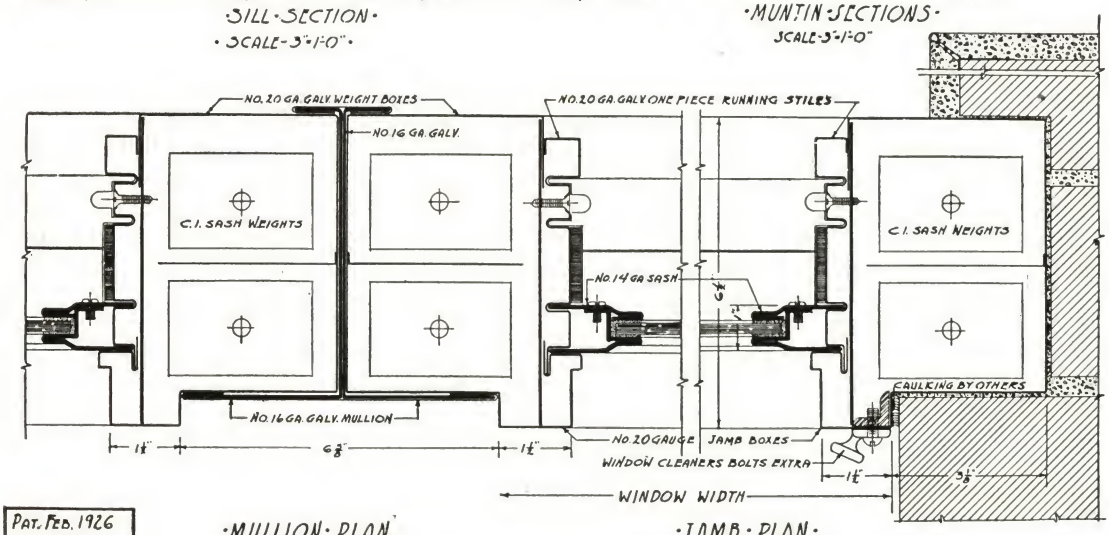
Glazing strips are attached with screws as shown on detail.

Removable jamb running stile is in one piece extending from sill to head and is held in place by three screws only on windows up to 7 ft. 3 in. high and four screws on windows over 7 ft. 3 in. high. No screws are exposed to weather.

Weatherproofing—Consists of a zinc interlocking strip at meeting rail, combination zinc and waterproofed felt strip at sill, and double contact through rolled grooves at head and jambs.

Finish—All parts receive one coat best grade metal priming paint inside and outside at factory.

Underwriters' Labels—When required, windows may bear labels of the Underwriters' Laboratories, Inc. Labeled windows cannot exceed 6 ft. in width nor 10 ft. in height; nor have more than 720 sq. in. of exposed glass area in each light. 2-in. muntin bars and malleable iron locks are required to meet Underwriters' specifications.



PAT. FEB. 1926
No. 1572217

Willis Paramount Double Hung Windows
No. 20-24 Hollow Metal Type

Materials—All parts are of gages and sizes as shown on detail drawings. Sills are of 14-gage galvanized steel as standard (12 or 16-gage when specified). Jamb and head members are of 20-gage galvanized steel, and sash are of 24-gage galvanized steel. All parts are fabricated from "Prime" sheets.

Pulleys have 3-in. pressed steel wheels with bronze bushings on ⅜-in. turned steel axles, and 14-gage steel housings. Pulleys are removable.

Chain used is American Chain Company's No. 130 with sherardized finish as standard. Other makes or finishes are used when specified.

Finish hardware is solid bronze or iron, bearing any plating desired. Each window is equipped with one cam action lock, two bar lifts and pole socket of our standard design.

Sash weights are cast iron in sizes to properly counterbalance sash.

Assembly—Frame members are assembled with butt joints, riveted or welded together by means of heavy backing plates at joints.

Sash members have lap joints and are riveted and soldered at corners, with no open joints.

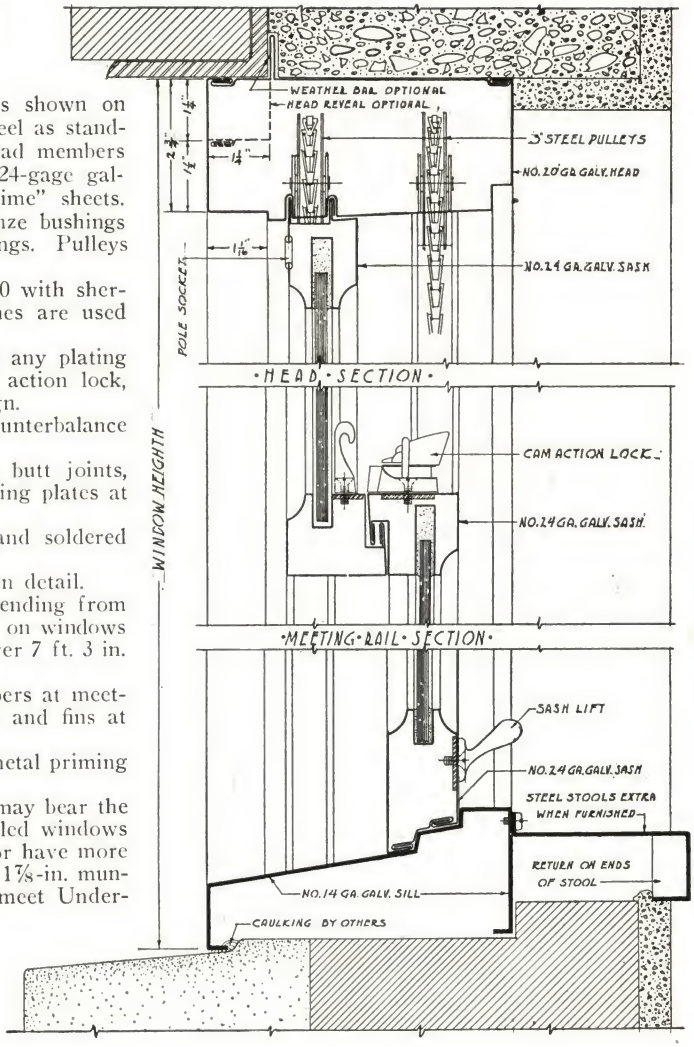
Muntin caps are attached with screws as shown on detail.

Removable jamb running stile is in one piece extending from sill to head and is held in place by three screws only on windows up to 7 ft. 3 in. high and four screws on windows over 7 ft. 3 in. high. No screws are exposed to weather.

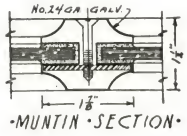
Weatherproofing—Consists of interlocking members at meeting rail, double contact at sill, and double grooves and fins at head and jambs.

Finish—All parts receive one coat of best grade metal priming paint inside and outside at factory.

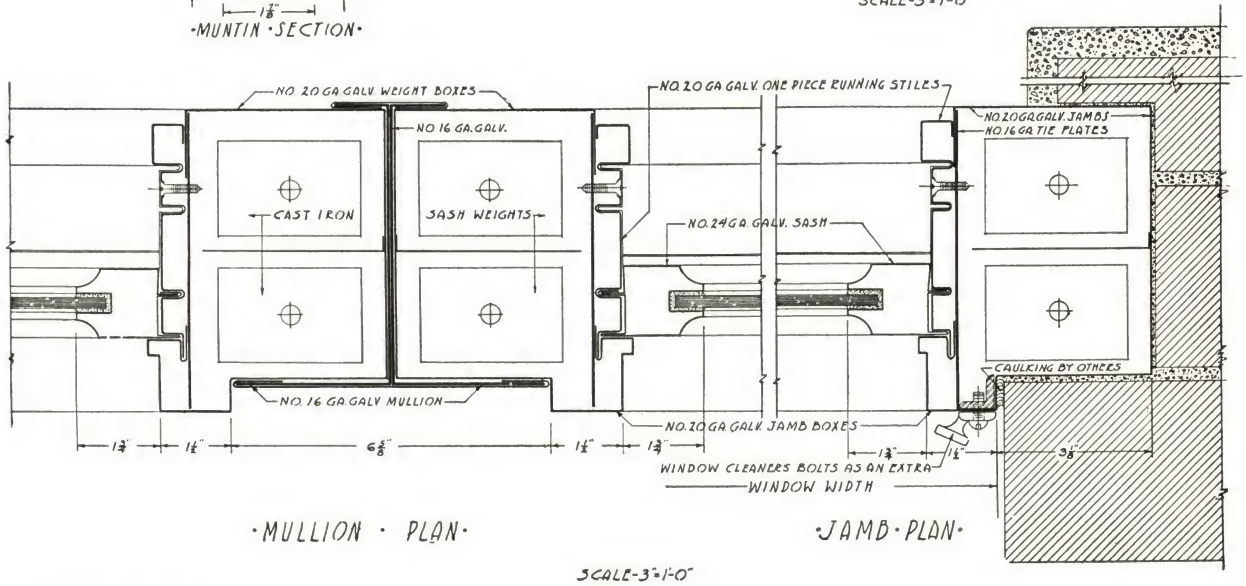
Underwriters' Label—When required, windows may bear the labels of the Underwriters' Laboratories, Inc. Labeled windows cannot exceed 6 ft. in width nor 10 ft. in height; nor have more than 720 sq. in. of exposed glass area in each light. 1⅞-in. muntin bars and malleable iron locks are required to meet Underwriters' specifications.



·SILL·SECTION·
SCALE-3"=1'-0"



·MUNTIN·SECTION·



·MULLION · PLAN·

·JAMB·PLAN·

SCALE-3"=1'-0"

PAT. FED. 1926
No 1572217

VENTO STEEL SASH COMPANY

INCORPORATED

Puttyless Steel Windows and Metal Bound Screens

MUSKEGON, MICH.

Products

PUTTYLESS STEEL BASEMENT WINDOWS, PUTTYLESS STEEL FACTORY WINDOWS and Sash Operating Devices.

STEEL BOUND BASEMENT SCREENS and Factory Screens.

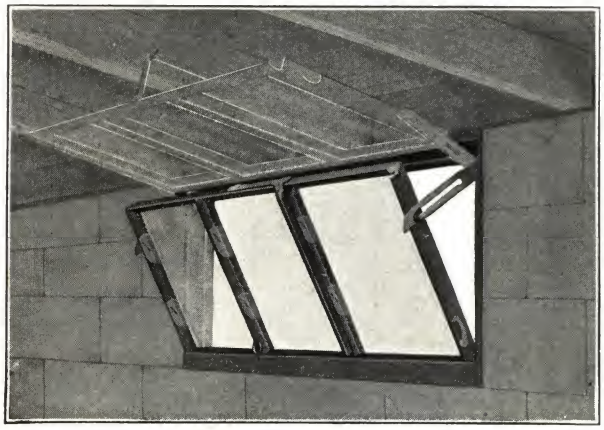
BASEMENT WINDOW STORM SASH.

Also Steel Thresholds and Pressed Steel Coal Chutes.

Windows Patented March 4, 1924, December 11, 1928, and July 30, 1929, United States Patent Office. Other patents pending.

Vento Puttyless Steel Basement Windows

We sincerely believe that an actual comparison of the new Vento "Premier" Basement Window with any other in the field will convince anyone that it is head and shoulders ahead



of its competition. Its double channel frame of copper bearing, special rolled steel is the strongest construction known—it cannot sag or bind. Sash is heavy section special T-bar stock welded in a rigid unit. This window provides both overhead ventilation and full opening *with a convenience probably unapproached by any other.* It is absolutely weathertight—supremely well made in every detail. Costs less installed than many others.

Outstanding Construction Features of Vento Basement Windows

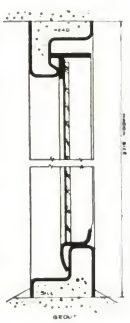
Puttyless—The major cost of glazing is eliminated by the Vento patented puttyless feature. Glass is held in airtight contact against bed of cork by patented glazing clip. It takes less than a minute to install a pane of glass in a Vento Puttyless Sash.

Unlocked from Sill Level—The new Vento locking bar permits window to be opened or closed and locked from the bottom of the sash. When closed the lock bar lies snugly against the third cross-member, out of the way, and the window is tightly and securely locked—no need of a box, chair or what not to stand on.

Operates without a Hitch—The "Premier" opens to top ventilating position at a touch of the locking bar. From this position it may be quickly opened wide by simply lifting sash over bottom rail and swinging upward where it may be held by means of ceiling hook fastened either in the ring provided at bottom of window or the locking bar. Snow or ice in no way interferes with the operation. Rain drains outside when window is left in ventilating position. Protective lock prevents intrusion when window is in this position.

All-around Double Contact—The double contact between the flanged sash and the window makes it absolutely weathertight—keeps out rain, wind, snow and sand. The easily operated friction lock keeps this double contact equal at all points.

Airtight Hinge Construction—The new Vento Sash construction eliminates the necessity of notching the sash. When closed the hinge fits neatly between sash and outer shoulder of the frame channel. It is 100% weathertight.



Fits Any Construction—The installation details shown indicate how easily and economically Vento Windows can be installed. They fit perfectly into any type of construction—concrete block, frame, brick or cement.

Mullions for Multiple Windows—Wherever a superabundance of light is desired, two or more Vento Basement Windows may be installed by use of our vertical mullions.

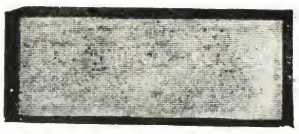


STANDARD SIZES VENTO BASEMENT WINDOWS

Size of window		Wall opening required		Net and shipping weight, lb.
Lights	Inches	Width, in.	Height, in.	
2	10x12	23 1/2	15	15
2	14x20	31 3/8	23	23
3	10x12	33 3/4	15	19
3	12x18	39 3/4	21	25
3	10x20	33 3/4	23	25
3	10x16	33 3/4	19	24
3	12x20	39 3/4	23	25
3	10x24	33 3/4	27	30
2	14x24	31 3/8	27	25

Vento Metal Bound Screens

Each Vento Basement Window is drilled and tapped ready to be fitted with a Vento 16-mesh Galvanized or Bronze Screen or Storm Sash.

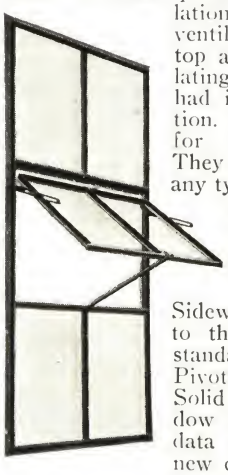


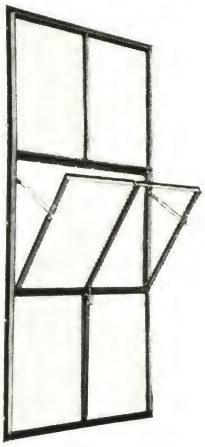
Vento Basement Window Storm Sash

The panes in these sash are held by our patented puttyless glazing clips and hence may be quickly and easily replaced in summer by pane-size screens.

Vento Puttyless Sidewall Sash—Inward Projected

Vento Sidewall Sash incorporates the same time and money saving puttyless feature that is used in our basement sash. These windows provide overhead ventilation—indirect ventilation from bottom, or ventilation from both top and bottom. Ventilating sections can be had in any desired section. Frames are tapped for outside screening. They fit perfectly into any type of construction; are quality built in every detail, and usually cost less installed.





Sizes of Vento Sidewall Sash conform to those established as standard for Horizontal Pivoted Windows by the Solid Section Steel Window Industry. Complete data is contained in our new catalog.

Vento Puttyless Utility Sash

Ideal for home garages, small stores, etc. Made in 6-light 10x16-in. and 6-light 12x20-in. with upper section ventilating.

Additional Information and Prices

Write for catalogue and prices.

B 1877

CARPENTRY

STANDARD SPECIFICATIONS
FOR
HOUSE FRAMING



a complete manual of
frame erection for home builders
using
WEYERHAEUSER
4 SQUARE Guide Line FRAMING

4-SQUARE Guide-Line FRAMING



Weyerhaeuser 4-SQUARE Guide-Line FRAMING, the new precision lumber improved with eleven practical plus values, is manufactured in five American Lumber Standard dimensions—2x4, 2x6, 2x8, 2x10, 2x12—each size in standard lengths from 8 to 20 feet.

Other improved lumber products in the 4-SQUARE line, not shown here, come in labeled packages. They include Bevel Siding, Colonial Siding, Inch and Thick Finish, Inch and Thick Common, Drop Siding, Stepping, Flooring, Ceiling; and Mouldings in full length cartons.

WEYERHAEUSER SALES COMPANY

4-SQUARE Guide-Line FRAMING and Other Building Materials

LUMBER PRODUCTS INCLUDE WEYERHAEUSER 4-SQUARE LUMBER, WEYERHAEUSER STANDARD LUMBER, WEYERHAEUSER LABORATORY-DESIGNED AND CUT-TO-SIZE CRATING, WEYERHAEUSER POLES AND PILING. INSULATION PRODUCTS INCLUDE BALSAM-WOOL BLANKET, THE TRUE BUILDING INSULATION, AND NU-WOOD, THE ALL-WOOD INSULATING BOARD AND LATH

GENERAL OFFICES, First National Bank Building, ST. PAUL, MINN.

MINNEAPOLIS	CHICAGO	KANSAS CITY	TOLEDO	PITTSBURGH
808 Foshay Tower	307 N. Michigan Ave.	1417 R. A. Long Bldg.	2001 2nd Nat'l Bank Bldg.	2401 1st Nat'l Bank Bldg.

PHILADELPHIA	NEW YORK	SAN FRANCISCO	SPOKANE
1600 Arch Street	3107 Chanin Bldg.	149 California St.	Old Nat'l Bank Bldg.

Weyerhaeuser 4-SQUARE Guide-Line FRAMING and 4-SQUARE Finishing Lumber are sold at retail by Authorized 4-SQUARE Lumber Dealers, from Coast to Coast

Precision Lumber

4-SQUARE Precision Lumber, and particularly 4-SQUARE Guide-Line FRAMING, is the first attempt to bring precision to lumber in the interests of good construction.

Compared with ordinary framing lumber, 4-SQUARE Guide-Line FRAMING is quite revolutionary in its economic scope. Produced on special machines from selected, seasoned stock, this new lumber has functional improvements which promote accuracy of construction and ease of use. It has been placed on the market at a surprisingly reasonable cost when its quality and inherent advantages are considered.

A Weyerhaeuser Product

4-SQUARE Lumber for Good Construction is made by Weyerhaeuser, the world's largest manufacturer of home building materials. The organization which has pioneered almost every important improvement in lumber manufacture, in scientific logging, in forest conservation and utilization. Owner and operator of 20 lumber mills, 4 central distributing plants, 923 miles of standard gage railroad, 4 steamships for lumber transportation to Eastern markets. This organization has been known for years in the profession as among the most progressive in fostering good design and good construction.

Outstanding Advantages

4-SQUARE Guide-Line FRAMING possesses *Eleven Plus Values,* practical advantages which make it a precision product, easier to use with greater assurance of permanent good construction.

1. Squared Ends—Both ends of every piece of 4-SQUARE Guide-Line FRAMING are machine-trimmed precisely square, automatically providing full bearing surfaces and snug, tight joints. Ordinary framing lumber is not squared on the ends and must be trimmed by hand on the job.

2. Exact Standard Lengths—Every piece is cut to precise standard length. A 14-foot joist, for example, is 14 full 12-inch feet in length. Ordinary framing lumber is seldom exact standard length. Frequently it is over-length, requiring hand-trimming. Too often it is scant.

3. Calibrated Every Inch with Guide Lines—A revolutionary innovation in lumber are these accurate guides pressed into the face of every piece of 4-SQUARE Framing. They serve as valuable time-saving, trouble-saving aids to precision in placing, measuring, fitting and leveling of framing members.

4. Seasoned Stock—The words, "Seasoned Stock," printed on every piece of 4-SQUARE Framing, are Weyerhaeuser's assurance that this precision lumber is ready and fit for immediate use in good construction. Ordinary framing lumber may or may not be seasoned. Too much of it is "green"—totally unfit for use in good construction.

5. Chamfered Edges—The instant you handle a piece of 4-SQUARE Framing you know it is unlike any lumber you ever handled before. All four edges of each piece are chamfered. No sharp edges. Easier to handle.

6. Better Appearance—Never before have you seen structural lumber that *looks* like the precision building material this improved Framing *is*. Properly surfaced on four sides after seasoning it is clean, bright, good-looking stock.

7. Marked for Species—The full species name, printed on each piece, is positive protection against substitution. Ordinary framing lumber is seldom species-marked.

8. Marked for Grade—The full grade name, printed on each piece, is positive proof that the quality specified and paid for is the quality delivered.

9. Trade-Marked—Every piece of 4-SQUARE Guide-Line FRAMING bears the nationally advertised Weyerhaeuser 4-SQUARE trade mark, for quick identification and protection to the buyer.

10. Sold Only by Authorized 4-SQUARE Dealers—The 4-SQUARE Franchise Sign is displayed only by selected lumber merchants who have proved their reliability and their knowledge of good lumber and its uses.

11. Guaranteed by Weyerhaeuser—All the specific precision advantages claimed for 4-SQUARE Guide-Line FRAMING are verified by the words, "Weyerhaeuser Guaranteed," printed on each piece.

An Architectural Product

Each piece of 4-SQUARE Guide-Line FRAMING is distinctly marked for identification as to "Species" and "Grade" and the fact that it is "Seasoned Stock" all backed by the guarantee and the trade mark of a responsible producer.

Thus, for the first time, the architect is in a position to specify definitely a lumber product with the full assurance that when 4-SQUARE Guide-Line FRAMING is named, the lumber delivered will fulfill in every respect his specification requirements.

Not only is the architect assured of the quality of the product specified, but the lumber has such definite elements of economy (apparent to anyone familiar with the use of ordinary lumber) that the architect is fully justified in its specific selection.

The Standard Specifications for House Framing

While many national organizations have in the past furnished standard details of wood framing, there has hitherto never existed a well organized, complete standard specification to supplement these accepted standard details.

For the convenience of the architect there is included in this manual such a specification. Its provisions are based on standard national good practice and may be regarded as containing all the elements needed to assure good sound construction based on the use of 4-SQUARE Guide-Line FRAMING.

STANDARD DETAILS FOR HOUSE FRAMING

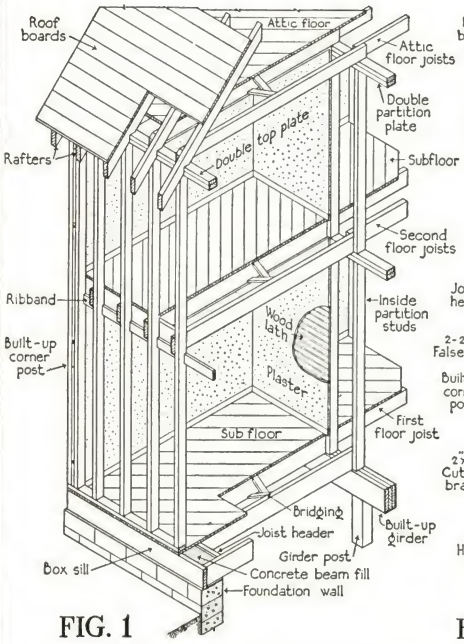


FIG. 1

THE BALLOON FRAME

This type of frame has many things to recommend it. The one piece studs, extending the full height of the wall and tied together by the ribband at the second floor line reduce to a minimum the shrinkage factor. It is strong and rigid but requires careful fire stopping.

This frame is more efficient when the interior studding is set directly on top of girders or bearing partitions.

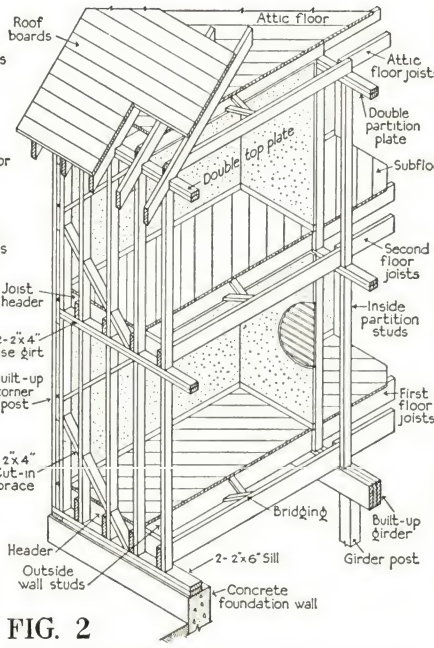


FIG. 2

THE MODERN BRACED FRAME

This type of frame is an outgrowth of New England solid timber post and girth construction. Built-up members are used today very largely and with equal satisfaction. Instead of heavy posts set eight or ten feet apart, walls are built with 2x4 in. studs set 16 in. on centers. The second floor is carried on a double 2x4 in girt. Diagonal bracing is inserted at the corners. This type has several commendable features. It is simple to build and has good provision for fire stopping both at sill and second floor line. 2x4 in. cut-in bracing, as illustrated, may also be used with other types.

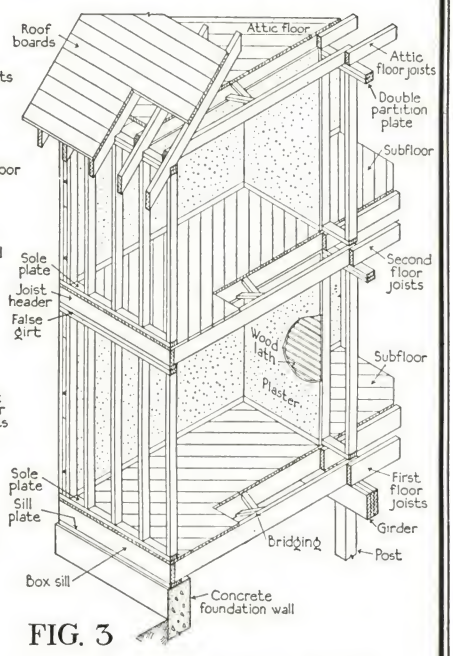


FIG. 3

THE PLATFORM FRAME

The Platform Frame is extensively used. It is similar in principle to Braced Frame but has boxed sill construction at each floor line. This makes for greater shrinkage but it is equalized on each floor when a similar type of construction is used under bearing partitions.

This frame is more efficient when the interior studding is set directly on top of girders or bearing partitions.

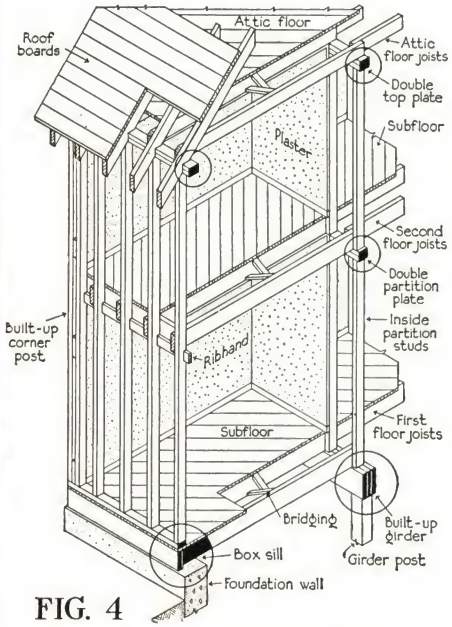


FIG. 4

DETAIL OF METHOD FOR SECURING BALANCED SHRINKAGE

THE FRAME provides the network to which the other materials are fastened and the strength and rigidity required to support the loads put upon it and preserve the materials with which it is built. Three distinct types of frames are shown by Figs. 1, 2 and 3. Numerous combinations of these types are frequently employed.

BALANCED SHRINKAGE

The total thickness of horizontal lumber in the framing of outside and inside walls on each floor should be equalized as nearly as possible to eliminate uneven shrinkage.

FIRE STOPPING

Fire safety in a dwelling is increased by preventing the circulation of air in the walls between floors or between rooms. An effective method is shown in the drawing to the right. (Fig 5)

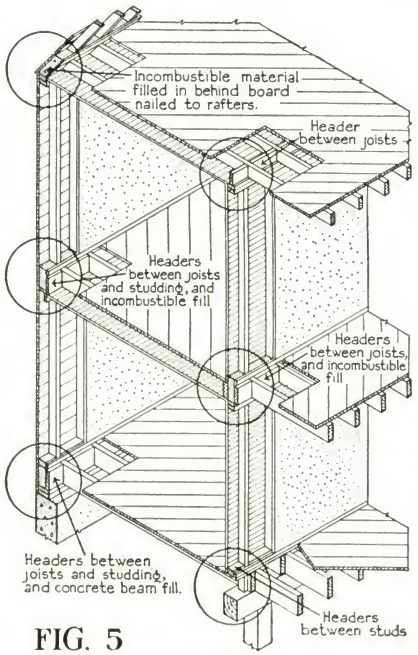


FIG. 5

FRAMING FOR FIRE STOPPING

MASTER SPECIFICATIONS

PREFACE

Scope

The scope of these specifications is confined to the erection of the rough structural frame above masonry footings and foundations, joists are covered with sub-flooring; and exterior walls are sheathed and the roofs boarded and the whole protected with waterproof building paper.

Window and door frames and exterior mill trim, siding, shingles, etc., are not included.

Details Required

Though customarily not furnished, certain of the illustrative drawings used in conjunction with this specification are obviously necessary and should be included among the details of the building if the full intent of the specifications is to be conscientiously carried out.

Specification Form

The form of this specification is that of a "Master" which includes all clauses which in ordinary practice apply to average work. All clauses, obviously do not apply to every building. In formulating the "Rough Framing and Carpentry Specifications" for a particular building, only those clauses which apply should be selected for inclusion. Special provisions or methods but seldom required are not included—such clauses should be added wherever necessary to define the procedure clearly and especially to obviate controversy involving responsibility and cost.

Notes

Notes in italics are explanatory or advisory only and should not be included in the specification.

Selective Words or Phrases

Wherever words or phrases occur in the body of the specification paragraph printed in italics and enclosed in parentheses, choose that word or phrase which applies to the particular work, omitting those that are irrelevant. Wherever the word "specify" occurs in italics enclosed in parentheses, thus *(specify)*, add the particular word or clause applicable, optional with the specification writer.

Local Ordinances

These specifications are based upon the recommendations of the National Committee on Wood Utilization, United States Department of Commerce; the National Lumber Manufacturer's Association and other national bodies. Engineering data are based upon the findings of the United States Department of Agriculture, Forest Products Laboratory.

Due to lack of universal adoption of nationally accepted standards, the specifications should be correlated with the requirements of Local Ordinances relating to this division of the work.

Alterations and Additions

These specifications cover new work only. For additions and alterations add such clauses covering repairs and replacements and the joining of old and new work as may be required.

Advisory Service

The technical staff of Weyerhaeuser Forest Products is at all times accessible for advice and recommendations in the formulating of the specification for "Rough Framing and Carpentry."

ROUGH FRAMING AND CARPENTRY

(1) General Conditions

The General Conditions governing the General Contract apply to the work under this division.

Note: *The American Institute of Architects' standard form of General Conditions is advocated.*

(2) Work Included

The work included under this heading is all of the rough structural wood framing as shown upon the drawings and details and herein specifically mentioned.

Note: *Amplify or amend as required for the particular work, and especially in the case of alterations and additions.*

(3) Preliminary Provisions

Note: *Provide for the following under other specification divisions when and where they apply.*

(3a) Footings, Foundations, Etc.—

(3a1) Footings—All footings shall be set well below the frostline and rest on firm soil. They shall be made of a good grade of concrete and be allowed to season thoroughly before starting the framework or masonry foundation.

(3a2) Bearing Surfaces—Bearing surfaces shall be flat and horizontal, and have an area equal to:

1 sq. ft. for every 4 tons of weight for coarse sand, gravel or hard clay.

1 sq. ft. for every 3 tons of weight for dry clay and fine sand.

1 sq. ft. for every 2 tons of weight for ordinary sand or clay.

1 sq. ft. for every 1 ton of weight for wet, soft clay or loam.

(3a3) Column Footings—Footings for columns shall be square and the base shall have a depth equal to one-half the length or width and the top shall set high enough to support the columns at least 3 in. above finished basement floor.

Note: *See Fig. 6, page 6.*

(3a4) Wall Footings—Footings for walls shall be at least 12 in. wider than thickness of foundation wall and at least 8 in. deep.

Note: *See Fig. 7, page 6.*

(3a5) Chimney Footings—Footings under chimneys shall be not less than 12 in. deep.

(3a6) Basement Stud Partition Footings—Provide concrete footings under all stud basement bearing partitions. Footings shall extend 3 in. above the basement floor forming a concrete base carefully troweled smooth which shall be at least the width of the finished partition. For non-bearing partitions form a similar base of concrete when the finished concrete floor is laid.

(3a7) Foundation Walls—Foundation walls shall be at least 12 in. thick. Materials for foundations shall be a good grade of concrete, approved concrete blocks, hard brick, hollow load bearing tile, stone masonry or other approved impervious material adapted to local soil conditions. The top of the foundation walls shall be leveled-up so as to furnish uniform bearing for framing.

(3a8) Drainage—Tile drainage, level with the footings shall be provided on up-hill side of walls and on all other sides where ground water is apt to collect.

(3b) Dampproofing—

Note: *Moisture is necessary for the growth of fungi, the most common cause of wood decay. Proper dampproofing at all points of juncture between masonry (usually prone to capillarity) and wood should obviously be provided.*

STANDARD DETAILS FOR HOUSE FRAMING

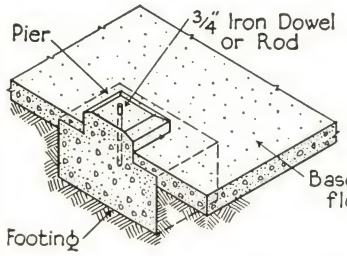


FIG. 6 FOOTING FOR COLUMN

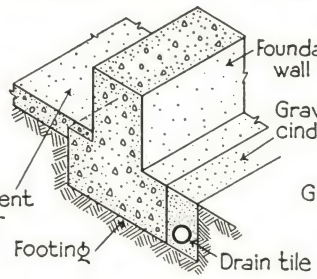


FIG. 7 FOOTING FOR FOUNDATION WALL

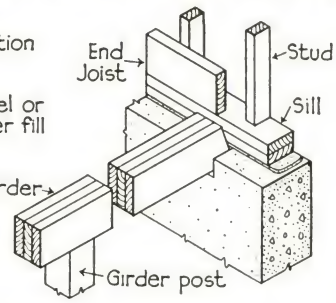
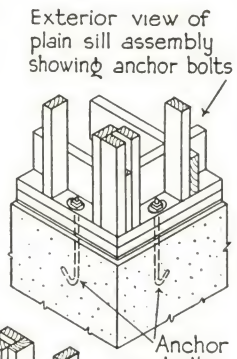


FIG. 8 BUILT-UP GIRDER—END SET IN CONCRETE WALL



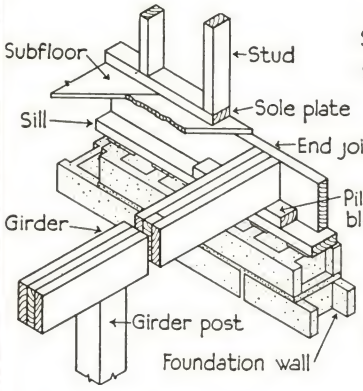


FIG. 9 BUILT-UP GIRDER END SET ON SILL PLATE

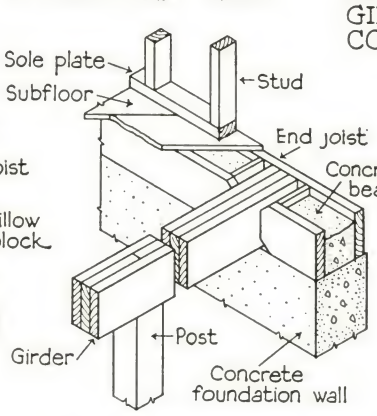


FIG. 10 BUILT-UP GIRDER END SET ON CONCRETE WALL

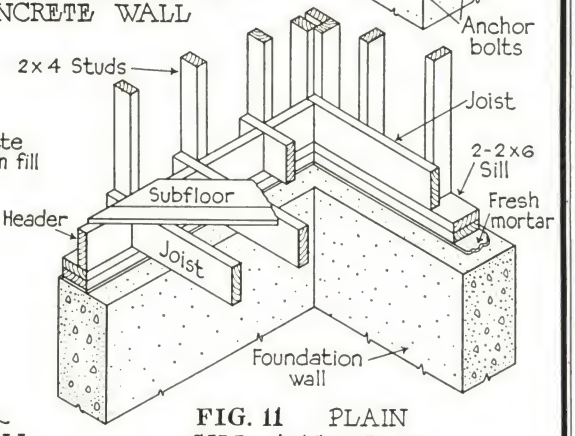


FIG. 11 PLAIN SILL ASSEMBLY

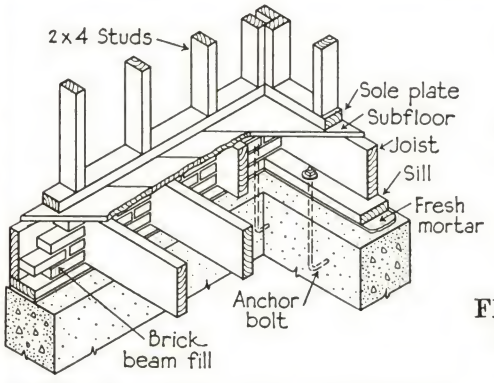


FIG. 12 BOX SILL ASSEMBLY WITH SILL PLATE

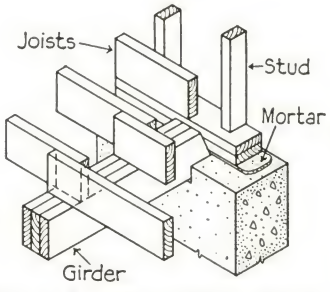


FIG. 14 FRAMING JOIST ON TOP OF GIRDER

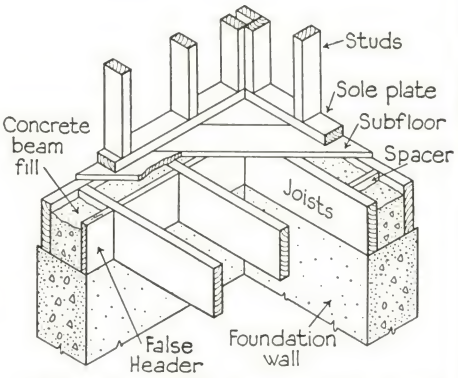


FIG. 13 BOX SILL ASSEMBLY WITHOUT SILL PLATE

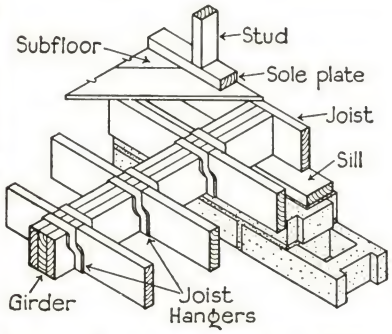


FIG. 15 FRAMING JOIST LEVEL WITH TOP OF GIRDER

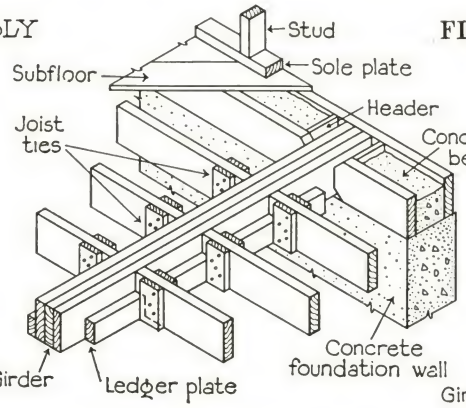


FIG. 16 FRAMING JOIST NOTCHED OVER LEDGER STRIP

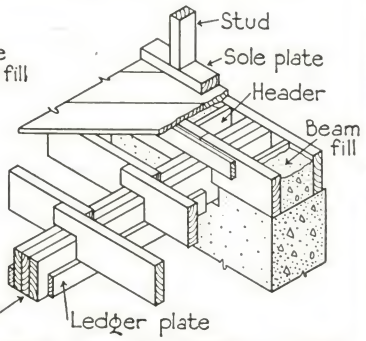


FIG 17 FRAMING JOIST NOTCHED OVER GIRDER

Provide integrally waterproofed mortar or concrete at all points of contact between masonry and wood or dampproof the masonry at these points with a coating of dampproof paint.

(3c) Dowels, Anchors, Etc.—

(3c1) Post or Column Dowels—Provide steel anchor dowels for all wood posts or columns, ¾ in. in diameter, set 12 in. in concrete footings and extending 2 in. into hole bored in bottom of columns. Accurately center dowels in footings.

Note: *See Fig. 6, page 6.*

(3c2) Sill Anchors—Furnish and install, accurately located (as detailed), ¾ in. diameter steel hook bolts to anchor all *(sills) (sill plates)* to masonry walls. Anchors shall be set from 16 in. to 20 in. in the masonry work and not more than 8 ft. apart between stud locations with one anchor on each side of all corners. They shall project a sufficient height above top of masonry to pass through the sill and take large nuts and washers.

Note: *See Figs. 11 and 12, page 6, for details.*

(3d) Lumber Treatment—

Note: *In localities subject to termite depredation or at points of construction exposed to fungi growth, the chemical treatment of lumber and particularly that coming in contact with masonry foundations may be necessary. Recommendations to suit the particular locality best may be obtained from the Weyerhaeuser Technical Staff.*

(4) Materials and Dimensions

(4a) General—Where so specified, all material for the structural wood frame shall be "4-SQUARE Guide-Line FRAMING" as marketed exclusively by Weyerhaeuser Sales Co., St. Paul, Minnesota, or equivalent, meeting fully the following specifications:

No. 1 common grade, seasoned stock; surfaced four sides to American Lumber Standard sizes; trimmed square and true at both ends to exact full lengths; fully identified and guaranteed as to grade, species and seasoning.

Note: *"4-SQUARE Guide-Line FRAMING" is made from No. 1 common grade, S4S. Therefore in the specifications under sub-headings "Grade and Species," only the one designation is necessary.*

Solid timber and other grades and sizes not specified to be "4-SQUARE Guide-Line FRAMING" shall be in accordance with the rules of the Association of Lumber Manufacturers covering the region in which it is produced.

(4b) Abbreviations—Wherever the following trade abbreviations occur, they shall be interpreted as follows:

S4S—Surfaced four (4) sides.

S1S1E—Surfaced one (1) side and one (1) edge.

(4c) Finished Dimensions—All sizes specified are nominal and shall be interpreted as the Standard Commercial Size established by the Lumber Association covering the region in which the lumber was produced.

Note: *See "Standard Sizes of Lumber," page 17.*

(4d) Wood Posts or Columns—

(4d1) Grade and Species—Solid timber, No. 1 Common Grade of Douglas Fir, S4S.

(4d2) Dimensions—Sizes marked on plans.

Note: *Posts should be preferably square, and in any case not smaller than 4x6 in. Provide full bearing for width of girder supported. Height should not be greater than 50 times its least dimension. Posts 6x6 in. or less over which girder is spliced or butt-jointed should be provided with ribbed cast iron caps. Posts supporting wood girders should not be spaced more than 10 ft. apart. See data for determining size of posts, page 17.*

(4e) Wood Girders—

Note: *Wood girders may be built-up or solid. While either type may be used, built-up girders are preferable because of greater strength, size for size; less shrinkage due to complete seasoning possible in thinner stock; and greater ease of installation. Members of built-up girder should be nailed together securely. See data for figuring girder sizes, page 17.*

(4e1) Grade and Species—

(a) Built-up Girders, "4-SQUARE Guide-Line FRAMING" Douglas Fir.

(b) Solid Girders, No. 1 Common Grade of Douglas Fir *(S4S) (S1S1E).*

(4e2) Dimensions—Sizes marked on plans.

(4f) Sills—

Note: *For types of sills, see Figs. 11, 12, and 13, page 6.*

(4f1) Grade and Species—"4-SQUARE Guide-Line FRAMING" Douglas Fir *(or No. 2 common Douglas Fir, S4S or S1S1E except for Box Sill).*

(4f2) Dimensions—

(a) Plate Sills, 2x6 in. under 2x4 in. studding; 2x8 in. under 2x6 in. studding as designated on plans.

(b) Box Sills, same dimensions as designated on plans for joists.

(4g) Joists—

(4g1) Grade and Species—"4-SQUARE Guide-Line FRAMING" *(Douglas Fir) (West Coast Hemlock).*

Note: *Select to suit local market conditions.*

(4g2) Dimensions and Spacing—Sizes and spacing marked on plans.

Note: *Joists should be spaced normally 16 in. o. c. except where additional strength is required for some particular floor area, in which case the joists should be doubled or extra joists set between the regular joists so as not to interfere with lathing. 12 in. o. c. spacing will also conform to lathing requirements.*

See data for determining size of joists, page 18.

(4h) Rafters—

(4h1) Grade and Species—"4-SQUARE Guide-Line FRAMING" *(Douglas Fir) (West Coast Hemlock).*

(4h2) Dimensions and Spacing—Sizes and spacing marked on plans.

All ridge, hip and valley rafters shall be at least 2 in. wider than the regular rafters. The ridge rafter may be of 1 in. material, but the hip and valley rafters shall be 2 in. thick.

Note: *Rafters should be spaced normally 16 in. o. c., since this permits setting the rafters directly over the wall studs and permits nailing each one to the side of the ceiling joist, thus tying the frame together and prevent spreading of the wall. Also, this spacing facilitates lathing in case underside of rafters is to be plastered. See data for determining size of rafters, page 19.*

(4i) Bridging—

(4i1) Grade and Species—Cut from sound boards of grade and species hereinafter specified for sheathing.

(4i2) Size—*(1x3 in.) (1x4 in.) (2x2 in.)* accurately beveled at ends to fit tightly against the face of joists.

(4j) Stair Strings or Carriages—

(4j1) Grade and Species—"4-SQUARE Guide-Line FRAMING" *(Douglas Fir) (West Coast Hemlock).*

(4j2) Dimensions—

Note: *Select to suit local market conditions.*

(a) Strings shall be 2 in. thick by such a width that when the rough riser and tread support is cut out the minimum dimension remaining shall not be less than *(3⅝ in.) (5⅝ in.) (specify).*

(b) Carriages shall be *(4x6 in.) (specify)* built up of 2 in. thicknesses.

(4k) Studs, Soles and Plates—

(4k1) Grade and Species—"4-SQUARE Guide-Line FRAMING" *(Douglas Fir) (West Coast Hemlock).*

Note: *Select to suit local market conditions.*

(4k2) Dimensions and Spacing—2x4 in. (other widths where so designated) studs spaced 16 in. o. c. (12 in. o. c. where so designated).

Note: *On exterior walls for one or two story houses the outside studs are customarily 2x4 in. In buildings over two stories and in cases of exceptionally high ceilings, studs should be 2x6 in. or larger.*

Basement bearing partitions should be framed with 2x4 in. studs and spaced 16 in. o. c. except where they support more than one floor, in which case they should be framed with 2x4 in. studs spaced 12 in. o. c. or 2x6 in. studs spaced 16 in. o. c.

All partitions above the basement should be framed with 2x4 in. studs spaced 16 in. o. c. (12 in. where so designated), except where thicker walls are required on the larger work for structural purposes or to conceal plumbing and heating pipes, vents, etc., or to provide for architectural effects.

(4l) Ribbands—

(4l1) Grade and Species—Same as hereinafter specified for "Wall Sheathing."

(4l2) Dimensions—*(1x4 in.) (1x6 in.)* S4S.

(4m) Diagonal Let-in Bracing—

(4m1) Grade and Species—Same as hereinafter specified for "Wall Sheathing."

(4m2) Dimensions—1x4 in. S4S.

(4n) Diagonal Cut-in Bracing—

(4n1) Grade and Species—Same as hereinbefore specified for "Studs, soles and plates."

(4n2) Dimensions—Same as exterior studding.

(4o) Sub-Flooring—

Note: *The grades, species, size, etc., of this type of lumber are numerous and must be selected to suit local stocks. Select from one of the following.*

(4o1) Grades and Species—

(a) No. 3 Common or better grade of *(Genuine White Pine) (Ponderosa Pine) (Spruce) (White Fir) (Fir and Larch) (Western Red Cedar)* in accordance with the grading rules of Northern Pine Manufacturers' Association, Western Pine Manufacturers' Association, California White and Sugar Pine Manufacturers' Association, or Western Pine Association as they apply.

Note: *Grade of No. 4 Common is permissible provided large and coarse defects that will weaken the boards materially are cut out.*

(b) No. 1 Common Grade of *(Douglas Fir) (West Coast Hemlock) (Western Red Cedar)* in accordance with the grading rules of West Coast Lumbermen's Association.

Note: *Grade of No. 2 Common is permissible provided large and coarse defects that will weaken the boards materially are cut out.*

(4o2) Dimensions—*(Square-edged) (Shiplapped) (Dressed and matched) (Dressed and matched and end matched)* 1 in. nominal thickness surfaced to $\frac{25}{32}$ in. or thicker and uniform width of *(4 in.) (6 in.) (8 in.) (10 in.) (12 in.).*

Note: *Square edged material may be used, although shiplapped or dressed and matched, is recommended due to its greater strength, warmth and soundproofness. Select to suit local market conditions. Stock dressed and matched and end matched is not recommended in widths exceeding 8 in.*

(4p) Wall Sheathing—

(4p1) Grade and Species—Same as specified hereinbefore for "Sub-flooring."

(4p2) Dimensions—*(Shiplapped) (Dressed and matched) (Dressed and matched and end matched)* 1 in. nominal thickness surfaced to $\frac{25}{32}$ in. or thicker and uniform width of *(4 in.) (6 in.) (8 in.) (10 in.) (12 in.).*

Note: *Select to suit local market conditions. Stock dressed and matched and end matched is not recommended in widths exceeding 8 in.*

(4q) Roof Boarding—

(4q1) Grades and Species—Same as specified herinbefore for "Sub-flooring.

(4q2) Dimensions—*(Square edged) (Shiplapped) (Dressed and matched) (Dressed and matched and end matched)* 1 in. nominal thickness surfaced to $\frac{25}{32}$ in. or thicker and uniform width of *(4 in.) (6 in.) (8 in.) (10 in.) (12 in.).*

Note: *Square edged material may be used, although shiplapped or dressed and matched is recommended due to its greater strength and warmth. Select to suit local market conditions. Stock dressed and matched and end matched is not recommended in widths exceeding 8 in.*

(4r) Miscellaneous Framing Items—

Note: *Here specify any miscellaneous framing items not customarily encountered but which are required on the particular work.*

(4s) Iron and Steel—

Note: *All anchors for sills, plates, etc., built into the masonry before the framing is erected should be included under the masonry specifications (see (3c), page 7). All anchors, plates, ties, stirrups, etc., attached to or a part of the framing should be included here.*

(4s1) Girder Plates—Provide *(where so detailed) (12x8x ½ in.) (specify size) (steel) (cast iron)* girder bearing plates.

(4s2) Post Plates—On posts 6x6 in. and under supporting spliced or butt jointed wood girders, provide full area cast iron post caps ¾ in. thick, with end clutch ribs and central rib parallel to girder to anchor ends of girders together at splice and maintain lateral contact. Provide 2 holes for spiking to girder top.

(4s3) Stirrups—*Furnish (¼x1½ in. steel stirrups to support all headers where specified and of finished width and depth equal to the joists. Top shall be provided with a turn-over hook to fit the top of trimmer width, punched for horizontal spiking to the trimmer side, and at bottom for spiking to bottom of header) (specify any other type).*

(4s4) Miscellaneous Items—

Note: *Here specify any miscellaneous items not customarily encountered but which are required on the particular work.*

(4t) Nails—Nails shall be *(Smooth) (Cement Coated) (common wire nails) (sinker nails) (non-splitting nails) (specify).*

Note: *Cement coated nails are recommended due to their greater holding power and the fact that in the same sizes as standard wire nails they are less in diameter and therefore less likely to split the wood. Since in the same size they weigh less than standard wire nails the comparative cost per pound is approximately the same. Non-splitting nails have also obvious advantages.*

(4u) Waterproof Building Paper—Waterproof building paper shall be *(specify brand)* as made by *(specify manufacturer).*

Note: *The building paper in frame construction not only protects the wood framing from moisture, but it prevents wind driven air infiltration and materially aids in fuel reduction. A high grade tough stock, permanently saturated with non-volatile waterproofing and preservative compounds is strongly advocated as an economy.*

(5) Wood Posts or Columns

Note: *See (4d), page 7. See details, page 6. For footings, see (3c1), page 7.*

(5a) Erect wood posts over dowel anchors with full level bearing on concrete footings. Posts shall be maintained plumb and true until supported girders and joists are secured in place.

(5b) Before erection, treat bottom of posts with hot creosote to protect against moisture *(and termites).*

Note: *This clause may be omitted if integrally waterproofed concrete is used in footings as suggested in (3b).*

(5c) On all posts 6x6 in. or smaller install *(cast iron) (specify)* caps securely attached to tops of posts.

Note: *See (4s2).*

(6) Girders

Note: *See (4e), page 7. See details, page 6.*

(6a) Construction of Built-up Girders—Tops and bottoms of built-up girders shall be sized where necessary to assure even bearing on supports and under joists.

A two-piece girder shall be nailed from both sides with 10 penny nails staggered and spaced 24 in. apart along both top and bottom edges. Near center of span space nails 12 in. apart.

A three-piece girder shall be nailed in same manner as above but using 20 penny nails.

A four or five-piece girder shall be assembled by nailing three members together in the same manner as above but using fewer nails and then nail the other members to this assembly.

(6b) All splices in girders shall be square cut and close fitted, centering over columns or piers.

(6c) Ends of girders bearing on masonry walls shall be cut with a 3 in. bevel.

Note: *Ends of all girders should have a bearing surface on solid concrete walls of not less than 4 in., on common brick (cement mortar) wall not less than 6 in. and when concrete block wall is used the girder should bear on wall 8 in. and be supported by a steel or cast-iron plate.*

(6d) Provide *(where so detailed) (2x4 in.) (specify)* joist ledger strips thoroughly secured to the girder with 16 penny nails staggered and spaced 12 in. apart along both top and bottom edges.

(6e) All girders shall be set with crown edge up, carefully leveled with full bearings at ends and intermediate supports.

(6f) Ends of girders setting on masonry shall have at least 1 in. clearance on sides and ends for free circulation of air.

(6g) Where so indicated girder ends shall be provided with *(steel) (cast iron)* bearing plates accurately leveled and set in a ½ in. bed of *(waterproofed)* Portland cement mortar. Allow mortar to set before erecting girder.

(6h) Accurately notch girders over stay-fins of posts provided with *(cast iron) (specify)* caps.

Note: *See (4s2), page 8.*

(7) Sills

Note: *See (4f), page 7. See details, page 6.*

(7a) All ends shall be square cut and closely fitted. Bore all sills accurately to take steel foundation anchors.

Note: *See (3c2), page 7.*

(7b) Double sill members shall be securely nailed together with 16 penny nails staggered and set 24 in. apart along both edges. Joints between halves and at corners shall be lapped and broken.

(7c) All sills shall be laid on a ½ in. bed of fresh (waterproofed) Portland cement mortar, tapped lightly so as to assure a uniform, level bearing surface for the joists. Allow mortar to set before anchor bolts are tightened.

(7d) Treat the sills with a paint or dip coat of hot asphalt before erection.

Note: *This clause may be omitted if tops of masonry walls are dampproofed or sills are laid over a bed of waterproofed mortar.*

(8) Joists

Note: *See (4g), page 7. See details, pages 6 and 10.*

(8a) General—

(8a1) All joists shall be set with crown edge up, carefully leveled with full bearings at ends and intermediate supports. All headers and starting joists shall be selected for straightness.

(8a2) All butted joints shall be square cut and closely fitted.

(8a3) Space joists uniformly 16 in. o. c. (12 in. o. c. where so shown). Where required for added strength of particular floor areas, as hereinafter indicated, doubled or extra joists shall set between the regular joists so as not to interrupt the uniform spacing required for standard lath units.

(8a4) Joists (including headers and trimmers) shall not be cut away to permit pipe installations, etc., unless adequate provision is made to compensate for the loss of strength.

(8b) Framing Around Floor Openings—

(8b1) Provide accurately fitted double header and trimmer joists of the same size as the regular joists around all floor openings. If the header is longer than six (6) feet and set back more than three (3) feet from the ends of trimmer, the trimmer shall be tripled, unless it is supported by a bearing partition column or girder.

Note: *See Fig. 22, page 10.*

(8b2) The ends of all headers longer than 3 ft. 6 in. (except when supported by columns or bearing partitions) shall be carried in steel stirrups, supported by and secured to the trimmer. Counter sink stirrups above and below the tops and bottoms of headers and trimmers.

Note: *See (4s3), page 8 and Fig. 22, page 10.*

(8b3) Wherever a trimmer is cut away at the header line, (as at an open stairway) the trimmer end shall be supported at the corner by a partition or post extending down to a girder or to a concrete footing. Where impossible to use a post, the construction shall be cantilevered and strongly braced.

Note: *See Fig. 30, page 14.*

(8b4) Trimmers and headers around chimneys and hearths shall be set at least two (2) inches from the face of the masonry. In no case shall a framing member be allowed to set in or on a chimney wall.

(8b5) Provide correctly turned wood centers with outer ends supported on header ledger strips and butts supported on brick chimney-breast corbels for the support of rough brick hearth-arches.

Note: *Omit (8b5) if reinforced concrete cantilever hearth slabs are provided.*

(8b6) In fabricating headers and trimmers, a single header joist shall first be nailed to the ends of all joists supported with 20 penny nails two (2) for 2x6 in., three (3) for 2x8 in., four (4) for 2x10 in. and 2x12 in. joists). The second member shall then be nailed to the first with 16 penny nails staggered and spaced 16 in. apart along both top and bottom edges. The trimmer joists shall be nailed in a similar manner and with the same size nails, first to the ends of header joists and then to each other.

(8c) Framing Under Partitions—

(8c1) Double the joists under non-bearing partitions running parallel with the joists for spans 10 ft. or less. When span exceeds 10 ft. or partition height exceeds 9 ft. 6 in., the supporting joists shall be tripled. Doubled joists shall be separated a distance equal to the width of the supported partition sole and bridged every 18 in. with solid blocks the full joist depth (cut from joists) set with the grain running horizontally.

Note: *See Fig. 26, page 12.*

Where joists are tripled, first fabricate doubled joists as above and then secure a third joist at one side with 16 penny nails staggered and spaced 16 in. apart along both top and bottom edges.

Note: *This provides solid nailing for the finished flooring and allows pipe space through to partition without cutting away the supports.*

(8c2) When one or more non-bearing partitions are set at right angles to the joists near the center of spans exceeding 10 ft., alternate joists shall be doubled.

(8c3) When bearing partitions are not directly supported on girders or bearing partitions, but are offset not to exceed 1/20 of the span of the supporting joists running at right angles to the partition, then alternate joists shall be doubled. If distance away from girder or bearing partition exceeds 1/20 of the span, all joists shall be doubled.

(8d) Framing for Tile and Similar Floors—

Note: *The joists under toilet, bathroom and similar floors should provide for an additional dead load of 30 lbs. per sq. ft. for tile floors. Provide for an additional 20 lbs. per sq. ft. for plumbing fixtures. This often requires that joist be set 12 in. o. c. or extra joists set between regular joists. See Fig. 23, page 10.*

(8d1) Where tile or similar floors are to be installed, the top edges of joists directly under these floors shall be tapered and 1x2 in. ledger plates nailed along each side to support the cut-in sub-floor.

(8d2) Joists shall be arranged, wherever possible, to permit installation of pipes with a minimum amount of cutting away of the joists. If this is not possible, headers and trimmers shall be provided to compensate for the loss of strength.

Note: *See Fig. 23, page 10.*

STANDARD DETAILS FOR HOUSE FRAMING

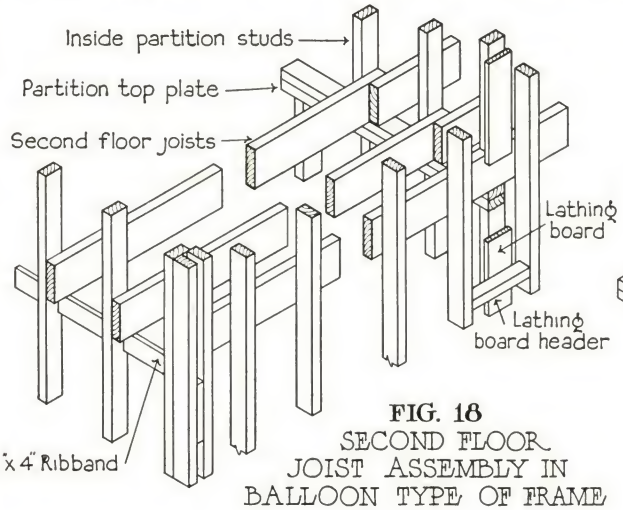


FIG. 18
SECOND FLOOR JOIST ASSEMBLY IN BALLOON TYPE OF FRAME

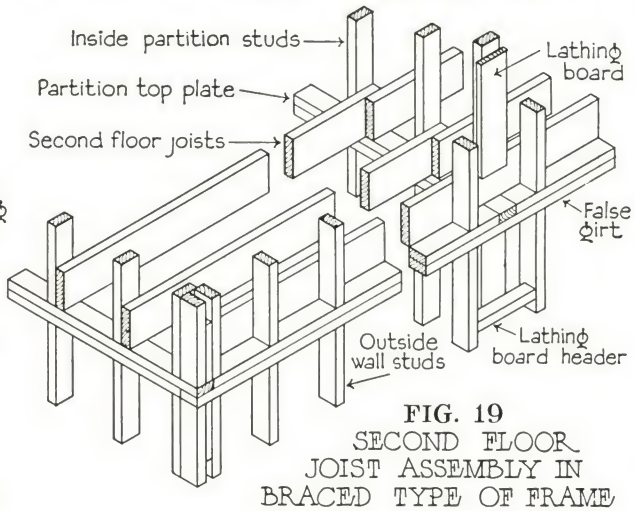


FIG. 19
SECOND FLOOR JOIST ASSEMBLY IN BRACED TYPE OF FRAME

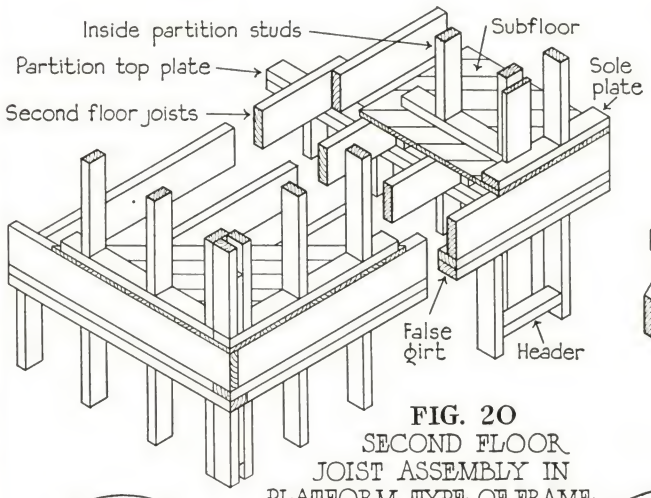


FIG. 20
SECOND FLOOR JOIST ASSEMBLY IN PLATFORM TYPE OF FRAME

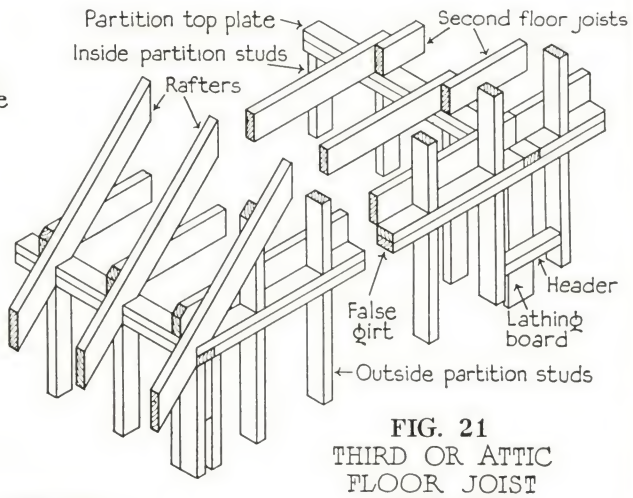


FIG. 21
THIRD OR ATTIC FLOOR JOIST ASSEMBLY

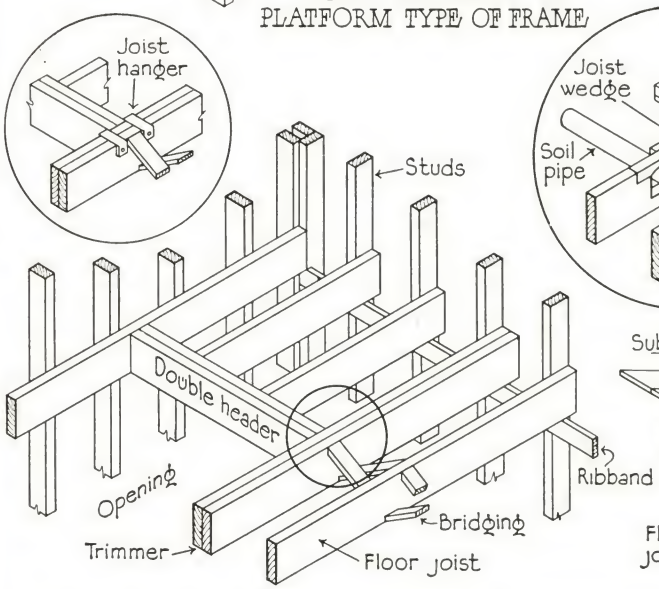


FIG. 22 FRAMING AROUND FLOOR OPENING

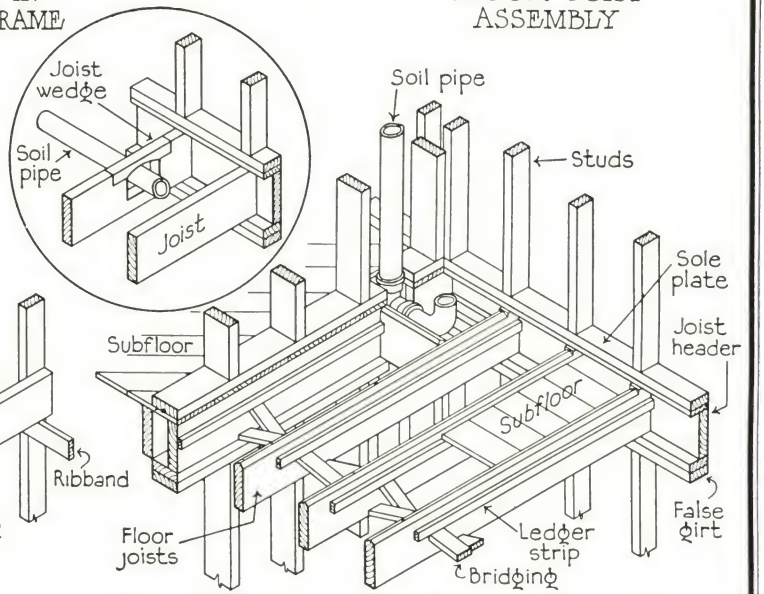


FIG. 23 FRAMING JOIST UNDER BATHROOM

(8e) Framing Joists to Girders—

Note: *Choose and include the clauses which apply to the particular construction detailed.*

(8e1) Joists Bearing on Top of Girder—

Note: *This method, illustrated by Fig. 14, page 6, is the most common, simplest and best when it is not necessary to conserve head room. It does not take away from the strength of joists. Can be used in connection with either the PLAIN SILL or BOX SILL (see Figs. 11, 12 and 13, page 6). The shrinkage factor can be reduced by framing bearing partition studs to rest directly on girder. (See Fig. 25, page 12).*

Joists shall lap each other at least six (6) inches uniformly over the girder and shall be nailed together securely where they lap, with two 10 penny nails driven from each side.

(8e2) Joists, Stirrup Hung, to Flush-top Girders—

Note: *This method, illustrated by Fig. 15, page 6, is recommended where it is necessary to conserve head room. Adapted for use in connection with PLAIN or BOX SILL (see Figs. 12 and 13, page 6).*

Ends of joists shall be square cut and tightly fitted against girder. Joists shall be sized to form even bearing surface over countersunk iron stirrup straps. Secure joists to stirrups with a 10 penny nail driven through bottom of stirrup.

(8e3) Joists Notched over top of Girders and Supported on Ledger—

Note: *This method, illustrated by Fig. 17, page 6, is suitable for more economical construction on small house work. Does not provide sufficient bearing surface for long joist spans. Reduces shrinkage factor to some extent.*

Notches in joist shall be cut evenly so as to secure level surface for sub-floor and with at least six (6) inch lap. Cut notches so that all load shall bear on ledger strip with ⅛ in. clearance over girder top. Joists shall be nailed together securely where they lap each other, using two 10 penny nails driven from each side.

(8e4) Joists Notched and Carried on a Ledger and Fitted Flush with Top of Girder—

Note: *This method, illustrated in Fig. 16, page 6, is not recommended. It is often met with in construction and may be used when properly reinforced at the weak point. While it provides increased head room and reduces shrinkage, the joists are apt to crack at the angle of the notch unless definite precautions are taken.*

Notches in joists shall be accurately cut to give full bearing on the ledger strip with the top joists set ¼ in. above the top of the girders. Sides and bottoms of joists shall be toe-nailed to girder and ledger. Securely nail a 1x4 in. cleat on each side of each joist close to the ledger.

(8f) Framing First Floor Joists at Outside Walls—

Note: *Provide for beam-filling in Masonry Specifications.*

(8f1) Plain Sill Construction—

Note: *This method of support, illustrated by Fig. 11, page 6, is adapted to the BRACED or BALLOON FRAME.*

All joists shall be toe-nailed to sill plate with three 10 penny nails and separated by spacers of the same size as the joist. Spacers shall be set back from ends of joist a distance equal to the width of studs and shall be fastened in place by two 16 penny nails driven into each end through the joists. Ends of joists shall be nailed to studs with three staggered 16 penny nails.

The starting joist shall set back from outside edges of sill plate a distance equal to the width of studs and shall be toe-nailed to the sill plate with 10 penny nails spaced 20 in. apart and to each stud with three 16 penny nails.

(8f2) Box Sill with Plate—

Note: *This method of support, illustrated by Fig. 12, page 6, is adapted to the BALLOON or PLATFORM FRAME.*

Both headers and starting joists shall be set flush with the outside of sill plate and shall be toe-nailed to it with 10 penny nails set 20 in. apart.

All joists shall be toe-nailed, each side, to sill plates with one 10 penny nail.

(8f3) Box Sill without Sill Plate—

Note: *This method of support, illustrated by Fig. 13, page 6, is used with BALLOON or PLATFORM FRAME.*

Both headers and starting joists shall be set flush with the outside of studding above.

The headers shall lap the ends of the starting joists at all corners and shall be nailed to them with three 16 penny nails for 2x8 in. joists, and four 16 penny nails for 2x10 in. and 2x12 in. joists.

All joists shall be set 16 in. o. c. (12 in. o. c. where so indicated) measured along top edge of headers. Headers shall be nailed to the joist ends with the same number and size of nails as specified above.

All joists shall set flush with top of main headers.

(a) Provide joist-size false headers along the sides and false joists across the ends set flush with inside face of foundation wall, toe-nailed in place. Along the ends, provide solid spacers the full joist depth set four feet apart o. c.

This assembly shall be leveled-up and "beam-filling" (installed by others) shall be tamped under all members that do not have full bearing on foundation walls. "Beam-filling" shall be added sufficient to fill all boxes flush with top of joists. Allow fill to set, before putting on the sub-floor.

Note: *Omit this clause (a) if brick beam-filling is used as in (b). Provide for furnishing and installing of beam-filling in Masonry Specifications for 1-3-6 concrete mixture with a limited amount of water to prevent as far as possible the swelling of joists and subsequent shrinkage. Brick beam-filling is often preferred since less moisture is contained in the mortar necessary to lay the dry brick. See Fig. 13, page 6.*

(b) This assembly shall be leveled-up and the bed of mortar for brick beam-filling (installed by others) shall be thoroughly tamped under all members that do not have full bearing on foundation walls. Brick beam-filling shall be added using as little mortar as possible to fill from the top of wall flush with tops of joists and inner face of wall. Allow fill to set before putting on sub-floor.

Note: *Omit this clause (b) if concrete beam-filling is used as in (a) above. See note above. See Fig. 12, page 6.*

(8g) Framing Second Floor Joists—

(8g1) Balloon Frame Construction—

Note: *This method is illustrated by Fig. 18, Page 10.*

The ribbands shall be let into studs their full thickness. Ribbands shall be selected for straightness and leveled-up so as to support all joists evenly, and shall be nailed to each stud with two 8 penny nails.

The joists shall be placed against sides of studs and nailed to them with three 16 penny nails. The starting joists shall be nailed to each end wall stud with two 16 penny nails.

The inside ends of all joists shall be supported on partitions having a double 2x4 in. plate with the studs in this partition set as nearly under each joist as is possible. Joists shall lap each other directly over bearing partitions for a distance equal to the width of the partition plate and shall be nailed together with two 10 penny nails driven from each side. All joists shall be toe-nailed, each side of laps, to the bearing partition plates with one 10 penny nail.

(8g2) Braced Frame Construction—

Note: *This method is illustrated by Fig. 19, page 10.*

The joists shall be placed 16 in. o. c. (12 in. o. c. where studding is 12 in. o. c.) measured along the false girt and shall be toe-nailed to it with two 10 penny nails on each side.

The joists shall be placed against sides of studs and nailed to them with three 16 penny nails. The starting joists shall be nailed to each end wall stud with two 16 penny nails.

STANDARD DETAILS FOR HOUSE FRAMING

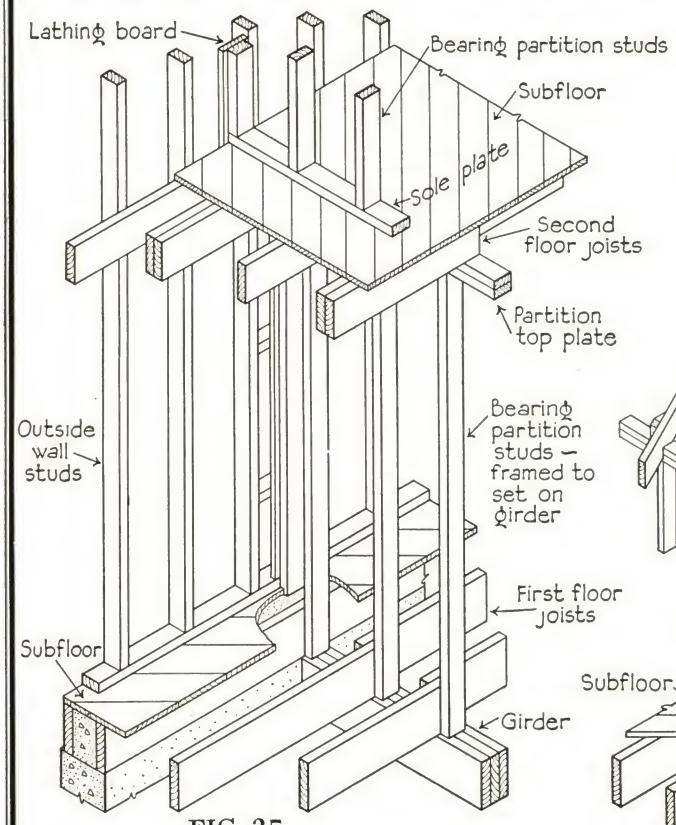


FIG. 25
FRAMING FOR BEARING PARTITION

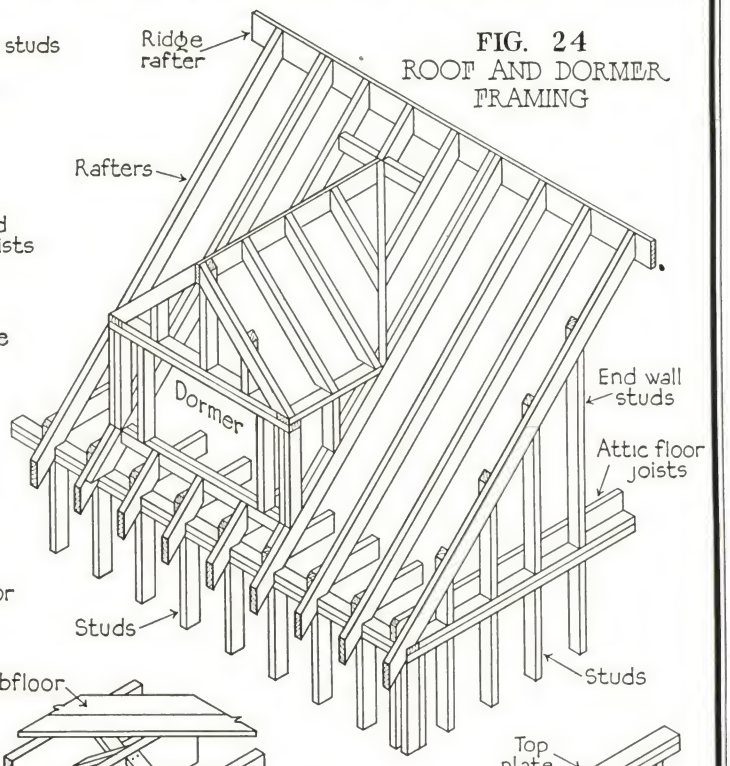


FIG. 24
ROOF AND DORMER FRAMING

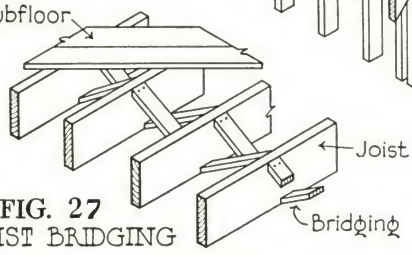


FIG. 27
JOIST BRIDGING

Note: Bridging should be nailed at top only until after subflooring is laid.

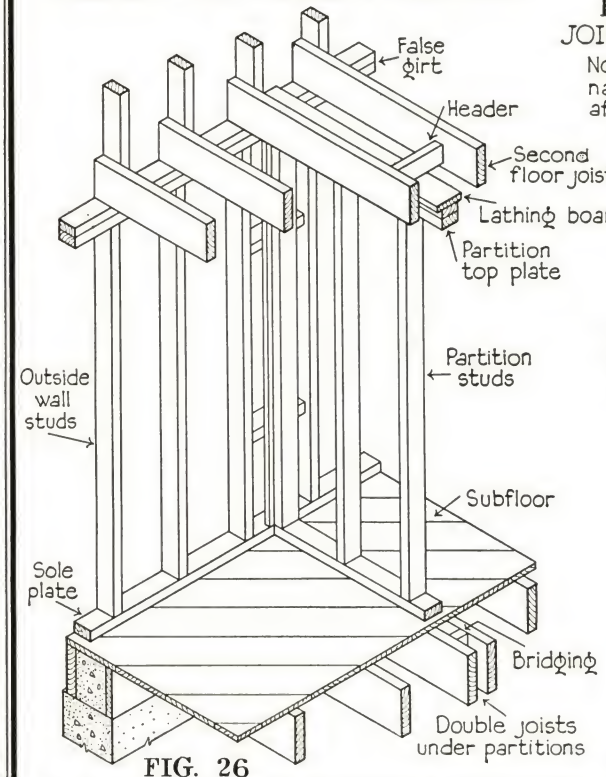


FIG. 26
FRAMING FOR NON-BEARING PARTITION

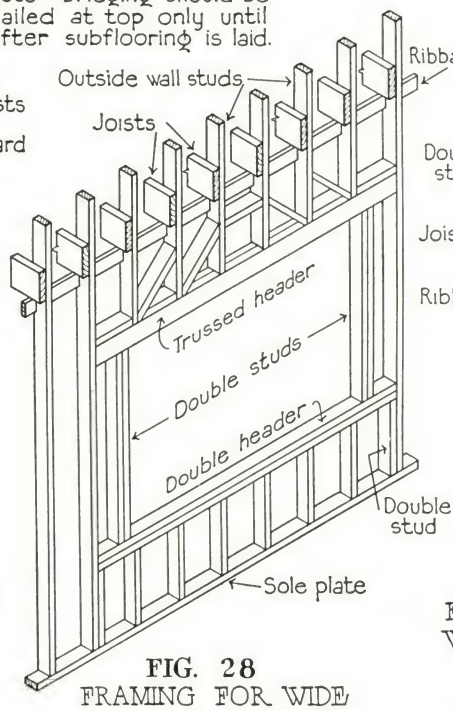


FIG. 28
FRAMING FOR WIDE WINDOW OPENINGS

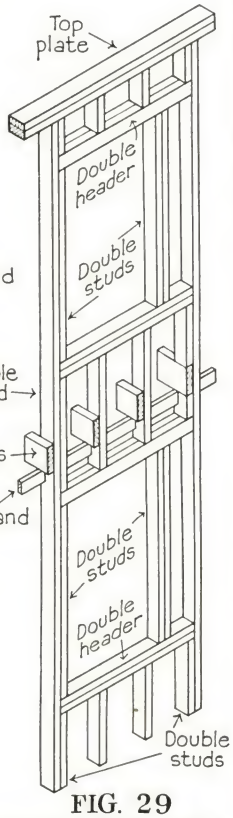


FIG. 29
FRAMING FOR TWO WINDOW OPENINGS — ONE ABOVE THE OTHER IN BEARING WALL

The inside ends of all joists shall be supported on partitions having a double 2x4 in. plate with the studs in this partition set as nearly under each joist as is possible. Joists shall lap each other directly over bearing partitions for a distance equal to the width of the partition plate and shall be nailed together with two 10 penny nails driven from each side. All joists shall be toe-nailed, each side of laps, to the bearing partition plates with one 10 penny nail.

(8g3) Platform Frame Construction—

Note: *This method is illustrated by Fig. 20, page 10.*

Both headers and starting joists shall be set flush with the outside edge of false girt and shall be toe-nailed to it with 10 penny nails set 20 in. apart.

All joists shall be toe-nailed, each side, to false girt with one 10 penny nail.

Headers shall be nailed to the joist ends with three 16 penny nails for 2x8 in. joists, and four 16 penny nails for 2x10 in. and 2x12 in. joists.

The inside ends of all joists shall be supported on partitions having a double 2x4 in. plate with the studs in this partition set as nearly under each joist as is possible. Joists shall lap each other directly over bearing partitions for a distance equal to the width of the partition plate and shall be nailed together with two 10 penny nails driven from each side. All joists shall be toe-nailed, each side of laps, to the bearing partition plates with one 10 penny nail.

(8h) Framing Third or Attic Floor Joists—

Note: *The method illustrated by Fig. 21, page 10, for supporting outer ends of the third or attic floor joist is adapted to either the BRACED, BALLOON or PLATFORM types of frame.*

(8h1) Joists shall be spaced 16 in. o. c. (12 in. o. c. where so indicated) measured along the plate and toe-nailed to it with two 10 penny nails on each side.

Ends of all joists shall set flush with outside edge of plate and top corners shall be chamfered (when necessary) after rafters have been nailed in place.

(8h2) The joists shall be placed against sides of rafters and nailed to them with three 16 penny nails. The starting joists shall be nailed to each end wall stud with two 16 penny nails.

The inside ends of all joists shall be supported on partitions having a double 2x4 in. plate with the studs in this partition set as nearly under each joist as is possible. Joists shall lap each other directly over bearing partitions for a distance equal to the width of the partition plate and shall be nailed together with two 10 penny nails driven from each side. All joists shall be toe-nailed, each side of laps, to the bearing partition plates with one 10 penny nail.

(8i) Bridging—

Note: *See (4i), page 7. See Fig. 27, page 12.*

(8i1) Cross bridge all floor joists with one (1) row of bridging for spans from six (6) ft. to ten (10) ft.; two (2) rows for all spans from ten (10) ft. to twenty (20) ft.

Bridging shall divide the spans into equal parts and shall be nailed at both ends with two 8 penny nails driven at right angles to face of joists. All nails shall be started before members are set in place. Bridging shall be put in and the top ends nailed before laying the sub-floor. The bottom ends shall be nailed after the sub-floors have been laid.

Bridging shall be put in between the first three or four joists opposite the ends of headers when these headers are set two (2) ft. or more away from the end of the trimmer or from the regular row of bridging.

Note: *See Fig. 22, page 10.*

(8i2) Add a 1x4 in. continuous strip nailed to the underside of the joists (when not plastered) beneath each line of diagonal bridging.

Note: *On first story floors carrying heavy or concentrated loads this provision adds considerably to the strength in assisting in distributing the load over several joists.*

(8j) Miscellaneous.

Note: *Here include any special structural features not ordinarily encountered, but necessary in the particular work.*

(9) Studding (Outside Walls)

Note: *See (4k), page 7.*

(9a) General—

(9a1) Studs shall be spaced 16 in. o. c. (12 in. o. c. where so designated).

(9a2) All corners shall be made of three (3) studs so set as to provide approximately a full stud thickness on each side of the internal angle and all thoroughly blocked and secured together with 16 penny nails spaced 12 in. apart o. c.

Note: *See Figs. 18, 19 and 20, page 10 and Fig. 31, page 14.*

(9a3) Over the rough flooring, with outer edge flush with joist construction, lay a single 2x4 in. (2x6 in. for 2x6 in. studs) sole, secured through flooring to each joist with two 16 penny nails.

Note: *Include (9a3) for BALLOON with box sill and PLATFORM Frame Construction. See Figs. 1 and 3, page 4.*

(9a4) All studs shall be one piece (not spliced) from sill to plate *(or girt)* except at openings, in which case they shall be framed as specified for these openings.

All studs around openings and at corners shall be selected for straightness.

All studs shall have full bearing on sills or other bearing surfaces and shall be toe-nailed with four 8 penny nails (two on each side), except where these studs set against joists in which case secure with two nails on the one side.

Where studs set against joists, they shall be nailed to the joist with 16 penny nails, two for 2x6 in. and three for 2x8 in. joists and four for 2x10 in. or 2x12 in. joists.

All main studs shall be square cut and of uniform length so as to furnish uniform bearing for wall plates.

Studding at chimney shall be set at least *(one (1) inch) (specify)* from the face of the masonry.

Plates shall consist of two pieces of the same size material as the studs. They shall be lapped at the corners and at all joints. All joints shall be made directly over the studs.

Plates shall be nailed to top ends of each stud, one thickness at a time, with two 16 penny nails and to each other with 10 penny nails staggered and spaced 16 in. along each edge.

(9a5) All *(gable) (and) (dormer)* studs shall be notched and beveled to receive end rafters and rafters nailed to each stud with two 10 penny nails.

Note: *See Fig. 24, page 12.*

(9b) Framing Around Openings—

Note: *See Figs. 28 and 29, page 12, and Figs. 31 and 33, page 14.*

Double studs and headers shall be used around all openings (where 2x6 in. studs are used, the headers shall be tripled). All header members shall be securely nailed together, those at opening heads set on edge and secured flush with the outside face of studding.

For openings three (3) ft. wide or less in bearing walls and four (4) ft. wide or less in non-bearing walls, the material used for headers shall be the same size as studs. For wider openings up to five (5) ft. in bearing walls and seven (7) ft. in non-bearing walls, the material used for headers shall be of same thickness, but at least 2 in. wider than the studs. For wider openings the headers shall be symmetrically trussed.

STANDARD DETAILS FOR HOUSE FRAMING

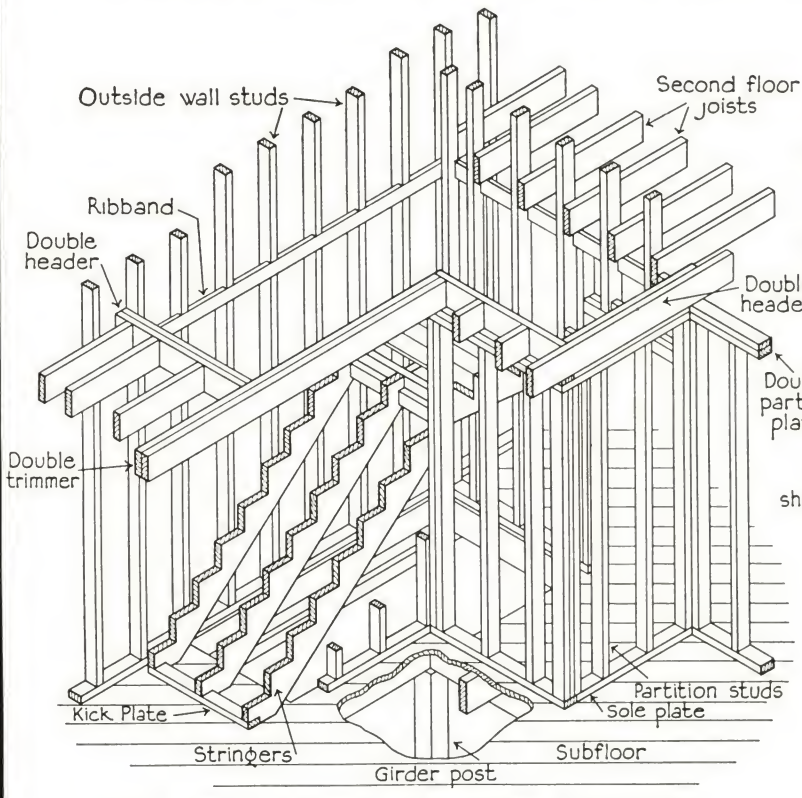


FIG. 30 FRAMING FOR OPEN STAIRWAY

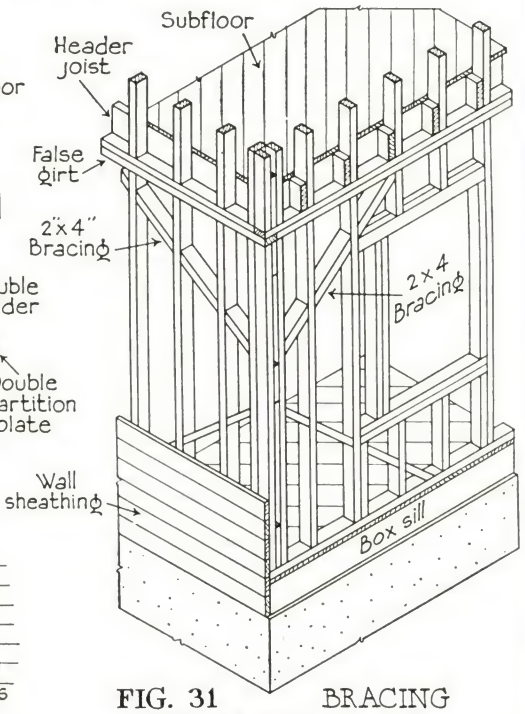


FIG. 31 BRACING
2"x4" Cut between studs
Sheathing applied horizontally

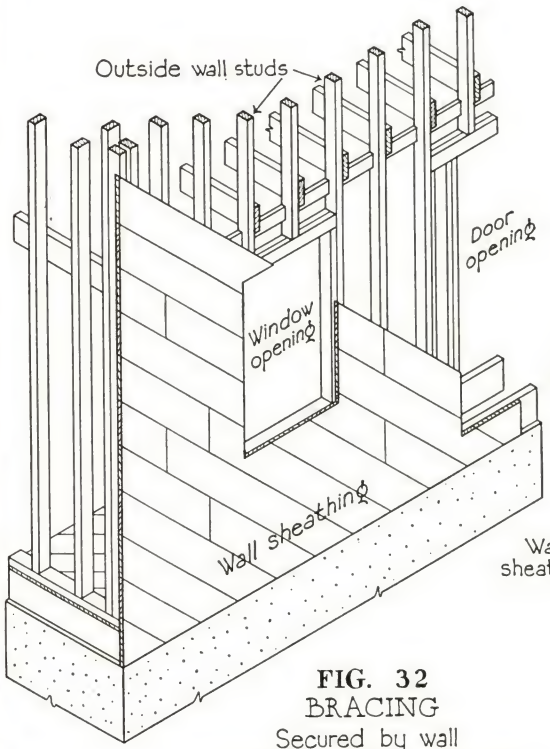


FIG. 32
BRACING
Secured by wall
sheathing applied diagonally

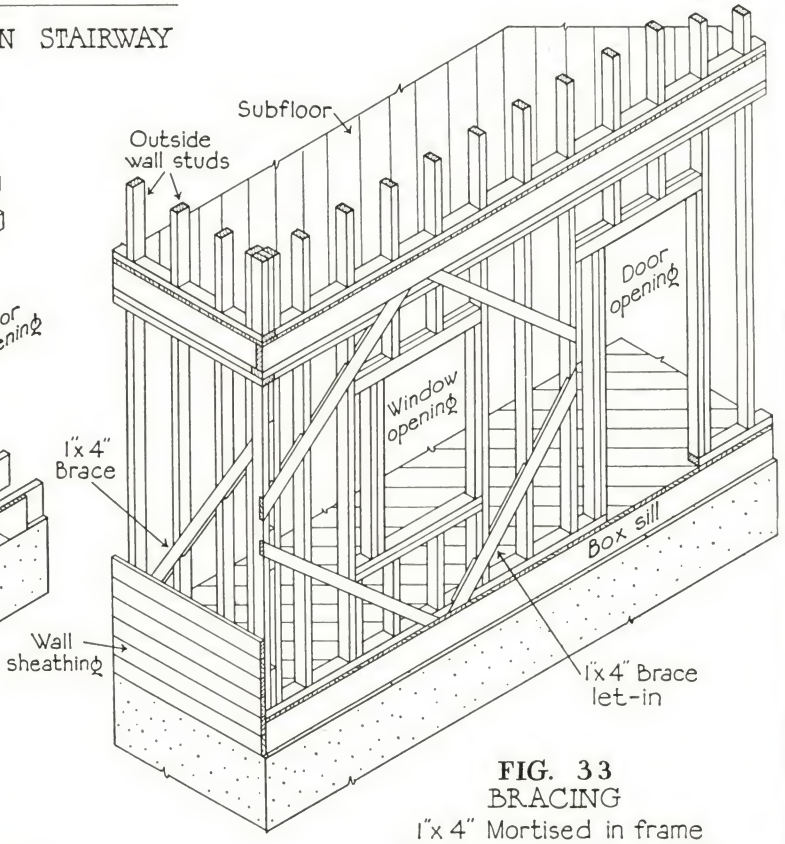


FIG. 33
BRACING
1"x4" Mortised in frame
Sheathing applied horizontally

In bearing walls the ends of the bottom headers in all window openings shall be supported by short studs nailed to the regular studs and extending down to the sill or second floor joists. Where a window opening in second floor comes above a first floor opening, studs at both sides of the openings shall be reinforced all the way up to the roof plate by short studs cut-in between all headers and nailed to them.

Double studs and bottom header members shall be nailed together with 16 penny nails staggered and spaced 16 in. apart along both edges. 2x4 in. headers shall be fastened to studs with two 16 penny nails driven through the studs into each end. The ends of all short studs fitted between the headers shall be toe-nailed to the headers with four 8 penny nails.

At windows, allow the dimensions detailed between finished jambs, sills and heads to rough framing for weight boxes, casement jambs, head jambs, etc.

Over the figured door sizes, allow *(3 in.) (specify)* in width *and (2½ in.) (specify)* in height for rough framing.

(9c) Bracing—

Note: *Bracing is essential in all frame construction, because it provides rigidity, resistance to wind pressure and assists to prevent plaster cracks. The three methods following are given in the order of effectiveness. Specify one.*

(9c1) Apply the sheathing diagonally.

Note: *See Fig. 32, page 14. Also par. (16a), page 16.*

(9c2) Provide let-in diagonal bracing at each story at all corners, set approximately at 45°, with upper ends on opposite side of corner studs and approximately full story height. Bracing shall be 1x4 in. accurately let-in the full thickness, flush with the outside face of studs and nailed to each stud with two 8 penny nails. Thoroughly brace at corners with two braces running in opposite direction where openings close to corners interfere with standard bracing.

Note: *Use where horizontal sheathing is specified. See Fig. 33, page 14.*

(9c3) Provide cut-in diagonal bracing at each story at all corners set at 45° with the upper ends on adjacent sides of corner studs and carried the full story height when possible. Braces shall be the same dimensions as the studding, accurately cut, tightly fitted between studding and in line. Nail bracing at each stud with two 10 penny nails. Where openings interfere with continuous bracing apply in shorter lengths at floor and ceiling of each story.

Note: *Use where horizontal sheathing is specified. See Fig. 31, page 14.*

(10) Studding (Partitions)

Note: *See (4k), page 7.*

(10a) General—All material shall fit squarely and tightly against all bearing surfaces and shall be nailed as specified for outside wall studs.

Wherever possible, bearing partitions shall set directly over girders or other bearing partitions and the studs in these partitions shall be framed to rest directly on the girders or bearing wall plates *(except that when the platform type of frame is used, then the second story partition studs shall set on a single sole of the same size material as the stud nailed to the sub-floor).*

Note: *See Fig. 25, page 12, and Fig. 19, page 10. Omit bracketed clause in italics if PLATFORM type of construction is not used.*

All non-bearing partition studs shall be set on a single plate nailed to the sub-floor except where a double plate permits use of standard length materials.

All bearing partitions shall be capped with a double plate and all non-bearing partitions with a single plate except where a double plate permits the use of standard length materials.

All studs, except those around closets or in other very short partitions, shall be set with edges parallel with the partition line.

Studding at chimneys shall be set at least *(one (1) inch) (specify)* from the face of the masonry.

(10b) Studding at Stair Wells—Carry all studding for stair wells continuously from First Story to Top Story ceiling. Let in a ribband to support joists at floors and construct as specified for Balloon Outside Wall Construction.

Note: *This prevents the bulging and cracking of plaster, usually encountered in open stair wells at the second and third floor levels due to shrinkage of floor joists, plates, etc.*

(10c) Framing Around Openings—Framing around all openings shall be as specified for studding in outside walls.

Allow *(3 in.) (specify)* in width and *(2½ in.) (specify)* in height over the figured door size for rough framing.

(10d) Sliding Door Partitions—Notch the studs on the inside 1 in. and set in a spreader of size detailed and located to take the door tracks and hangers specified. Furnish 2 in. thick plank to terminate the vertical end of pocket, allowing at least 2 in. clearance at back of door. Line pockets, both sides with *(⅞ in. ceiling) (specify).* Erect in accordance with the manufacturer's details and printed directions, the specified tracks, hangers, etc.

(10e) Miscellaneous—

Note: *Here include any special items, such as special partition construction for accordion partitions, etc.*

(11) Fire Stopping

Note: *The function of fire stopping is to increase fire safety by stopping the circulation of air and fire within the walls, partitions and floors. See Fig. 5, page 4.*

Fire stopping shall be provided at each floor level, both in the outside walls and bearing partitions by placing tightly fitted headers between the ends of the joists at these points. The boxes formed by these headers shall be filled with incombustible materials *(crushed mortar) (gypsum) (mineral wool) (specify),* so as to shut off more effectively the circulation of air.

(12) Construction to Balance Shrinkage

Note: *Lengthwise shrinkage of timber is practically negligible, but all lumber tends to shrink and swell across the grain with changes in atmospheric conditions. It is advisable from this standpoint to limit horizontal members as much as possible but, as it cannot be avoided entirely, it is necessary to balance the thickness or depth of the horizontal lumber in exterior and interior bearing walls. See Fig. 4, page 4.*

(12a) The thickness of horizontal framing members in exterior and interior walls shall be balanced on each floor level as nearly as possible.

(13) Rafters

Note: *See (4h), page 7.*

(13a) Flat Roofs—All low-pitch flat roofs, decks, etc., shall be constructed and bridged in exact accordance with the specification for floor joists.

(13b) Sloped Roofs—

(13b1) All rafters shall be notched or beveled so as to secure a bearing of not less than 3 in. on the wall plate and shall be toe-nailed securely to the plate with two 10 penny nails on each side. If set against the attic joists, they shall be nailed to the joists with two 16 penny nails in addition to the plate nailing.

Note: *See Fig. 21, page 10, and Fig. 24, page 12.*

(13b2) All rafters shall be cut and beveled so as to fit tightly against all *(ridge) (hip) (and) (valley)* rafters and shall be nailed securely to them with four 8 penny nails.

(13b3) *(Except on hipped roofs)* collar ties of same size material as the regular rafters shall be nailed to each pair of rafters as near half way up from the plate as is possible.

(13b4) Where due to lack of headroom, collar ties must be omitted, nail 1x4 in. or 1x6 in. ties to the underside of rafters on both slopes extending from the center of the ridge diagonally to the corners of the building.

Note: *A portion only of the strengthening effect of collar ties is obtained by this method.*

(13b5) Where heavy wind or snow loads are prevalent and when attic is not used for living quarters, the roof shall be strengthened with braces set at an angle to the rafters and about four feet apart extending from top of partitions preferably up to rafters near center of span. Braces shall be notched over a 2x4 in. member set on edge extending the full length of the roof section and nailed against the under side of the rafters.

(13c) Framing Around Openings—Rafters shall be doubled on each side of *(dormers) (chimneys) (scuttles) (skylights) (specify)* etc. and double headers shall be used around all openings where one or more of the regular rafters have been cut away.

All headers and double trimmers shall be nailed together with 16 penny nails staggered and spaced 20 in. apart along both edges.

Note: *See Fig. 24, page 12.*

(13d) Miscellaneous—

Note: *Here include any special structural features not ordinarily encountered, but necessary in the particular work.*

(14) Stair Construction

Note: *See (4j), page 7.*

(14a) General—*(Strings) (carriages)* shall be adequately supported at floors and landings. At all floors provide a 2x4 in. kick-plate at right angles to the stair run to take the thrust of the *(strings) (carriages)*. Notch the *(strings) (carriages)* over kick-plates at floors and ledger strips or trimmers at landings and receiving floors and securely toe-nail each to these supports.

Note: *See Fig. 30, page 14.*

(14b) Landings—Landings shall be framed with double trimmers and in all respects as specified for joists. Securely support landings on walls or partitions and brace and bridge against thrust. At the upper ends of stair runs provide a 1x2 in. ledger strip to receive stair strings or carriages.

(14c) Strings—Cut solid strings accurately to the pitch, rise and run of risers and treads. Provide *(3) (specify)* strings to each run.

Note: *Omit (14c) if carriages are used.*

(14d) Carriages—Carriages, *(3) (specify)* to each run, shall be built up of 2 in. thick stock on edge to the required dimension. Members shall be secured together with 16 penny nails staggered and spaced 16 in. apart along both top and bottom edges. Set carriages accurately to the stair run and pitch. Fit 2 in. thick triangular blocks, cut from joist lumber to the rise and tread, on the center of each carriage accurately in line. Toe-nail each block to the carriage.

Note: *Omit (14d) if strings are used.*

(15) Sub-flooring

Note: *See (4o), page 8.*

(15a) Except as hereinafter noted, all sub-flooring shall be laid diagonally at approximately 45° with the boards of alternate stories run at right angles to those above and below.

(15b) All sub-flooring shall be fitted tightly together and nailed to each bearing with 8 penny nails, two to each board 4 or 6 in. wide, three to each board 8 in. wide and four to each board 10 or 12 in. wide.

(15c) All joints shall be broken and made directly over the center of a joist, unless end matched material is used, when the joint may occur over or between the joists, provided the joints in two adjacent boards do not occur over the same joist or between the same two joists.

(15d) Except as hereinafter noted, the sub-flooring shall be continuous across the building. Where bearing partition studs extend below the top of the floor joist, the sub-flooring shall be cut to fit around each stud with the ends supported on cleats.

(15e) At the outside walls the sub-flooring shall extend to the outside face of studs where box sill or platform frame is used, otherwise the sub-flooring shall extend to the inside face of studs.

(15f) In *(bathrooms) (kitchens) (vestibules) (specify)* where there is a *(tile) (marble) (specify)* or similar floor laid over wood joists cut in the rough flooring between the joists and secure to ledger plates to provide for a reinforced concrete bed.

(16) Wall Sheathing

Note: *See (4p), page 8.*

(16a) All sheathing shall be applied diagonally at approximately 45°, with all boards on each side of the building running in the same direction.

Note: *Diagonal sheathing is strongly recommended due to its greater bracing strength. See Fig. 32, page 14. However, where exterior stucco is applied, horizontal sheathing should always be used.*

(16b) All sheathing shall be applied horizontally.

Note: *Wherever used, wind bracing as specified in (9c2) and (9c3) should always be included. See Figs. 31 and 33, page 14.*

(16c) All sheathing shall be tightly fitted together and nailed to each bearing with 8 penny nails, two to each board 6 in. wide, three to each board 8 in. wide and four to each board 10 or 12 in. wide.

(16d) All joints shall be broken and made directly over the center of a stud, unless end matched material is used, when the joint may occur over or between the studs, provided the joints in two adjacent boards do not occur over the same stud or between the same two studs. No joint shall occur directly at the top or bottom of an opening.

(16e) The boards directly at the top and bottom of all openings shall continue to at least the second stud on each side of the opening.

Note: *Include (16e) only when horizontal sheathing is used.*

(16f) The sheathing shall be cut off at the center line of the first stud at the sides of all window and door openings, 1 in. above the bottom edge of all top headers, and flush with the top edge of the bottom headers.

Note: *Include (16f) where, as is customary, wide blind stops are detailed for window frames. Where standard brick veneer frames are used, omit this clause.*

(16g) All sheathing shall be continuous except for openings and shall extend full width to the outside edge of corner studs and to or below the bottom edge of the sill as detailed. Boards shall be notched to fit closely around all rafters at the eaves and shall extend up and be trimmed off flush with the top edge of all rafters.

(17) Roof Boarding

Note: *See (4q), page 8.*

(17a) All roof boarding shall be laid at right angles to the rafters.

(17b) All boards shall be fitted tightly together and nailed to each bearing with 8 penny nails, two (2) to each board 4 or 6 in. wide, three (3) to each board 8 in. wide and four (4) to each board 10 or 12 in. wide.

(17c) All joints shall be broken and made directly over the center of a rafter, unless end matched material is used, when the joint may occur between the rafters provided that the joints in two adjacent boards do not occur between the same two rafters.

(17d) All boards supporting the end rafters or barge boards shall be long enough to extend over at least two of the regular rafters.

(17e) Form all crickets, saddles, etc. *(back of chimneys) (specify)* etc. as may be required to drain the roof areas properly to *(gutters) (leader drains) (specify)*. They shall be formed of accurately fitted roof boarding secured to strongly braced framing built on top of the regular roof boarding.

(18) Building Paper

(18a) Cover all sheathing and roof boarding with building paper, laid at right angles to the studding and rafters, lapped at least 2 in. at joints to shed water and adequately secured with nails driven through standard galvanized sheet-metal washers or lath cleats.

(18b) When window and door frames are installed provide and install 8 in. wide strips of building paper, secured over the frames back of outside casings and lapping over the regular building paper.

ENGINEERING DATA—For Determining the Correct Sizes of Wood Columns, Girders, Joists and Rafters

STANDARD SIZES OF LUMBER

Recommended by U. S. Department of Commerce

Type of Lumber	Nominal Size		Actual Size S4S At Comm. Dry Shp. Wt.	
	Thickness	Width	Thickness	Width
Dimension **4-SQUARE Guide-Line FRAMING**	2 in.	4 in.	1⅝ in.	3⅝ in.
	2 in.	6 in.	1⅝ in.	5⅝ in.
	2 in.	8 in.	1⅝ in.	7½ in.
	2 in.	10 in.	1⅝ in.	9½ in.
	2 in.	12 in.	1⅝ in.	11½ in.
Timbers	4 in.	6 in.	3⅝ in.	5½ in.
	4 in.	8 in.	3⅝ in.	7½ in.
	4 in.	10 in.	3⅝ in.	9½ in.
	6 in.	6 in.	5½ in.	5½ in.
	6 in.	8 in.	5½ in.	7½ in.
	6 in.	10 in.	5½ in.	9½ in.
	8 in.	8 in.	7½ in.	7½ in.
	8 in.	10 in.	7½ in.	9½ in.
Common Boards	1 in.	4 in.	25/32 in.	3⅝ in.
	1 in.	6 in.	25/32 in.	5⅝ in.
	1 in.	8 in.	25/32 in.	7½ in.
	1 in.	10 in.	25/32 in.	9½ in.
	1 in.	12 in.	25/32 in.	11½ in.
Shiplap Boards	1 in.	4 in.	25/32 in.	3⅛ in. face
	1 in.	6 in.	25/32 in.	5⅛ in. face
	1 in.	8 in.	25/32 in.	7⅛ in. face
	1 in.	10 in.	25/32 in.	9⅛ in. face
	1 in.	12 in.	25/32 in.	11⅛ in. face
Tongued and Grooved Boards	1 in.	4 in.	25/32 in.	3¼ in. face
	1 in.	6 in.	25/32 in.	5¼ in. face
	1 in.	8 in.	25/32 in.	7¼ in. face
	1 in.	10 in.	25/32 in.	9¼ in. face
	1 in.	12 in.	25/32 in.	11¼ in. face

WOOD POSTS OR COLUMNS

SIZES OF WOOD COLUMNS FOR VARIOUS LOADS AND COLUMN HEIGHTS

Based on Use of No. 1 Common Douglas Fir

Load on Column (lbs.)	Length of Column					
	5′-0″	6′-0″	6′-6″	7′-0″	7′-6″	8′-0″
	Nominal Size of Column Required					
10,000	**4x6 in.**	**4x6 in.**	**4x6 in.**	**4x6 in.**	**4x6 in.**	**4x6 in.**
15,000	4x6	4x6	4x6	4x6	**6x6**	**6x6**
20,000	**6x6**	**6x6**	**6x6**	**6x6**	6x6	6x6
25,000	6x6	6x6	6x6	6x6	6x6	6x6
30,000	6x6	**6x8**	**6x8**	**6x8**	**6x8**	**6x8**
35,000	**6x8**	6x8	6x8	6x8	6x8	6x8
40,000	6x8	6x8	**8x8**	**8x8**	**8x8**	**8x8**
45,000	**8x8**	**8x8**	8x8	8x8	8x8	8x8
50,000	8x8	8x8	8x8	8x8	8x8	8x8
55,000	8x8	8x8	8x8	8x8	8x8	8x8

Reference—Page 50, Bulletin No. 145, National Committee on Wood Utilization, U. S. Department of Commerce, "Light Frame House Construction."

Instructions for Determining Column Sizes

First—Use the total load per linear foot of girder obtained when determining girder sizes.

Second—Determine length of girder span being supported by column (see diagram, page 19) (this is equal to one-half total distance from column measured both ways to next column or bearing wall, except when the girder is continuous over this column and broken over the column or bearing wall on each side in which case it is equal to ⅝ this total distance).

Third—Multiply the length of this span in feet by load per linear foot.

Fourth—Refer to table. Read down in column at left to load already determined—then across to column corresponding to length of column (distance from concrete footing to under side of girder). The figure at this intersection represents the size of column required.

WOOD GIRDERS

SIZES OF BUILT-UP WOOD GIRDERS FOR VARIOUS LOADS AND SPANS

Based on Douglas Fir 4-SQUARE Guide-Line FRAMING

Deflection not over 1/360 of Span—Allowable Fiber Stress 1600 lbs. per sq. in.

Load per Linear Foot of Girder	Length of Span				
	6′-0″	7′-0″	8′-0″	9′-0″	10′-0″
	Nominal Size of Girder Required				
750	**6x8 in.**	**6x8 in.**	**6x8 in.**	**6x10 in.**	**6x10 in.**
900	6x8	6x8	**6x10**	6x10	**8x10**
1050	6x8	**6x10**	**8x10**	**8x10**	**8x12**
1200	**6x10**	**8x10**	8x10	8x10	8x12
1350	6x10	8x10	8x10	**8x12**	**10x12**
1500	**8x10**	8x10	**8x12**	**10x12**	10x12
1650	8x10	**8x12**	**10x12**	10x12	**10x14**
1800	8x10	8x12	10x12	10x12	10x14
1950	**8x12**	**10x12**	10x12	**10x14**	**12x14**
2100	8x12	10x12	**10x14**	10x14	12x14
2250	**10x12**	10x12	10x14	**12x14**	12x14
2400	10x12	**10x14**	10x14	12x14	
2550	10x12	10x14	**12x14**	12x14	
2700	10x12	10x14	12x14		
2850	**10x14**	**12x14**	12x14		
3000	10x14	12x14			
3150	10x14	12x14			
3300	**12x14**	12x14			

The 6-in. girder is figured as being made with three pieces 2 in. dressed to 1⅝ in. thickness.

The 8-in. girder is figured as being made with four pieces 2 in. dressed to 1⅝ in. thickness.

The 10-in. girder is figured as being made with five pieces 2-in. dressed to 1⅝ in. thickness.

The 12-in. girder is figured as being made with six pieces 2-in. dressed to 1⅝ in. thickness.

Note—For solid girders multiply above loads by 1.130 when 6-in. girder is used; 1.150 when 8-in. girder is used; 1.170 when 10-in. girder is used and 1.180 when 12-in. girder is used.

Reference—Page 33, Bulletin No. 145, National Committee on Wood Utilization, U. S. Department of Commerce, "Light Frame House Construction."

Instructions for Determining Girder Sizes

First—Refer to diagram on page 19 and using it as a guide, determine for each floor the length of joist spans that are to be supported by the girder. For the first floor it is equal to one-half the total distance from center line of girder measured both ways to the next girder, basement bearing partition or foundation wall, except when joists are continuous over this girder and broken over nearest support on each side, in which case it is equal to ⅝ this total distance. Use the same method for second and third floors and roof when part of that weight is to be supported by the girder through the bearing partition, struts, etc. In the case illustrated in diagram on page 19, it is equal to 12 feet for all three floors and 18 feet for the roof.

Second—Multiply the load per square foot, as indicated on

the chart, for each of these floors and roof by the various spans, including 20 lbs. per square foot of floor area for first and second story partitions. (In this case it is 2880 lbs.)

(First Floor plus partitions.....70 lbs. × 12 ft.— 840 lbs.)
(Second Floor plus partitions.....80 lbs. × 12 ft.— 960 lbs.)
(Attic Floor, not floored.....30 lbs. × 12 ft.— 360 lbs.)
(Roof .....40 lbs. × 18 ft.— 720 lbs.)
(Total .....2880 lbs.)

The total represents the load to be supported by the girder for each foot of its length.

Third—Determine length of girder span (distance between columns).

Fourth—Refer to table, read down in column at left to load already determined—then across to column corresponding to length of span to be provided for, the figure at this intersection represents the size of girder required.

WOOD JOISTS

SIZES OF JOISTS FOR VARIOUS SPANS AND LOADS
JOISTS SPACED 16 IN. O. C. UNIFORMLY LOADED
Based on Use of 4-SQUARE Guide-Line FRAMING

(Plastered Ceiling Below—Deflection not over 1/360 of Span)
Allowable Fiber Stress for Douglas Fir—1200 lbs. per sq. in. Modulus of Elasticity, 1,600,000
Allowable Fiber Stress for W. Coast Hemlock—1040 lbs. per sq. in. Modulus of Elasticity, 1,400,000

Length of Span	Live Load in Pounds per Square Foot of Floor Area									
	10 lbs.		20 lbs.		30 lbs.		40 lbs.		50 lbs.	
	Nominal Size of Joist Required									
	Douglas Fir	W. Coast Hemlock	Douglas Fir	W. Coast Hemlock	Douglas Fir	W. Coast Hemlock	Douglas Fir	W. Coast Hemlock	Douglas Fir	W. Coast Hemlock
8′ or less	**2x6 in.**	**2x6 in.**	**2x6 in.**	**2x6 in.**	**2x6 in.**	**2x6 in.**	**2x6 in.**	**2x6 in.**	**2x6 in.**	**2x6 in.**
8′-6″	2x6	2x6	2x6	2x6	2x6	2x6	2x6	2x6	2x6	**2x8**
9′-0″	2x6	2x6	2x6	2x6	2x6	2x6	2x6	**2x8**	**2x8**	2x8
9′-6″	2x6	2x6	2x6	2x6	2x6	**2x8**	**2x8**	2x8	2x8	2x8
10′-0″	2x6	2x6	2x6	2x6	**2x8**	2x8	2x8	2x8	2x8	2x8
10′-6″	2x6	2x6	**2x8**	**2x8**	2x8	2x8	2x8	2x8	2x8	2x8
11′-0″	2x6	2x6	2x8	2x8	2x8	2x8	2x8	2x8	2x8	2x8
11′-6″	2x6	**2x8**	2x8	2x8	2x8	2x8	2x8	2x8	2x8	**2x10**
12′-0″	**2x8**	2x8	2x8	2x8	2x8	2x8	2x8	**2x10**	**2x10**	2x10
12′-6″	2x8	2x8	2x8	2x8	2x8	**2x10**	**2x10**	2x10	2x10	2x10
13′-0″	2x8	2x8	2x8	2x8	**2x10**	2x10	2x10	2x10	2x10	2x10
13′-6″	2x8	2x8	2x8	**2x10**	2x10	2x10	2x10	2x10	2x10	2x10
14′-0″	2x8	2x8	**2x10**	2x10	2x10	2x10	2x10	2x10	2x10	**2x12**
14′-6″	2x8	2x8	2x10	2x10	2x10	2x10	2x10	2x10	2x10	2x12
15′-0″	2x8	**2x10**	2x10	2x10	2x10	2x10	2x10	**2x12**	**2x12**	2x12
15′-6″	**2x10**	2x10	2x10	2x10	2x10	2x10	**2x12**	2x12	2x12	2x12
16′-0″	2x10	2x10	2x10	2x10	2x10	**2x12**	2x12	2x12	2x12	2x12
16′-6″	2x10	2x10	2x10	2x10	**2x12**	2x12	2x12	2x12	2x12	2x12
17′-0″	2x10	2x10	2x10	**2x12**	2x12	2x12	2x12	2x12	2x12	
17′-6″	2x10	2x10	2x10	2x12	2x12	2x12	2x12	2x12	2x12	
18′-0″	2x10	2x10	**2x12**	2x12	2x12	2x12	2x12			
18′-6″	2x10	2x10	2x12	2x12	2x12	2x12				
19′-0″	2x10	**2x12**	2x12	2x12	2x12					
19′-6″	**2x12**	2x12	2x12	2x12	2x12					
20′-0″	2x12	2x12	2x12	2x12						

Note—2x4 in. Douglas Fir may be used for ceiling joist (having no live load) up to 10-ft. spans. 2x4-in. West Coast Hemlock may be used for ceiling joist (having no live load) up to 9 ft. 6-in. spans.

Reference—Page 57, Bulletin No. 145, National Committee on Wood Utilization, U. S. Department of Commerce, "Light Frame House Construction."

Instructions for Figuring Joist Sizes

First—Determine maximum joist span for each floor.

Second—Determine amount of live load to be provided for from local Building Code (usually this is 40 lbs. per square foot for all floors used for living purposes and 20 lbs. for attic floors, used for light storage).

Third—Refer to table. Read down in column at left to the length of span already determined—then across to the column corresponding to live load to be provided for and species of wood to be used. The figure at this intersection represents size of joists required.

WOOD RAFTERS

Instructions for Figuring Rafter Sizes

First—Determine length of rafter span by measuring distance from plate up to next support. This can be a partition or strut brace extending up from a partition provided these struts are set not to exceed 4 feet apart and are capped with a plate set on edge. The presence of collar beams will permit increasing the span but should not be considered as a support.

Second—Determine amount of live load that shall be provided for from local Building Code—usually this is 30 lbs. per square foot of horizontal surface.

Third—Refer to table of rafter sizes. Read down in column at left to length of span—then across to column corresponding to live load that must be provided for and species of wood to be used. The figure at this intersection represents the size of rafter required.

SIZES OF RAFTERS FOR VARIOUS SPANS AND LOADS

Rafters Uniformly Loaded—Slope of 20° or More—Spaced 16 in. O. C.—Not Plastered

Based on Use of 4-SQUARE Guide-Line FRAMING

Span—Unsupported Lengths from Plate to Ridge—Without Collar Beams

Length of Span	Live Load in Pounds per Square Foot of Roof Area							
	15 lbs.		20 lbs.		30 lbs.		40 lbs.	
	Nominal Size of Rafters Required							
	Douglas Fir	W. Coast Hemlock	Douglas Fir	W. Coast Hemlock	Douglas Fir	W. Coast Hemlock	Douglas Fir	W. Coast Hemlock
7′ or less	**2x4 in.**	**2x4 in.**	**2x4 in.**	**2x4 in.**	**2x4 in.**	**2x4 in.**	**2x6 in.**	**2x6 in.**
7′-6″	2x4	2x4	2x4	2x4	2x4	**2x6**	2x6	2x6
8′-0″	2x4	2x4	2x4	2x4	**2x6**	2x6	2x6	2x6
8′-6″	2x4	2x4	2x4	2x4	2x6	2x6	2x6	2x6
9′-0″	2x4	2x4	2x4	**2x6**	2x6	2x6	2x6	2x6
9′-6″	2x4	**2x6**	**2x6**	2x6	2x6	2x6	2x6	2x6
10′-0″	2x4	2x6	2x6	2x6	2x6	2x6	2x6	**2x8**
10′-6″	**2x6**	2x6	2x6	2x6	2x6	2x6	**2x8**	2x8
11′-0″	2x6	2x6	2x6	2x6	2x6	2x6	2x8	2x8
11′-6″	2x6	2x6	2x6	2x6	2x6	**2x8**	2x8	2x8
12′-0″	2x6	2x6	2x6	2x6	**2x8**	2x8	2x8	2x8
12′-6″	2x6	2x6	2x6	2x6	2x8	2x8	2x8	2x8
13′-0″	2x6	2x6	2x6	**2x8**	2x8	2x8	2x8	
13′-6″	2x6	2x6	2x6	2x8	2x8	2x8	2x8	
14′-0″	2x6	2x6	**2x8**	2x8	2x8	2x8		
14′-6″	2x6	**2x8**	2x8	2x8	2x8	2x8		
15′-0″	2x6	2x8	2x8	2x8	2x8			
15′-6″	**2x8**	2x8	2x8	2x8	2x8			
16′-0″	2x8	2x8	2x8	2x8				
16′-6″	2x8	2x8	2x8	2x8				
17′-0″	2x8	2x8	2x8	2x8				
17′-6″	2x8	2x8	2x8					
18′-0″	2x8	2x8	2x8					

Note—Allowable fiber stress for Douglas Fir—1200 lbs. per sq. in.

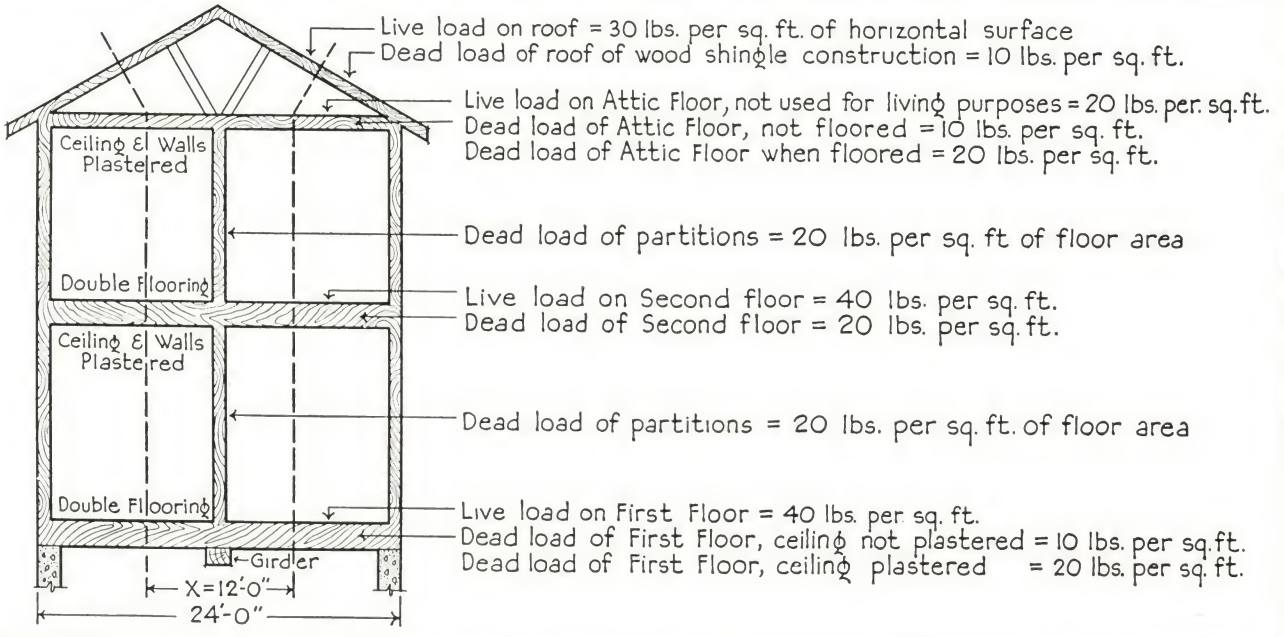
Allowable fiber stress for West Coast Hemlock—1040 lbs. per sq. in.

These figures provide for Dead Loads as follows: Weight of Rafters; Weight of Roof Sheathing (2.5 lbs. per sq. ft.); Weight of Roof Covering (2.5 lbs. per sq. ft.).

This roof covering will provide for wood shingles, metal sheets, metal tile or composition roofing. If heavier material is used, make the necessary allowance by using figures for a proportionately heavier live load.

Reference—Pages 19, 20, 21 and 22—"Maximum Spans for Joists and Rafters" by National Lumber Manufacturers' Association.

DIAGRAM SHOWING METHOD OF FIGURING LOADS FOR HOUSE FRAMING





4 SQUARE Guide Line FRAMING

WARREN ROSS LUMBER COMPANY

Oldest and Largest Merchants of Cherry Lumber, Panels and Veneers

JAMESTOWN, N. Y.

"ROSSCO" CHERRY LUMBER, PANELS AND VENEERS ARE IDEAL FOR INTERIOR TRIM

Specification

In writing Specifications, it is not enough to specify Cherry. You want superior Cherry. Therefore, specify by name, "Rossco" Cherry—a guaranteed product—"*good for the life of the building.*" And, for best results from "Rossco" Cherry, specify as follows:

Authorized Specification—The cabinet trim to be used in ..... building, to be manufactured from WARREN ROSS LUMBER COMPANY'S (Jamestown, N. Y.) "Rossco" Cherry, Select Grade A. For Panels, specify Grade A. For Veneers, specify Grade A.

Character

Cherry is considered by many authorities to be the most distinctive of the many woods used for interior cabinet work. This intriguing wood has an appealing charm and character all its own.

Lignification

The cohesion of the spring and summer wood in the lignification is superior to many other woods. This assures no end grain raising, no end or side expansion, no cupping, warping, twisting or curling of the wood.

Shrinkage

Leading American Architects specify Cherry for the best homes and buildings, because the moisture content in this wood is the lowest. The shrinkage in Cherry from green to oven dry, radial and tangential, is 10.8 against 12.3 to 16.9 for other American cabinet woods. This tells its own story.

In a porous wood, the atmospheric pressure forces moisture into the cells and cellular walls, and the vacuum in a porous wood draws the moisture in as well; a double reason why wood contains moisture. Varnish or paint does not prevent moisture from entering into the cellular walls of wood; it only retards it. Cherry is low in moisture content, because its structure is very free from pores. Consequently, *Cherry has no center expansion caused by moisture,* which forces lesions in the surface, causing the varnish, *paint,* lacquer or *enamel* to *crack, crock, peel* and *flake.* Cherry makes a superior paint or enamel base.

Cost

Cherry is 35% cheaper than the better mahoganies and walnut, and the utilization is much greater than in the latter. It costs 10% to 25% more than the cheaper woods. However, Cherry costs less in the end, because a good enamel will often last 20 or more years on Cherry, while on other woods, a renovation is required every few years, if the trim is maintained in proper condition.

Colors

Due to its structural texture, it is admitted that Cherry is susceptible of a finer color discrimination than any other wood. Any color dreamed or desired can be obtained on Cherry. There is no end grain to raise; it requires no sponging or extra sanding.

Supply

Our resources are ample and available supplies are sufficient to take care of all present and potential demands for our celebrated Cherry.

Recent Installations Done in "Rossco" Cherry

These buildings are the finest of their type built in the world during the past year:

The New Waldorf-Astoria Hotel, New York, N. Y., Lobby and entrances—"Rossco" Cherry ebonized.

The Aetna Life Insurance Company Building, Hartford, Conn.—Principal rooms, "Rossco" Cherry. Business Men's Club in Cherry color tones, balance enamel.

Museum of the City of New York—"Rossco" Cherry. Library, Cherry color tone, balance enamel, basement to attic.

Union League Club, New York City—"Rossco" Cherry, enamel.

Administration Building Board of Education, Philadelphia, Pa.—"Rossco" Cherry, Cherry color tone and enamel.

We will gladly submit on request photographs of above interiors for Architects' inspection.

Endorsement

New York, Oct. 6, 1931.

"In answer to your inquiry as to the position Cherry, as a finishing wood, occupies in the minds of architects, we feel that it is a most excellent wood but it has almost been out of the market. We have always found it to be dependable, free from warp, or buckle, to have a minimum shrinkage and to take an excellent finish."

Yours very truly,
McKIM, MEAD & WHITE.
By L. R. Holske.

Authorized Agents

Our celebrated and famous Red Cherry is worked into fine cabinet trim to architects' specifications by the following:

Irving & Casson, A. H. Davenport Co., Boston, Mass., and New York, N. Y.
Geo. W. Smith Woodworking Company, Philadelphia, Pa.
William Somerville, Inc., New York, N. Y.
Peck Lumber & Manufacturing Co., Scranton, Pa.
Rauwald Woodwork Company, Milwaukee, Wis.
National Lumber Company, South Bend, Ind.
A. H. Ramsey & Sons, Inc., Miami, Fla.
McCormick-Hannah, Inc., Orlando, Fla.
Duval Planing Mill Co., Jacksonville, Fla.
Sheboygan Woodworking Co., Sheboygan, Wis.

Our mills satisfy. Only the highest class interior finish mills are appointed as our agents. They use exclusively "Rossco" Cherry, which is selected with the utmost care.



The Above Room Finished in "Warren Ross Lumber Company's Select Grade A Cherry"

It is the Board Room in the Aetna Life Insurance Building and Affiliated Companies and is a beautiful example of the woodworker's art.

It is an exact reproduction of the Revolutionary Home of Matthias Hammond at Annapolis, Maryland. The table and ten Chippendale chairs were used by Thomas Jefferson at Monticello.

This is the largest building of its kind in the world devoted exclusively to insurance purposes, and our Famous Cherry was used in the best rooms

ARKANSAS SOFT PINE BUREAU

LITTLE ROCK, ARK.

Products

ARKANSAS SOFT PINE INTERIOR FINISH, stock and special patterns; QUARTERSAWN (EDGE GRAIN) FLOORING; MOULDINGS; SOFT, NON-SPLITTING PLASTER LATH; COMMON LUMBER.

Sold by

Local lumber dealers and planing mills east of the Rockies.

Individual Advantages

Arkansas Soft Pine is the highest quality short leaf southern pine, known botanically as *pinus echinata.*

Due to its workable character and also because of certain definitely individual qualities—freedom from excessive pitch, light weight, soft lustrous texture and fine grain—the wood has received a marked preference, especially for interior finishing and woodwork.

Because of its tough fibered, non-resinous make-up, it yields readily to edged tools and does not "gum" saws, knives or chisels.

General Uses

Arkansas Soft Pine in the common grades supplies an all-around framing material for residences, stores, apartments, churches and buildings of like character.

Specific Uses

Satinlike Interior Trim—It is from the thick, clear, sap wood with its fine lustrous texture and virtual absence of resinous oils that the highest grade of interior trim is manufactured; and it is because of the large percentage of this clear material, peculiar to South Central Arkansas timber, that Arkansas Soft Pine attains its maximum of value, merit and beauty when employed as interior trim.

Flooring—Arkansas Soft Pine flooring is manufactured in approximately ten grades. Edge grain is the most satisfactory and admits of no pieces in which the angle of the grain exceeds 45° from vertical to any point.

The preferred pattern measures $\frac{25}{32}$ in. by 2⅜-in. face and usually runs 8 to 20 ft. in length, the greatest percentage being 10 to 16 ft. In the finished floor these long lengths entail comparatively few end joints and Arkansas Soft Pine Floor is therefore better looking, firmer and less costly to lay.

The finished floor will take any desired treatment in stain, varnish, gloss or wax, and produces a hard wearing floor of attractive appearance.

Knotty Panelling—Manufactured from Arkansas Soft Pine No. 1 Common, S4S selected for sound knots, freedom from split, worm holes, wind shake or torn grain; re-kiln dried to moisture content of B & Better finish. Sizes $\frac{25}{32}$-in. thickness by 4 to 12 in. Panels are usually made up of one 12-in. width and two 8-in. widths with the 12-in. width in the center. Stiles and rails are B & Better finishing available in same thickness and widths. Mouldings per 8000 or 7000 Moulding Book (copies on request from Bureau).

Clear Panelling—Same as Knotty Panelling, except specify *all* B & Better grade.

Note: All stock bears the Arkansas Soft Pine registered trademark and grademark.

Individual Treatment for Stains and Enamel Finishes

Contrary to the necessary preliminary shellacking or filling of certain pine, often required to neutralize resin or oily content, stains are applied *directly* to Arkansas Soft Pine, permitting the color to permeate the fiber of the wood evenly, resulting in a uniform color throughout the piece.

When white or tint enamels are used, a preliminary coat of very thin shellac is applied, followed by the initial coat of zinc or lead. These first applications are likewise evenly absorbed and the subsequent coats are thus built up upon the wood itself and not upon a crust of heavy shellac. This factor of proper absorption is definite assurance against ultimate checking of enameled surfaces.



Arkansas Soft Pine for Knotty Panelling



Charm Obtained with Arkansas Soft Pine Interior Finish
This satinlike interior trim provides beautiful enamel work

Properly Balanced Absorption

Any prejudice which may have existed against soft woods for interior trim has been due in part to the tendency of some of them to over-absorb varnishes or enamels.

Arkansas Soft Pine is not of that corklike softness which literally drinks up oil and varnish. The tough fiber prevents that possibility; moreover, the finished surface will hold its luster permanently.

For Tints or White Enamel

Particular emphasis is laid on the merit of this wood as a base for painted and enameled woodwork. The absence of resin or oil content insures against any possibility of staining the surface from underneath. The close fiber takes the tinted or white coat with a perfectly uniform absorption, nor is any trouble experienced with raised grain, as the fine uniform texture and freedom from hard streaks prevent such tendency.

Proper Sanding

A prime prerequisite is that flat faced finish shall be machine sanded. This method is preferable, for it insures a smooth polished surface on the natural wood and eliminates the liability of scuffing the sap growth as it is often done when worked on the bench by hand. The Arkansas Soft Pine manufacturers now sand their interior finish at the mills, including stock of standard length and that sold in package units.

Source of Supply

Arkansas Soft Pine attains its greatest degree of perfection in the south central section of the state for which it is named. Certain favorable geological, topographical and climatic elements contribute to this condition; as for example, soil properties, rainfall and drainage. The ARKANSAS SOFT PINE BUREAU is composed exclusively of manufacturers whose plants are located in this identical region.

Grademarked, Trademarked Lumber

The product of these mills is grademarked according to the recommendations of the Hoover Standardization Committee, and also bears the registered trademark shown on the preceding page. These brands guarantee standard grades, uniform manufacture, scientific drying and seasoning and correct handling.

GRADE 

MARK

This Grademark Is Your Guarantee of Standard Quality Lumber and Woodwork

For Your Information

In addition to the handbook described later, literature on painting and finishing, together with finished and natural samples, will be sent on request. Also brochure containing 25 architectural competition designs and building data.

Specifications

(1) Arkansas Soft Pine, stamped with trademark and grademark of the ARKANSAS SOFT PINE BUREAU, shall be used throughout for structural and finishing purposes, as specified below.

(2) All lumber used shall conform to the grading rules of the Arkansas Soft Pine Handbook.

(3) **Framing**—All framing timbers, joists, girders, studs, etc., shall be Arkansas Soft Pine [No. 1 Common] [No. 2 Common] grade, of standard sizes.

(4) **Sheathing**—All outside walls and roofs shall be covered with Arkansas Soft Pine [shiplap] [sheathing boards], No. 2 Common grade. Sheathing boards shall be surfaced [one] [two] sides, shall be well nailed to the studs and shall be laid diagonally.

(5) **Window and Door Frames**—Shall be Arkansas Soft Pine rabbetted and moulded as detailed and of dimensions shown.

(6) **Exterior Trim**—Shall be Arkansas Soft Pine, [B & Better finishing grade] ["C" finishing grade], and shall be worked strictly in accordance with the scale and detail drawings.

(7) **Bevel Siding**—All exterior walls, as shown or noted on the drawings, shall be covered with Arkansas Soft Pine bevel siding of B & Better grade, laid [2½ in. in 4-in.] [4 in. in 6-in.] width to the weather.

(8) **Lathing**—All walls and ceilings to be plastered shall be covered with Arkansas Soft Pine lath, No. 1 grade, laid horizontally, 2 in. on centers, with breaking joints. In no case shall the lath be laid vertically and all lath shall be well nailed to every stud or other bearing, using 4 nails to the lath.

(9) **Subflooring**—On all floors throughout, except as otherwise shown or noted, lay Arkansas Soft Pine subflooring, [No. 2 Common] [No. 3 Common] grade shiplap, each board well nailed to every joist.

(10) **Finish Flooring**—In (locations) ..... lay a finish floor (after plastering is completed) of Arkansas Soft Pine, edge grain, Grade ["A"] [B & Better], tongued and grooved and well strained and blind nailed to every [joist] [sleeper] with two 8d cut flooring nails.

(11) After laying, the finish floors shall be well protected by covering them with heavy paper, or other approved material.

(12) **Interior Trim**—Shall be Arkansas Soft Pine, Grade B & Better, worked in strict accordance with scale and detail drawings (or selected from the ARKANSAS SOFT PINE BUREAU Handbook).

(13) **Mouldings**—All mouldings shall be run true and straight, carefully worked and finished, or may be selected from the Handbook of the ARKANSAS SOFT PINE BUREAU, as designated by the numbers specified or shown on the drawings (in accordance with the detail drawings).

(14) All flat-surfaced trim shall be triple machine sanded before installation, and shall be turned over to the painting contractor ready for finishing. All nailholes shall be puttied up, using putty to match the color of the wood, and all wood that is to be stained shall have all finger marks removed.

(15) **Painting and Finishing**—All stains shall be applied directly to the wood without the use of filler, and followed by the subsequent coats of varnish as called for.

(16) Where tint or white enamel finish is called for, 1 coat of thin shellac followed by 2 coats of enamel undercoating and 2 coats of enamel white or desired tint (detailed instructions on request).

Arkansas Soft Pine Handbook

The Arkansas Soft Pine Handbook contains complete grading rules, standard moulding designs, including numbers agreed to by the American Institute of Architects in conjunction with the Central Committee on Lumber Standards; also lumber actuary, shipping weights, painting and finishing instructions, and concise description of the wood. Sent on request. Also natural and finished samples.

Member Companies

All stock bearing the Arkansas Soft Pine trademark and grademark is manufactured and sold exclusively by the following companies, who also adhere to the practice of grade markings:

CADDO RIVER LUMBER CO., Rosboro, Ark.
Sales Office: R. A. Long Building, Kansas City, Mo.
CROSSETT LUMBER CO., Crossett, Ark.
DIERKS LUMBER & COAL CO., Dierks, Ark.
Sales Office: Gates Building, Kansas City, Mo.
FORDYCE LUMBER CO., Fordyce, Ark.
SOUTHERN LUMBER CO., Warren, Ark.

The above companies compose the ARKANSAS SOFT PINE BUREAU, Little Rock, Arkansas.

JOINTITE LUMBER

THE JOINTITE COMPANY

Boyle and Clayton Avenues
ST. LOUIS, MO.

A NEW AND BETTER WAY OF JOINTING LUMBER

Specified instead of tongue-and-groove or shiplap. Makes a more rigid and level surface

JoinTite
TRADE MARK REG. PATENTED

A Positive Locking Device

JoinTite units lock together to form practically a solid mass of lumber over any surface to be covered.

Quickly Put Together

The Jointite design is so simple and foolproof that construction is speeded up amazingly when JoinTite Lumber is used. JoinTite saves from 15% to 25% in labor.



Locks Like Hands



Reversible Surface

Provision for Shrinkage and Expansion

JoinTite design provides ample allowance for the natural shrinkage and expansion in any species of lumber.

Weatherproof Construction

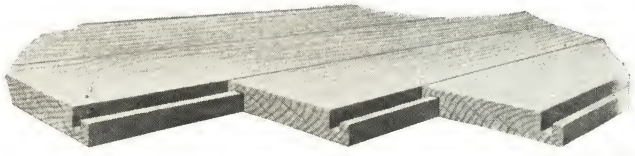
JoinTite is actually a *weatherstripping*. Its novel design provides protection against the elements. No battens are needed when JoinTite Lumber is used.

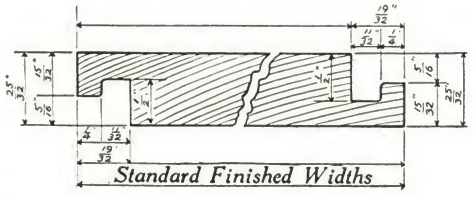
Self-aligning and Self-leveling

Level the *first piece* of JoinTite Lumber and the JoinTite design does the rest. Variations of alignment and of level that so often develop in applying tongue-and-groove lumber are eliminated.

Adapted for Caulking

For refrigerator cars, ice houses, packing houses and other types of construction requiring tight, waterproof joints, JoinTite Lumber can be caulked more effectively than the old designs.





Jointite Standard Pattern

Manufactured in all patterns of floors, siding, partitions, ceilings, etc.

Anything Built of Lumber Can Be Built Stronger and Tighter with JoinTite Lumber

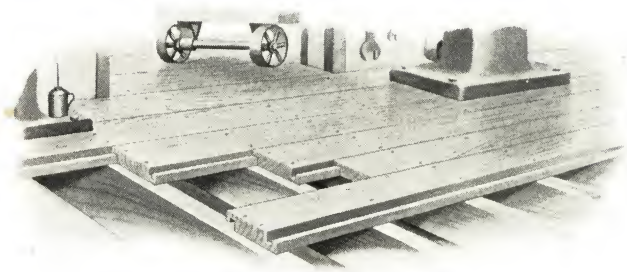
JoinTite Lumber is a combination of shiplap and tongue and groove. It is made from selected lumber, kiln dried and is graded according to all association rules of various lumber species. Every variety and dimension to meet your requirements.

On account of the tight waterproof joint possible with the Jointite interlocking design, it has been adapted for many uses where formerly ordinary shiplap, or tongue and groove had been used.

JoinTite has been used for form lumber, beams, and columns for the St. Louis Mart with perfect satisfaction to architects, contractor and owner.

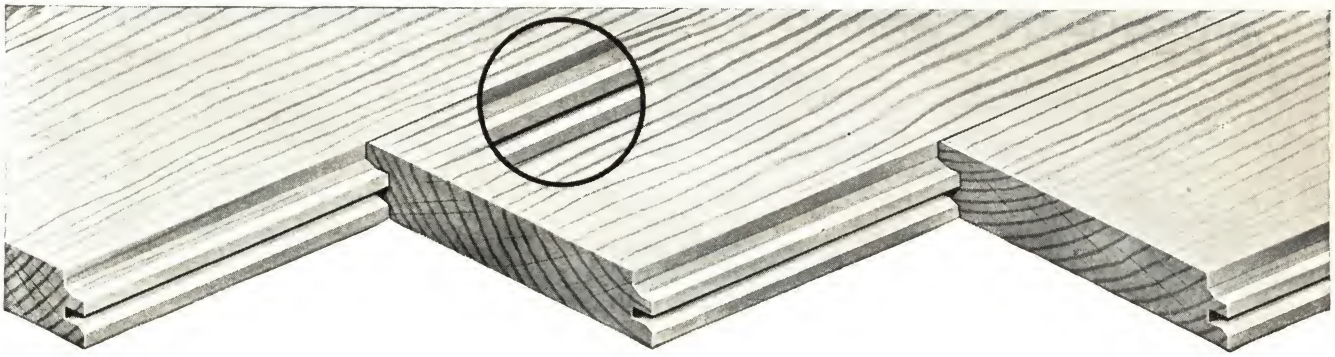
For form lumber on the Illinois Terminal Warehouse, St. Louis, Mo.

For brine tanks and general usage on the Armour and Co. plants at East St. Louis.



JoinTite Sheet Piling

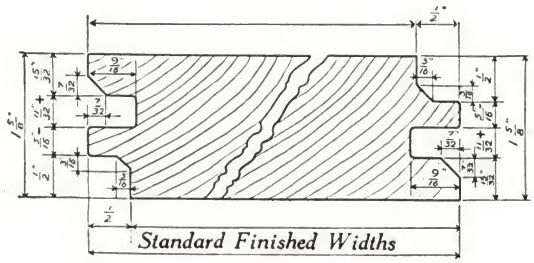
The JoinTite design is ideal for sheet piling. Write for special details.



JOINTITE "DTG"

JOINTITE "DTG" (DOUBLE TONGUE AND GROOVED) PATTERN

For Factory Flooring, Roofing, Concrete Forms and Other Uses



Made in All Standard Widths

JoinTite "DTG" Pattern Better for Blind Nailing— No Splitting of Material

Note the double tongue-and-groove design, with bevel surface provided for exact blind nailing. See how the nailing space acts as a guide, preventing splitting of material.

Reversible Joint Saves Time

JoinTite "DTG" pattern boards are instantly reversible. Use the better face, by just turning them over, instead of going to the trouble of up-ending.

A Weatherstrip in Itself

With its double application of tongue-and-groove JoinTite "DTG" pattern functions as an efficient weatherstripping, providing twice the ordinary resistance to the elements.

A Positive Bearing Surface

Observe the positive bearing surface of this new design both edges of JoinTite "DTG" pattern having the general effect of end-matching without additional cost.

15% to 25% Saving in Labor

Because of its much greater convenience to work with, JoinTite "DTG" pattern saves from 15% to 25% in labor. And in many types of construction there is also a considerable saving in lumber. These actual savings far outweigh the slight additional cost of the material.

It is *real economy* to use JoinTite "DTG."

Recommended Thicknesses

We recommend this type of JoinTite 1¼ in. and thicker only.

Orders Filled Promptly

An ample stock of JoinTite "DTG" Lumber in the most called-for sizes is always on hand for prompt shipments.

Further Information

Write or wire for any further information you may desire.

AMERICAN LUMBER & TREATING CORPORATION

Wolman Salts

GENERAL OFFICES

332 South Michigan Avenue

CHICAGO, ILL.

BRANCH OFFICES

NEW YORK, N. Y., 25 Broadway

ST. LOUIS, MO., Arcade Building

Products

WOLMAN SALTS, a clean, odorless and paintable Wood Preservative and Fire Retardant. Have as high toxicity as that of any wood preservative in commercial use, have no corrosive effect on metal fastenings, and do not exude after treatment.

WOLMANIZED LUMBER and TIMBER (any species of lumber, poles, posts, or forest products treated under vacuum and pressure with Wolman Salts and by the Wolman Process).

What Is Wolmanizing?

Wolmanizing is a process of preserving any kind of lumber so as to give it a high degree of protection against decay and insect attack—making it fire retardant. The preservative used in Wolmanizing is Wolman Salts.

Contractors may secure Wolmanized lumber and timbers, or have their own purchases of lumber treated at any one of a large number of commercial pressure treating plants strategically located all over the United States, so as to serve any locality. Competitive bids can be readily secured. Any first-class pressure treating plant can be quickly adapted to treat with Wolman Salts.

At each of these conveniently located points the lumber is treated by the full cell process in a closed retort under vacuum and pressure which insures a deep and dependable penetration of the preservative into all treatable areas of the wood.

A double-check analysis and technical inspection is maintained in both the manufacture of the Wolman Salts and in the Wolmanizing treatment. This insures the delivery of a constantly dependable treated lumber.

General Commercial Usages

Wolmanized lumber and timber is being specified by leading architects and engineers throughout the United States wherever protection against decay, insect attack or incipient fire is desired.

Some of these uses include roofing, flooring, subflooring, platforms, *bridge timbers,* and *planking, ties,* fencing, dock superstructures, board walks, telegraph and transmission line poles, car lumber, lining of ice houses, or wherever conditions invite decay or termite attack.

Wood treated with Wolman Salts may be painted or stained after treatment. Wolmanizing adds strength to the wood, and, therefore, resistance to abrasion. Wolmanized lumber and timber have a long, useful life, many times that of any untreated wood. The cost of treatment is no higher than other preservative treatments, often less.

Wolman Salts have a splendid 25-year record of service on a large scale in Central Europe.

Many million feet of Wolmanized lumber have been installed in the United States and Central America upon specifications of such well-known engineers as Modjeski, Masters & Chase, New York, N. Y.; The Ballinger Company, Philadelphia, Pa.; J. E. Sirrine & Co., Greenville, S. C.; Geo. E. Wells, Incorporated, St. Louis, Mo.; and many others.

Wolmanized Lumber in Yards

Many retail yards carry Wolmanized lumber in stock. If not available from your local dealer, write us for further information on prices on the treated lumber or on treatment only.

Recommended Specifications

All the timber specified to be Wolmanized, shall be given a pressure treatment of High Fixation Wolman Salts.

The Preservative—(A) The Wolman Salts (Triolith) mixture shall be composed essentially of the following ingredients for protection against *decay:*

Sodium fluoride, dinitro-phenol, and neutralizing chromates. (Free of arsenic.)

(B) The Wolman Salts (Tanalith) mixture shall be composed essentially of the following ingredients for protection against *decay* and *termites:*

Sodium fluoride and arsenate, dinitro-phenol, and neutralizing chromates.

Treatment—The treating solution shall generally have a strength of concentration in water of from 1.8% to 2% of Wolman Salts, in 98.2% to 98% of water; but the solution shall be no stronger than necessary to obtain the required retention of preservative specified below, with the largest volumetric absorption practicable.

All timber should be air seasoned until moisture content is below 20%. Green timber must be given an artificial seasoning in an airtight retort by a bath of live steam at from 10 to 15 lb. pressure for a period of 4 to 10 hours, followed by a vacuum of at least 22 in. for 1 hour or with alternating periods of vacuum and pressure, as may be found necessary to put timber into condition for treatment.

The cylinder shall be relieved continuously or frequently enough to prevent condensate from accumulating in sufficient quantity to reach the wood. After the above process, or in the case of air seasoned timber after a vacuum period at not less than 22 in. for at least 15 minutes, the preservative solution, maintained at a temperature of between 150° and 180° F., shall be admitted into the treating cylinder, without breaking the vacuum until timber is completely submerged. The preservative solution shall then be pumped into the timber under pressure sufficient to secure the desired absorption, or if this cannot be attained then under a pressure of 125 lb. per sq. in. continuing until the charge is treated to refusal. The solution shall then be quickly drained off, and the timber may be left in the cylinder to drip for about 30 minutes, or a quick final vacuum at no time greater than the minimum vacuum during submergence may be created and maintained until the charge can be removed from the cylinder free of dripping preservative; or preferably final air pressure of 50 lbs. for 15 minutes and then 75 lbs. for 15 minutes may be applied.

The amount of solution injected into the timber and its strength of concentration must be so controlled as to leave not less than (*) lb. of dry salt for each cubic foot of timber treated, and this shall permeate all of the sap wood and as much of the heart wood as practicable. No charge shall contain less than 90% nor more than 110% of the quantity of preservative specified.

Note: After treatment the lumber should be properly piled and should be allowed to dry before using, to insure against excessive shrinkage after being put in service.

When the lumber is to be painted or varnished, it is imperative that the wood be dry before applying paint or varnish.

(*) Insert the desired final retention of dry salt content, which may vary from $\frac{1}{16}$ lb. (mine timbers) to $\frac{1}{4}$ lb. (building construction) or for ties, poles and outside construction $\frac{5}{16}$ lb. of Wolman Salts for each cubic foot of the treated wood.

PROCESSED LUMBER COMPANY

FORMERLY AMERICAN WOLMANIZED LUMBER COMPANY

Wood Preservers

ELIZABETH, N. J.

Product

"AWLCO-IZED" LUMBER and SASH —for use wherever wood is subjected to moisture, humidity or other rot-producing conditions.



What "Awlco-ized" Stands For

Awlco-ized stands for undivided responsibility in lumber treated against decay. It represents a product—not simply a preservative or a process.

Complete Facilities

In addition to a modern vacuum-pressure treating plant, our facilities include a sawmill, planing mill and preframing plant, a sash and frame factory and dry kilns.

Preservative

The preservative we use is the sodium fluoride-dinitrophenol-chromate combination, commonly known as Wolman Salts. Its value has been demonstrated by many years of actual service.

Treatment

This consists of impregnation to refusal by the full cell vacuum-pressure process in accordance with standard specifications of the American Wood Preservers' Association.

Properties

"Awlco-ized" lumber is clean, odorless, non-corrosive, practically colorless, burns less readily than untreated lumber and can be painted, stained or otherwise finished. All the desirable characteristics of the natural wood are retained—strength, elasticity, resiliency, low conductivity of heat and sound, together with the ease with which it is worked.

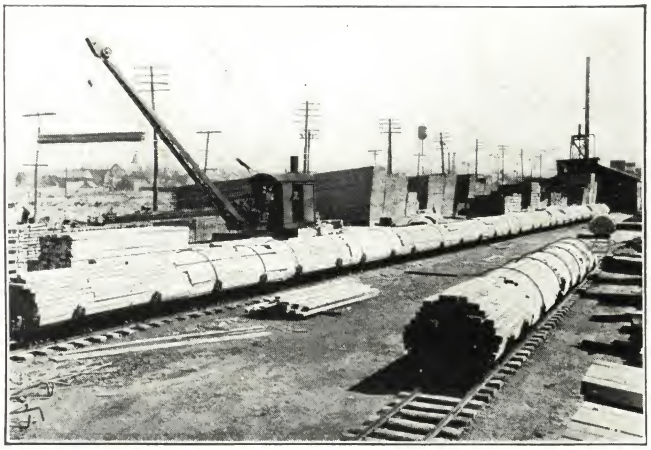
Life

The durability of lumber treated by our process is well established. "Awlco-ized" lumber can be depended upon to give at least three times the service life of untreated lumber installed under the same conditions.

The replacement of decayed wood usually involves the renewal of other materials in contact with it. With this in mind, the value of "Awlco-ized" lumber is easily appreciated. The comparatively small increase in the first cost of the building or structure is offset many times by the savings in replacement expense.

Termites

For lumber to be used in locations where attack by termites or white ants is a problem, we add an arsenical salt to our mixture, thereby giving the desired protection.



Lumber Ready to Be Charged into Treating Retort

Specialties in Stock

The following are always available for immediate shipment in carload or less than carload lots from our stock of lumber thoroughly air-seasoned after treatment:

"Awlco-ized" Yellow Pine Roof Plank —Standard 2"x6" and 3"x8", tongued and grooved plank which will effectively withstand the severe decay-producing conditions existing in dye houses, bleacheries, weave sheds, paper machine rooms and similar highly humid occupancies.

"Awlco-ized" Yellow Pine Beveled Sleepers and Underflooring for use in schools, apartment houses, hotels, churches, industrial plants and other buildings where laid in contact with green concrete or fresh cinder fill.

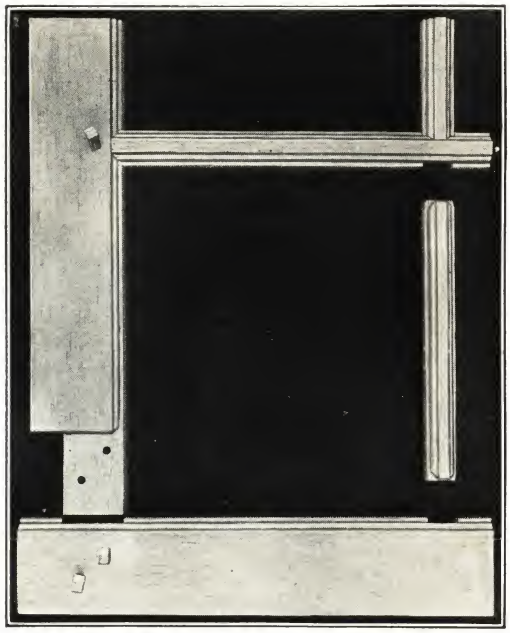
"Awlco-ized" Yellow Pine Furring.

"Awlco-ized" Edge Grain Yellow Pine Finish Flooring—Treated and air-seasoned in the rough. Kiln dried and dressed on order.

"Awlco-ized" Yellow Pine Trunking and Capping.

"Awlco-ized" Sash and Screen Frames—Made of carefully selected clear white pine, treated in the rough and air-seasoned four to six months. Each piece tested for complete penetration of the preservative, thereby eliminating the possibility of exposing untreated areas during manufacture.

Construction details are such as give maximum mechanical strength. Joints are made with wooden dowels and waterproof glue. Furnished glazed or unglazed; plain, primed or painted, as desired. Each sash branded and dated.



Details of "Awlco-ized" Sash Construction
Note absence of steel pins

Mill Construction, Bridges, Piers, Boardwalks, etc.

We also furnish large quantities of "Awlco-ized" structural timbers and decking for this class of work. This is all treated to order but, by drawing on our extensive untreated stock, we can make practically immediate shipment.

To Specify (Except Sash)

All.... (here insert sleepers, underflooring, etc.).... are to be of Awlco-ized Yellow Pine as furnished by the PROCESSED LUMBER COMPANY of Elizabeth, N. J.

To Specify Sash

Sash throughout (or, as noted on the drawings) shall be of Awlco-ized Clear White Pine and fabricated by the PROCESSED LUMBER COMPANY of Elizabeth, N. J., in accordance with their standard details of construction.

AMERICAN ROOF TRUSS COMPANY

Engineers and Constructors of Wood Trusses

TELEPHONE
Franklin 1720, 1721

228 North La Salle Street, CHICAGO, ILL.

REPRESENTATIVES

ST. PAUL, MINN., Lampland Lumber Co., 8th and Locust Streets
Telephone, Cedar 4950

MINNEAPOLIS, MINN., Lampland Lumber Co., 1627 So. 7th Street
Telephone, Atlantic 3271

LOS ANGELES, CALIF., P. Ryersen, 4116 Folsom Street

Products

Manufacturers and erectors of:
AMERICAN WOOD BOWSTRING TRUSSES.
WADDINGTON WOOD BOWSTRING TRUSSES.
WADDINGTON WOOD CRESCENT TRUSSES.
OPEN TIMBER TRUSSES for churches.
Also Concrete Arch Bridge Supports and Wooden Bridges for golf clubs, country estates, etc.

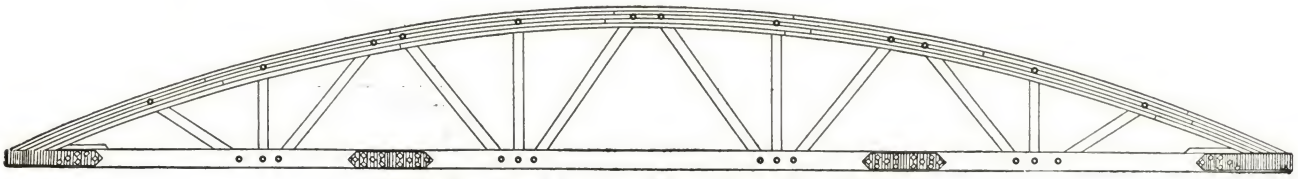
Service, Strength and Safety

Trusses are built on the job by us and erected in place as soon as pilasters are up, completely installed, ready for roof joists, anywhere in the United States, designed according to local building requirements. All trusses guaranteed.

Bowstring Trusses

Bowstring trusses designed for 25 to 150-ft. spans. Spacing is usually 16 to 20 ft. on centers, depending on length of building.

The standard height at the center on all bowstring trusses is one-eighth of the length of the truss.

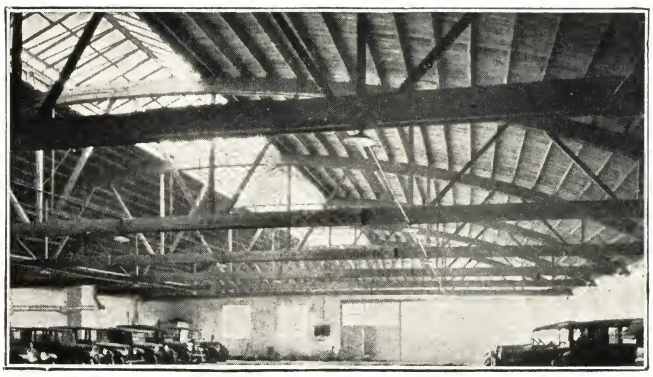


Waddington Wood Bowstring Truss—Spans 25 to 150 Feet

This truss has the ornamental splice plates and ornamental "U" straps, giving a modernistic effect when left exposed, the steel being painted at the plant. It also gives the lower chord a uniform thickness, a distinct advantage when designed for ceiling loads. The above truss is suitable for airplane hangars, skating rinks, showrooms, bowling alleys, etc.



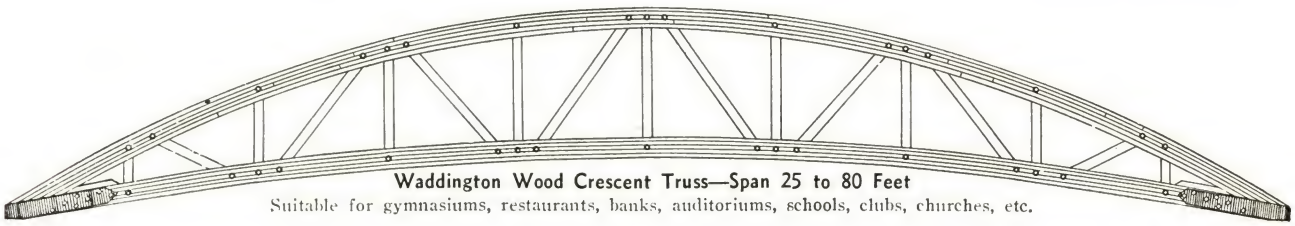
The two buildings shown in photographs below are using the American Wood Bowstring Trusses with the old-fashioned wood splice



Public Garage in New Jersey Using 75-foot Span Trusses

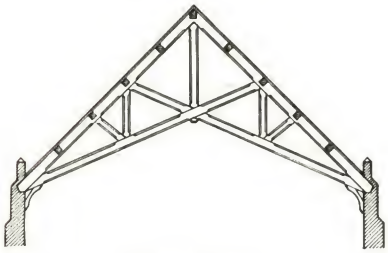


Michigan Factory Using 44 Trusses, 50-foot Span, Specially Designed



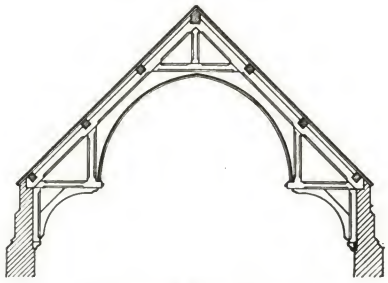
Waddington Wood Crescent Truss—Span 25 to 80 Feet

Suitable for gymnasiums, restaurants, banks, auditoriums, schools, clubs, churches, etc.



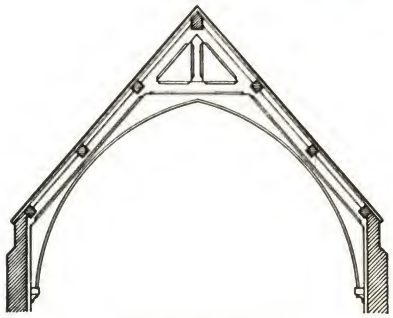
Scissors Truss

A splendid type of truss, much preferred by architects for the medium spans. Can be installed plain or with plenty of ornamentation



Hammer Beam Truss

Originated in the 12th century, and is still being used in high class church edifices



Gothic Arch Truss

For short spans this makes a very attractive truss for church work, and can also be used in high class residences and clubs



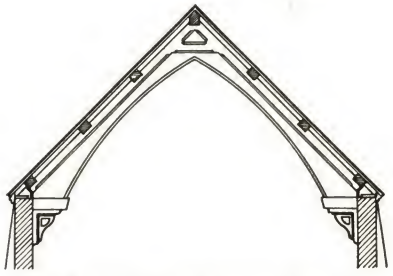
Short Span Truss

This type of truss makes a unique church design in the shorter spans. Used frequently for public libraries



Low Truss

This truss suitable for a building that requires a very small rise. Can be used in pavilions, waiting rooms, etc.



Old English Gothic Hammer Beam Truss

Used extensively in the old world colleges. Recommended for American educational institutions

Special Designs

The outlines of the trusses shown above are intended to give the architect a conception of the general design so that he will use his own idea of ornamentation to harmonize with the rest of the structure.

We are glad to estimate at any time, special designs of timber trusses including the hand-made, hand-adzed, open timber types of the middle ages.

These trusses can be fabricated in Chicago and shipped to any point of the United States.

Information Required for Estimates

(1) Number of trusses required.
(2) Span out to out of walls or center of columns.
(3) Spacing between trusses.
(4) Loads. Regular roof load in pounds per square foot. State if any ceiling load. For unusual loading conditions send plan or photostat.
(5) Address of job, nature of building, owner's and architect's names.

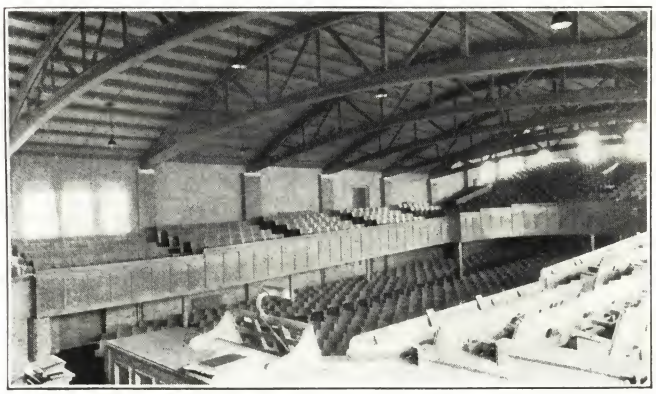
Specifications

Roof trusses shall be furnished by AMERICAN ROOF TRUSS COMPANY, 228 North La Salle Street, Chicago, Ill., according to their structural details.

Literature

Send for illustrated folder and valuable suggestions covering economical layout and brick saving features.

Our engineers will give fullest co-operation to architects.



Michigan Church Using 65 Foot Span Crescent Trusses



Illinois Church Using 33 Foot Span Plain Scissors Trusses

ARCH ROOF CONSTRUCTION CO., INC.

TELEPHONE
WIsconsin 7-5845

Engineers and Contractors
104 West 42nd Street, NEW YORK, N. Y.

Products and Service

Design, Construction and Erection of LONG SPAN ROOF ARCHES for theaters; auditoriums; convention, exhibition and fair buildings; garages; warehouses; factories; airplane and dirigible hangars; gymnasiums; skating rinks; bowling alleys, and all buildings where unobstructed space, maximum light and ventilation are desired.

ARCH ROOF CONSTRUCTION CO., INC., will design arches, supply all materials and do the erection, or ordinary materials can be supplied and erection done by local contractors.

Co-operation is offered to architects, engineers and contractors in planning the most economical and efficient design for particular buildings.

A request will bring additional information.

Construction and Materials

By using straight lengths of the usual structural materials combined with special connections, a practical way has been evolved of applying the arch principle with its beauty and great strength to the economical construction of buildings having spans up to *400 feet* or more, where unobstructed space is desired.

Columns, posts and trusses are eliminated with this construction, and a clear interior giving a maximum amount of light and ventilation obtained.

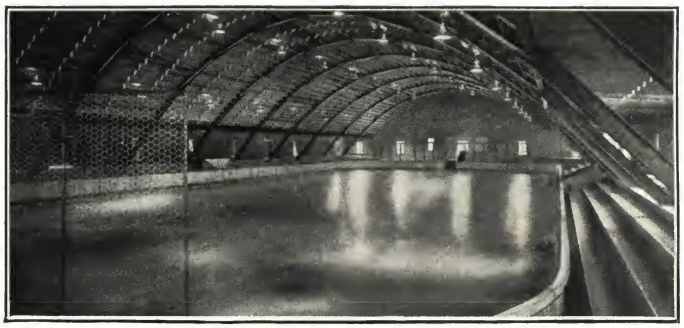
Strength

Arch roof construction can be of timber or steel or a combination of both. Standard structural shapes and sizes are employed in a patented design with patented connections to produce a roof of unusual strength. It may be fireproof, fire-retardant or non-fireproof.

Advantages of Arch Roof Construction

Maximum strength and long life. Unobstructed light and ventilation. Side walls of brick, wood sheathing, sheet iron, canvas, or folding or rolling doors. Full use of all floor space. Economy of material and labor. Temperature economically warm in winter and cool in summer. Reduced fire hazards, ease of controlling fires and low insurance rates. Added dignity, distinction and character to all long span buildings. Can be dismantled and erected with 100% salvage.

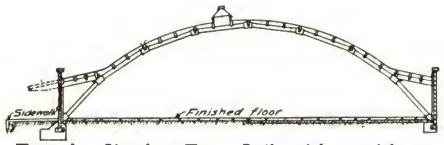
Adaptable to practically every type, style and size of building.



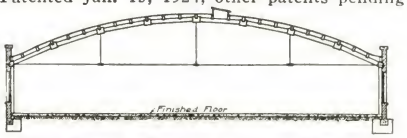
Dartmouth College Hockey Rink, 120-ft. Span

Types of Arch Roof Construction

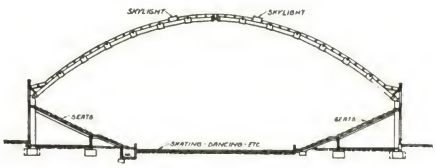
Patented Jan. 15, 1924, other patents pending



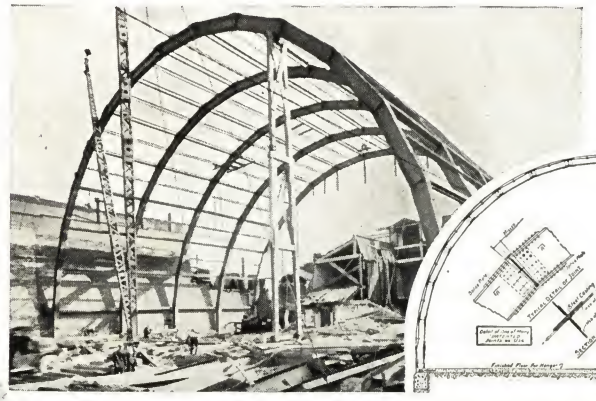
Type A. Simplest Type, Built with or without Sidewalk Overhang



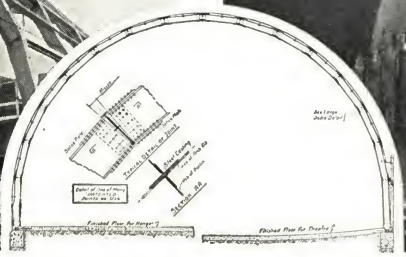
Type C. For Buildings Where Tie Rods Are Required



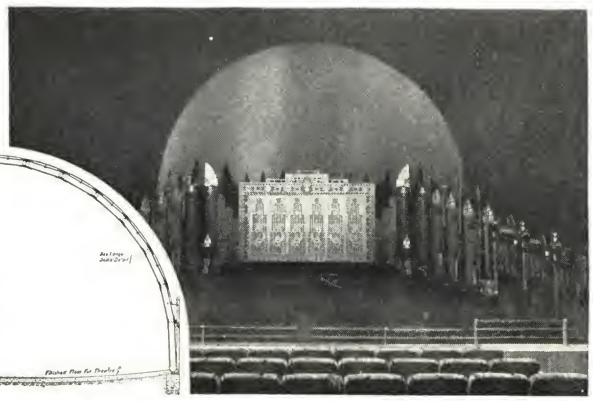
Type F. Auditorium, Spans to 400 Ft. or Over



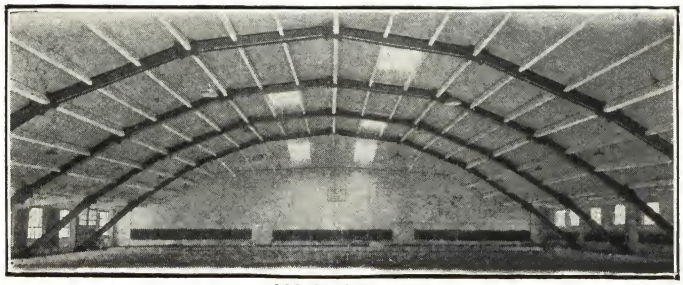
Five of Ten Type E Steel Arches Used in Embassy Theatre, Reading, Pa.
125-ft. span



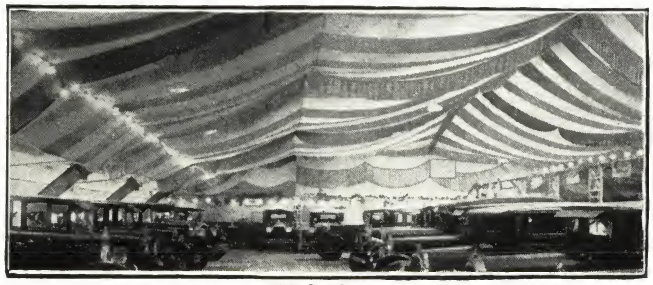
Type E. Ideal for Theatre Buildings and Dirigible Hangars
Also for storing chemicals and coal in gravity piles. Heights varied to suit



Interior of Embassy Theatre Showing Roof Construction
125-ft. span



100-ft. Span



100-ft. Span

McKEOWN BROS. COMPANY

ESTABLISHED 1894

Builders of Wooden Trusses for Any Condition

5235 South Keeler Avenue
CHICAGO, ILL.
TELEPHONE, Virginia 2010

220 East 42nd Street
NEW YORK, N. Y.
TELEPHONE, MUrray Hill 2-2380

Service

McKeown Bros. Company is not restricted to the building of any particular type of truss. We build for ordinary roofs, pitched roofs, curved ceilings, ornamental interiors, and for concrete arches.

Ordinary Bowstring Trusses

Built on the job and erected in place by us, or in our factory, they are influenced in the construction by years of experience. The Factory Built truss, in addition, has an upper chord glued to exact curvature and can be shipped in sections or knocked down.

Other Types of Trusses

We have no stock design of any type of truss. We aim to interpret the architect's ideas.

Construction

In building trusses on the site of the job, when possible, we use lumber and material from local yards, otherwise, as in the construction of Factory Built trusses, we use lumber from our own stock. This material is purchased through strict specifications, according to grading and dressing rules.

Finish

The exposed surfaces of timber trusses can be rough, rough sawn, hand adzed, hand axed, sanded, planed, sand blasted or charred.

Ornamented Ironwork

Hand-wrought ironwork of simple or complicated design made in our own shop insures the architect of faithful reproduction of his design.

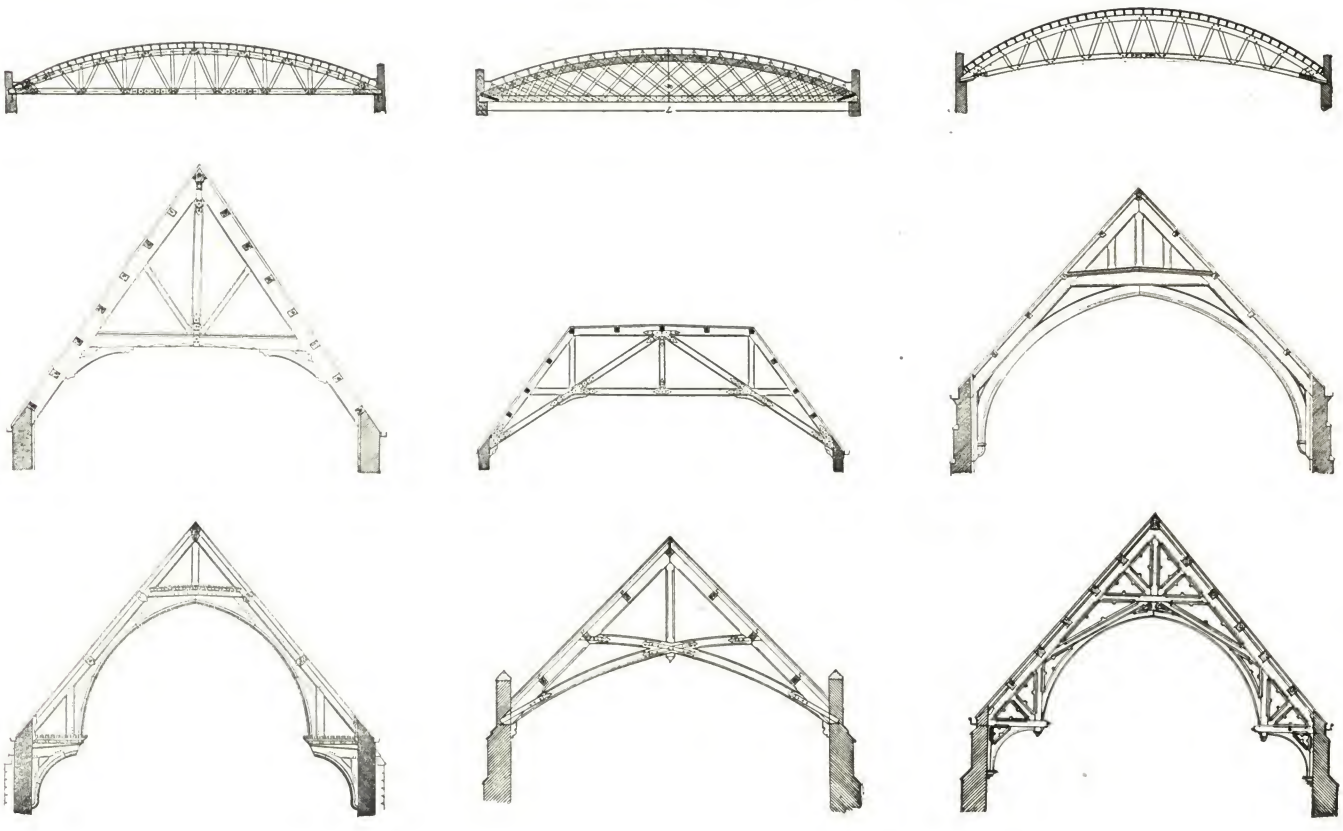
Estimates

It is advisable that plans or sketches be furnished if timber trusses are desired.

For the bowstring, Crescent, etc. trusses the following information is sufficient:

(1) Number of trusses required.
(2) Over-all length of the trusses.
(3) Distance between the trusses, or spacing from center to center.
(4) Load to be carried.
(5) Location of the job.

McKeown Bros. Company *furnishes Detail Drawings and Stress Diagrams for check and approval upon receipt of the order for any type of truss.*



LAMELLA ROOF SYNDICATE, INC.

TELEPHONE
BRyant 9-8532

45 West 45th Street
NEW YORK, N. Y.

(Holding Company for Lamella Patents in United States, Canada and Mexico)

AUTHORIZED LICENSEES

NEW YORK, N. Y., 45 West 45th St.
Lamella Constructions, Inc.

BUFFALO, N. Y., 401 Lehigh Valley Terminal
Lamella Trussless Roofs, Inc.

INDIANAPOLIS, IND., 1012 East 21st St.
Johnson-Maas Co.

CHICAGO, ILL., 100 West Monroe St.
Edward Hines Lumber Co.

CINCINNATI, OHIO, 5701 Lantana Ave.
Lamella Roof Company

ROCHESTER, MINN., 112 7th St., N. E.
Kruse Lamella Lumber & Mfg. Co.

ST. LOUIS, MO., 418 Olive St.
Missouri Lamella Roof Co.

HOUSTON, TEX., 4607 Walker Ave.
Lamella Trussless Roof Co.

LOS ANGELES, CAL., 754 East 29th St.
The Trussless Roof Co.

OAKLAND, CAL., 402 Builders Exchange Bldg.
The Trussless Roof Co.

PORTLAND, ORE., 427 Board of Trade Bldg.
The Trussless Roof Co.

PHOENIX, ARIZ., 1512 No. Central Ave.
The Lamella-Summerbell Co.

TWIN FALLS, IDAHO, P. O. Box 1052
Lamella Roof Company

MONTREAL, QUE., 1226 University St.
Lamella Trussless Roof Co., Ltd.

TORONTO, ONT., Temple Bldg.
Lamella Trussless Roofs (Ontario) Ltd.

VANCOUVER, B. C., 1490 Broadway West
Lamella Trussless Roof Co. of Western Canada, Ltd.

MANILA, P. I., P. O. Box 1693
N. R. Baugh

HONOLULU, T. H., 403 Inter-Island Building
J. Grant Morgan

Product

ARCH TYPE ROOF CONSTRUCTION.

Description

Lamella Trussless Roofs, licensed, manufactured and erected by authorized licensees of the Lamella Roof Syndicate, Inc.—are roof structures designed to conform with accepted engineering practice. The design makes use of two simple and proven principles—namely, the arch and the network. The roof is made up of timbers—called lamellas—varying in section from 2x8 ins. to 6x24 ins., and in length from 8 to 24 ft. These members are bolted together to form the network.

LAMELLA
Reg. U. S. Pat. Off.

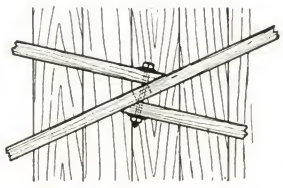


Fig. 1. Common Joint

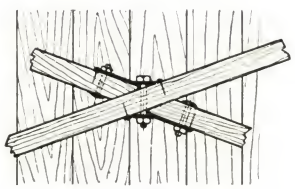


Fig. 2. Special Joint

Service

(a) Engineering—The licensees maintain engineering staffs to assist the architect in the design of the roof and its connections to other parts of the building. Detail drawings and stress calculations are promptly furnished.

(b) Construction—The Lamella stock is specially selected. A skilled and experienced crew, specializing in this type of construction, is maintained by the licensees so that the roof can be started and completed with the least possible loss of time.

Fire Resisting Qualities

Fire resisting qualities are rated in all localities equal to unprotected steel with open rafters.

They may be raised to slow burning (mill) classification by use of 4 or 6-in. material.

They may be further improved by special lumber treatment or sprinkler installation.

Acoustical Qualities

The Lamella network in its arch form pleasantly reflects the sound without causing reverberations. This has been demonstrated in the many musical halls covered with Lamella roof, some of which have successfully housed grand opera performances.

Steel Lamella Roofs

The Lamella structure may also be built using pressed or structural steel units. Steel Lamella Roofs can economically be fireproofed and are suitable for fireproof buildings of wide spans.

Data Required for Estimates

With inquiries, please give the following information:

(1) Kind of building—auditorium, garage, etc.
(2) Location.
(3) Width.
(4) Length.
(5) Height at which roof starts.
(6) Material of walls.
(7) Thickness of walls.
(8) Parapet or dripover.
(9) Size of piers, if any.
(10) Spacing of piers, if any.

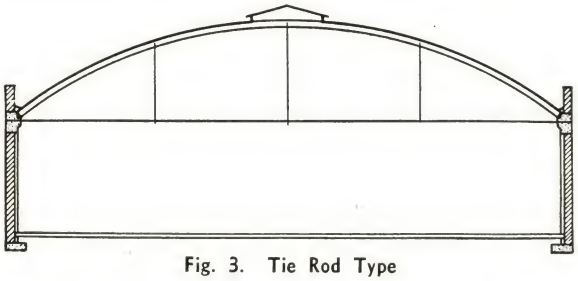


Fig. 3. Tie Rod Type

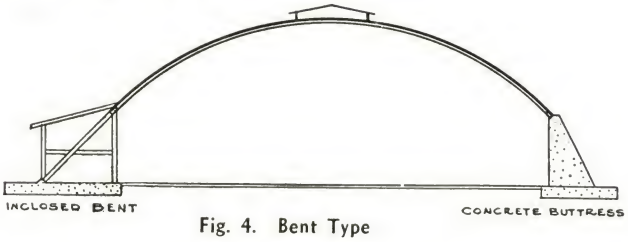


Fig. 4. Bent Type

Lamella Roofs may be curved down at the ends, thereby forming a cloistered roof of four or more sides. Their shapes may intersect to suit almost any required shape or size of building.



Above:

Westchester County Center, White Plains, N. Y.

WALKER & GILLETTE, Architects
WILLIAM WILSON, Consulting Engineer

This one million dollar building houses the Metropolitan Opera Co. of New York, N. Y., during its regular performances in Westchester County



Above:

Twenty-sixth Church of Christ, Scientist, Los Angeles, Cal.

MEYER & HOLLER, Architects

Groined arch type roof



Below:

Riding Ring for Sleepy Hollow Country Club, Scarborough, N. Y.

DELANO & ALDRICH, Architects

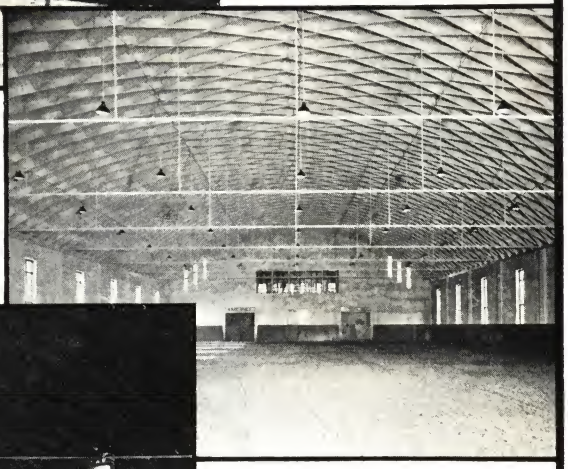


Above:

Garage, Coca Cola Bottling Works, Los Angeles, Cal.

H. T. MILLER, Architect

Lamellas are steel channels to be individually fireproofed with gunnite





Above:

One of Several Great Atlantic & Pacific Tea Co. Markets

GORDON B. KAUFMANN, Architect

Broached end type roof

Below:

School Auditorium, Los Angeles, Cal.

H. H. WHITELY, Architect

Below:

Cafe, Los Angeles, Cal.

C. F. PLUMMER, Architect

An octagon shaped roof

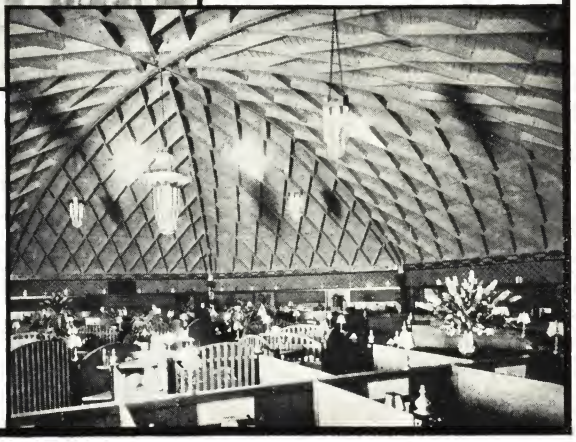


Above:

St. Elizabeth Gymnasium, St. Louis, Mo.

HENRY DREISOERNER, Architect

A gothic shaped roof



SUMMERBELL TRUSS COMPANY

Wood Roof Trusses

CHICAGO, ILL., One North La Salle Street
NEW YORK, N. Y., 45 West 45th Street
PHOENIX, ARIZ., 1512 Central Avenue
LOS ANGELES, CAL., 754 East 29th Street
OAKLAND, CAL., 405 Builders Exchange Building
PORTLAND, ORE., 624-626 Board of Trade Building

Products

Manufacturers and erectors of Wood Roof Trusses.

Wood Roof Trusses

Spans designed from 30 to 125 ft. in accordance with best standard engineering practice and to comply with various local ordinances.

Trusses can be erected at the building site anywhere. No delays due to inability in obtaining materials; local lumber yards carry in stock all sizes of materials used in the construction of this truss.

Information Required for Estimates

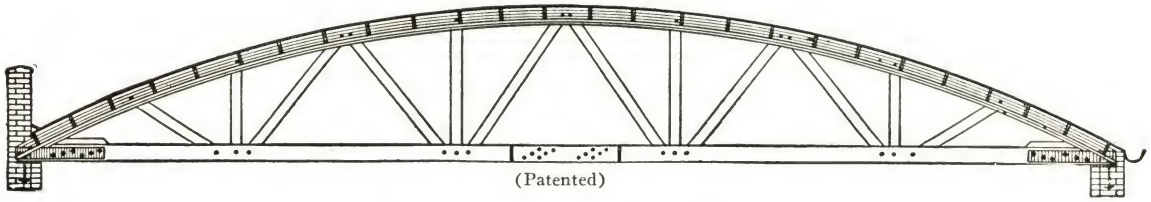
In requesting quotations the following information is necessary:

(1) Number of trusses required. (2) Span out-to-out of building walls. (3) Spacing of trusses. (4) Loads: roof, ceiling or special loadings. (5) Location of building, name of architect and owner's name.

Service

Estimates and details furnished on request.

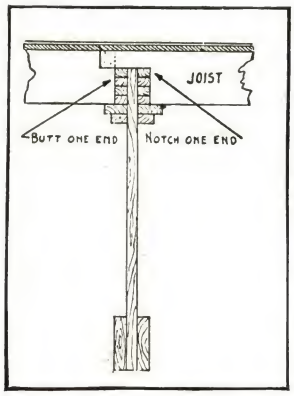
It is suggested that engineers avail themselves of our engineering service in any design calling for special types of roof trusses.



(Patented)

Summerbell Wood Roof Truss

Large solid section web members spaced far apart assure maximum light distribution. Heavy laminated top chord and bottom chord of two large solid sections reduce fire hazard. Note that the arch of the top chord is uniform from end to end and that there are no sharp breaks which cause rain to carry gravel to the gutters, or allow tar melted by the sun to run down

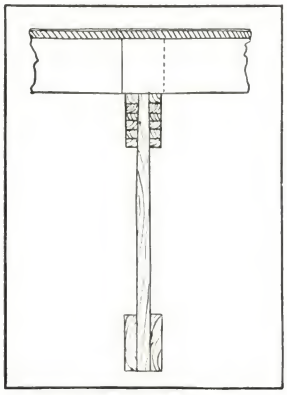


Section Standard Summerbell "Rigid-roof" Construction

Summerbell trusses save several courses of brick wall on all sides of the building in addition to making a rigid roof



80-ft. Span Trusses at Chicago Airport



Section of Ordinary Construction

Roof joists set on top of top chord.

Trusses of this type can be furnished, if desired



70-ft. Span Trusses in Garage, Los Angeles



60-ft. Span Trusses in Factory Building, Winchendon, Mass.

SAMUEL CABOT, INC.

Creosote Stained Shingles

141 Milk Street, BOSTON, MASS.

BRANCH OFFICES

NEW YORK, N. Y., 101 Park Avenue
PHILADELPHIA KANSAS CITY MINNEAPOLIS LOS ANGELES CHICAGO, ILL., 5000 Bloomingdale Avenue SAN FRANCISCO PORTLAND SEATTLE

ALSO DISTRIBUTED BY

CLEVELAND, OHIO, The Harvard Lumber Co., 6000 Harvard Avenue
COLUMBUS, OHIO, The Creith-Potter Lumber Co., 319-345 East Fifth Avenue
NEWARK, N. J., Industrial Sales Company, 24-49 Haynes Avenue
NORFOLK, VA., C. A. Nash & Son, Inc., 428 Granby Street

Products

CABOT'S CREOSOTE STAINED SHINGLES

For Heat-insulating and Sound-deadening "Quilt," and for Stains, Collopakes (instead of Paint), and Wood Preservatives, see Manufacturers' Index.

Cabot's Creosote Stained Shingles

Description—Grade A, U. S. Dept. of Commerce Standard, red cedar shingles ready-stained with Cabot's Creosote Shingle and Wood Stains.

Sold in original bundles, as packed at the mill, guaranteed full count.

Preserved with genuine creosote, the best wood preservative known, and having a life at least twice as long as unstained shingles or shingles stained with nonpreservative colors.

Standard Colors—*Weathering Browns, Light and Dark Bungalow Browns, Bark Browns, Warm Brown; Light and Dark Tile Red, Maroons, etc.*—A complete range of these handsome and durable colors for roof and walls.

Light, Dark and Medium Moss Greens—Our moss greens have a richness and depth of color such as can only be produced by the strongest and purest pigments.

Cabot's
Creosote Stained
Shingles
Samuel Cabot Inc.

Grays—Our Weathering Grays give the true natural seashore gray tones.

White Shingles—Cabot's Shingles are also furnished ready-stained with No. 1166 White Primer, to be finished after the shingles are laid, either with (1) a brush coat of No. 1166, (2) one or two brush coats of Cabot's Old Virginia White or (3) one or two coats of Cabot's DOUBLE-WHITE. (See our pages on Collopakes [instead of Paint] for description of these materials.)

Blended Roofs—All color combinations are blended in the bundle so they can be laid without blending on the job.

Sizes

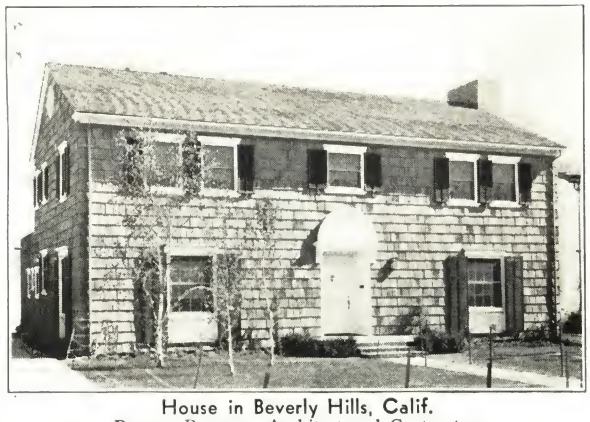


Cabot's Creosote Stained Shingles

24-in. "Royals," 18-in. "Perfections" and 16-in. "XXXX," the highest grade shingles made, are used exclusively for Cabot's Creosote Stained Shingles.

"Royals" for walls, laid with 10 to 12-in. exposure, are much more artistic than dressed siding, much warmer and the cost is actually lower. "Perfections" and "XXXX" are the standard regular sized shingles for walls and roofs.

24-in. Re-sawn, Hand-split Shakes—Flat backs; butts ¾ in. to 1¼ in. thick. These heavy and artistic shakes are rapidly gaining in popularity. They produce an effect as beautiful as tile or heavy slate and are, of course, much warmer than either, keeping out the summer's sun and the winter's cold.



House in Beverly Hills, Calif.
ROLLIN PIERSON, Architect and Contractor
Sidewalls, Cabot's Old Colony Cedar Shakes; roof, Cabot's Creosote Stained Shingles

Samples

Samples of standard colors sent on request.

Deliveries

Prompt deliveries from staining plants in Boston, Chicago, Newark, New Rochelle, Columbus, Cleveland, Grand Rapids, Los Angeles, San Francisco, Seattle and Portland.

COVERING CAPACITY PER SQUARE OF CABOT'S CREOSOTE STAINED SHINGLES BASED ON THE FOLLOWING WEATHER EXPOSURE

	4-in. exp.	4½-in. exp.	5-in. exp.	5½-in. exp.	6-in. exp.	6½-in. exp.	7-in. exp.	7½-in. exp.	8-in. exp.	8½-in. exp.	9-in. exp.	9½-in. exp.	10-in. exp.	11-in. exp.	12-in. exp.
1 square of 16 in. (4 bun. 20/20 pack.)	80	90	100	110	120	130	140	150	.....	.....	.....	.....	.....	.....	.....
1 square of 18 in. (4 bun. 18/18 pack.)	.....	.....	.....	100	109	120	129	138	148	157	.....	.....	.....	.....	.....
1 square of 24 in. (3 bun. 14/14 pack.)	.....	.....	.....	.....	.....	.....	.....	75	80	85	90	95	100	110	120

Note: Cabot's Shingles are sold under the Official Grading and Packing Rules of the Shingle Manufacturers' Association, and the tables of the Red Cedar Shingle Bureau show that our shingles actually cover from 3% to 8% more than the figures given.

CREO-DIPT STAINED SHINGLES

Stained Under Pressure—Packed in Cartons

CREO-DIPT COMPANY, INC.

NORTH TONAWANDA, N. Y.

FACTORIES, SALES OFFICES OR WAREHOUSES IN ALL PRINCIPAL CITIES

Other Creo-Dipt Products: Creo-Dipt Mohawk Shingles (Fireproof—made of Cement and Asbestos), Creo-Dipt Fireproof Shingles (Cement and Asbestos), Creo-Dipt Building Papers, Creo-Dipt White (Double Strength)

See Manufacturers' Index for Information on these Products

Products

Originators and sole manufacturers of genuine CREO-DIPT STAINED SHINGLES, *stained under pressure,* for roofs and sidewalls.

CREO-DIPT THATCHED STAINED SHINGLES to produce the thatched roof effect.

For other Creo-Dipt products see list at top of this page and consult Manufacturers' Index.

Sold Everywhere by Leading Lumber Dealers

Creo-Dipt Stained Shingles, *stained under pressure,* are carried in stock by lumber dealers in all parts of the United States and Canada. Shipments are made from our plants at North Tonawanda, N. Y.; Cleveland, Ohio; Minneapolis, Minn.; Kansas City, Mo.; Seattle, Wash., and Vancouver, B. C.

Uniform Colors

Creo-Dipts are *stained under pressure,* after which they are given an additional treatment that applies the maximum amount of stain uniformly on the shingle. This means uniform weathering for every color—even the lightest gray shade. The heavy coat of stain prevents the usual pronounced variations in the shade of the timber from showing through, and materially lengthens the shingle's color life.

Packed in Cartons

All Creo-Dipt Stained Shingles, with the exception of Creo-Dipt Pilgrims and Aristocrats, are packed in cartons to keep them clean and free from damage while in transit, in the dealer's stock, and on the job.

Other Creo-Dipt Qualities

Creo-Dipt Stained Shingles are made only from carefully inspected red cedar, with the grain of the wood running 100% straight from top to bottom. Creo-Dipts, because of their straight grain, will lie flat without splitting or curling.

Creo-Dipt Stained Shingles effect considerable fuel savings when used on the sidewalls and roofs. Red cedar is the finest natural insulator, and Creo-Dipts overlap three times, thus giving triple protection against winter cold and summer heat. Owners tell us that the average fuel saving with Creo-Dipt varies between 15% and 25% a year.



Home of Arthur Baer, St. Louis, Mo.

BEVERLY T. NELSON, Architect

The softly sloping roof gives an air of serenity to this house on which Creo-Dipt 18-inch Perfections stained a weathered gray harmonize perfectly with the soft roof lines. The sidewalls are Creo-Dipt 24-inch Royals laid slightly staggered, and Dixie White Stain is on the chimneys.

Creo-Dipt Stain is made from the strongest pigments, ground to minute fineness in linseed oil, by our own mills. Creo-Dipt Stained Shingles, with the exception of Creo-Dipt White, do not require brushcoating after they are on the building. (See Manufacturers' Index for page on the new Creo-Dipt White.)

On Old Homes Too

Many architects are now rebeautifying old homes with Creo-Dipt Stained Shingles laid right over the old siding and roof. Write for photographs.

Sizes and Styles of Creo-Dipt Stained Shingles

Note: In specifying, give the name indicating the thickness in addition to the length of the shingles.

Thatched Effect—Special Creo-Dipt Stained Shingles are furnished for thatch roofs ready for application. Complete instructions and details will be supplied to architects and builders.

Graduated Exposure—The best effect is secured by starting at the eaves with the large Creo-Dipt Aristocrat at wide exposure, working through thinner grades at decreasing exposures up to the ridge.

Blended Color Treatment—Unusual artistic results can be obtained by using several shades of the same color starting with the darkest shade at the eaves, working to the lightest shade at the ridge.

Variegated Effects—Creo-Dipt Stained Shingles can be furnished packed promiscuously in each bundle in any proportion of the various shades which you select.

Creo-Dipt White—(See Manufacturers' Index).

Creo-Dipt Aristocrats—24 inches long; random widths; 1 inch in thickness at butt.

Creo-Dipt Pilgrims (Sometimes known as rustics or shakes)—Hand split on the weather surface and smooth sawn on the back. 25 inches long; random widths; average 1 inch in thickness at the butt. (See following page for complete information on this unusual product.)

Creo-Dipt Yorktown Shakes—Hand-split, 25 and 18 inch lengths; random widths; average ½ inch in thickness at butts.

Creo-Dipt Yorktown Shakes are exactly like Creo-Dipt Pilgrims—hand split on the weather surface and smooth sawn on the back—except that they average ½ inch thick at the butt. They are available in both 25-inch and 18-inch lengths.

Creo-Dipt Ambassadors—(Shakes) 24 inches long; random widths; 9/16 inch thick; machine grooved on the face but smooth sawn on back.

Creo-Dipt Royals—24 inches long; random widths; ½ inch in thickness at the butt.

Creo-Dipt Perfections—18 inches long; random widths; 5 shingles will measure 2¼ inches in thickness at the butt.

Creo-Dipt XXXXX—16 inches long; random widths; 5 shingles will measure 2 inches in thickness at the butt.

Covering Capacity of Creo-Dipt Stained Shingles

All shingles are sold on the basis of the square (100 square feet).

The table below shows the number of square feet a square of shingles will cover at various exposures:

Name	Exposure to the weather, in.									
	5	5½	6	6½	7	7½	8	10	10½	11
Aristocrats*	....	....	....	...*	....	75	....	100	105	110
Pilgrims*	....	....	....	....	70	75	....	100	105	110
Yorktown Shakes, 25-in.	....	....	....	....	....	62	66	82	89	90
Yorktown Shakes, 18-in.	....	66	72	78	83	89	95	....	....	....
Ambassadors*	....	....	....	....	....	75	....	100	105	110
Royals*	....	....	....	....	....	75	....	100	105	110
Perfections	....	100	111	120	129	138	148	....	....	....
Eurekas	....	100	111	120	129	138	148	....	....	....
XXXXX	100	110	120	130	140	....	....	....	....	....

*These shingles usually laid 10 inches to the weather on sidewalls and 7 or 7½ inches on roofs.

Colors

Creo-Dipt Stained Shingles are manufactured in any color or combination of colors. A color pad, showing a wide choice of shades, will be sent on request. We will make special shades or submit samples without charge.

Your Protection: The Name "Creo-Dipt" on Every Carton

The Creo-Dipt trade-mark is on every carton for the protection of yourself and your clients. For 20 years leading architects throughout the country have known it as their protection in specifying Creo-Dipts.

In writing specifications, it is recommended that you include the following:

Creo-Dipt Stained Shingles, as manufactured by the CREO-DIPT COMPANY, INC., of North Tonawanda, N. Y., shall be, etc.

Creo-Dipt Service Department

We are continually developing new and unusual combinations. Address your inquiries for further information and illustrated folders to the Service Department, CREO-DIPT COMPANY, INC., North Tonawanda, N. Y. We examine plans carefully in order to estimate the approximate number of squares of Creo-Dipt Stained Shingles required.

There is a trained Creo-Dipt salesman in your territory who always welcomes the opportunity to serve you. Look for the name "Creo-Dipt" in your telephone book.

CREO-DIPT HAND-SPLIT PILGRIMS

(Sometimes known as Rustics or Shakes)

Nature of Product

Creo-Dipt Hand-Split Pilgrims, remarkably beautiful shingles, are hand-split from first growth, live red cedar.

They are 25 inches long and average 1 inch in thickness at the butt, although this varies in individual shingles from ½ to 1¼ inches.

The surface of hand-split Pilgrims is rough and uneven, giving them a lovely ragged texture which is softened by the deep shadow lines of the thick butts.

The backs are smooth-sawn, assuring perfect watertightness when laid according to our specifications.

Uses of Creo-Dipt Hand-Split Pilgrims

Although hand-split shingles date back to the 17th and 18th centuries, Creo-Dipt Hand-Split Pilgrims are by no means limited to the Colonial house but can be used on nearly all styles of architecture.

Creo-Dipt Pilgrims are both a roof and sidewall material. You can get them in any color, stained by our patented pressure process, or unstained—just as you prefer.

Specifications

Write us, or ask our representative for complete specifications, a portfolio of Pilgrim homes and full sized samples stained in the shade you want to use.



A Pilgrim Roof for Arthur C. Webb

Designed by GUY O. KOEPP, Architect, of Carmel-by-the-Sea, Calif. This house has a roof of Creo-Dipt hand-split Pilgrims, stained red.



Creo-Dipt Pilgrims on Roof, Creo-Dipt White on Brick

FREDERICK H. REIMERS, Architect used Creo-Dipt Pilgrims on the roof of this house. He obtained the soft, flat white effect on the brick walls with Creo-Dipt White

THE EDHAM CO., INC.

Manufacturers of Sunfast Stained Red Cedar Shingles

GENERAL OFFICE
MINNESOTA TRANSFER, ST. PAUL, MINN.
MILLS AND FACTORIES: MINNESOTA TRANSFER, MINN., AND VANCOUVER, B. C.
SALES OFFICES IN PRINCIPAL CITIES
Carried by Lumber Dealers Everywhere

Products

EDHAM KOLORED SUNFAST RED CEDAR SHINGLES for roofs and sidewalls.

EDHAM KOLORED SUNFAST BENT SHINGLES to produce the thatched effect.

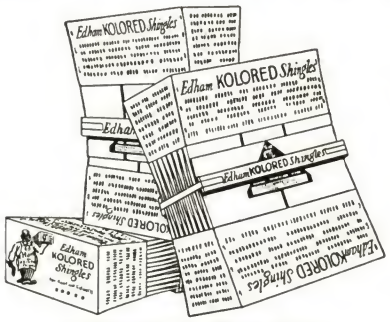
Also Edham Kolored Shingle Stains, SEALFAST Building Paper, STAYFAST Shingle Nails. *Specify by full name.*

Edham KOLORED Shingles

TRULY SUNFAST

PERMANENT COLORS ON RED CEDAR • IDENTIFIED AND PROTECTED BY THE RED CAPS

INDIVIDUALLY SATURATED AND PROCESSED PRESERVING THE COLOR AND THE WOOD



Protected by "Red Cap" Identification

In order that these shingles may arrive on the job, clean, unscratched and ready to use, every bundle is contained in protective end caps. This protects faces, edges and butts while shingles are being handled in the lumber yard. It keeps them free from lime, cement, dust and dirt until ready to be used

Edham Sunfast Process

A permanence of color that defies the elements is obtained by the exclusive Sunfast process of staining straight, vertical grain, West Coast red cedar shingles—immune to atmospheric changes, scorching sun, beating rain, driving sleet. Non-fading, permanent, truly Sunfast.

A Shingle Actually Sunfast

Only Nature's own true mineral colors are used, laboratory tested and scientifically mixed, with linseed and other essential oils in accordance with secret stain formulas. After thoroughly saturating and brushing the shingles, the linseed oil content of the stain is oxidized by a process of thermometer-controlled treatment by heated air. This produces a "linoleum-like" finish causing positive fixation or adhesion of the color pigment to the wood—truly permanent colors.

Available in Wide Variety of Sunfast Colors

The appearance of these new shingles actually improves with age, as their soft harmonious colorings are mellowed. Unaffected by acid or alkaline conditions, even when dipped into hot lime or plaster, they will not peel or crack. The colors will not change. They are truly non-fading.

Available in green, gray, brown, red or attractive combinations of any of these colors—also the incomparable new grays and prime white. Packed in bundles in correct proportions, ready for laying.

Covering Capacity

Edham Sunfast Shingles are supplied on the square basis (a square containing sufficient shingles to cover 100 sq. ft.) figured as follows:

Shingle length, in.	Exposed to weather, in.	Bundles to square	Courses
16	5	4	20/20
18	5½	4	18/18
18 (Process Shakes)	7½	3	18/18
24	10	3	13/14

Sizes and Styles

The Edham Kolored Sunfast Shingles can be obtained in a wide variety of sizes and styles, as follows:

Shingle	Size, in.	Butt, in.
XXX	16	6 to 2
XXXXX	16	5 to 2
Eureka	18	5 to 2
Perfection	18	5 to 2¼
Process Shake	18	9/20
Royal	24	½ and
Supreme	24	1
Process Shake	25	½
Hand Split Shake	25	½ to 1¼

Color and Planning Service

A service department is maintained to co-operate with architects, contractors and builders, color suggestions and layouts supplied without charge.

Architects' Sample Pad of Actual Shingles

A request on your letterhead brings a pad showing the full color range of Edham Kolored Sunfast Shingles.



Sidewalls of this Colonial Residence at Kansas City, Mo., are in Gray with a Green Shingle Roof of Edham Sunfast Shingles

HAL. A. STONEBRAKER, Architect

THE ELHIDE COMPANY

JOHN C. RUNKLE, President

Makers of Elhide Hand-Split Cedar Shingles

CAMBRIDGE, MASS.

PLANT AT HATZIC, B. C.

NEW YORK OFFICE: 122 East 42nd Street

Products

ELHIDE HAND-SPLIT CEDAR SHINGLES.

For Elhide Hand-Split Cedar Fencing and Elhide Monson Maine Roofing Slate, see Manufacturers' Index.

Elhide Hand-Split Cedar Shingles

Elhide Hand-Split Cedar Shingles are rived by hand from the giant cedars of British Columbia, the source of the best red cedar. There the Elhide workmen cut the trees, split the shakes with maul, frow and wedge, and saw the shingles on one side only to effect a tight-laying undersurface.

Stock—Rotproof red cedar, air-dried and 100% edge (straight) grain, which effectually prevents warping, curling and consequent splitting. Free from knots, sap and other imperfections.

Sizes—25 and 31 ins. long. Random widths 4 to 12 ins. Graded to seven butt thicknesses, from ½ to 2 ins. (For table of sizes, see following page.)

Weight Per Square—From 200 lbs. on ½-in. butts to 700 lbs. on 2-in. butts. Note: Even the 2-in. butt shingles are light in weight compared with tile, slate, etc.; and do not require extra construction to support their weight on a roof.

Butts—The butt-line has a natural irregularity typical of a hand-made shingle but this characteristic unevenness is not artificially exaggerated.

Durability—By comparative tests, British Columbia Red Cedar is rated as one of the most durable woods for exterior use. It contains preservative oils which prevent rot and decay. Straight-grained stock prevents warping and splitting after the shingles are applied. The exposed surface of an Elhide Hand Split Shingle is entirely unbroken hard-grain which resists the destructive effects of the weather.

Staining—Untreated Elhide Shingles weather to a delightfully mellow tone. They require no stain or paint to preserve them, but if color is desired, we are equipped to stain them any shade, including white primer or bleaching oil.

Application—To secure an authentic old-time effect, do not cut or trim the edges of Elhide Shingles. Lay each shingle vertically. Use at least two nails to each shingle, spaced about 2 ins. under the lap. Copper nails, or hot dipped, zinc-coated nails should be used to secure the full durability of these long-wearing shingles. The joints should be well broken, with at least a 2-in. side-lap. On roofs, a watertight layer of asphalt roofing felt,



Elhide Hand-Split Cedar Shingles

Patented March 23, 1926

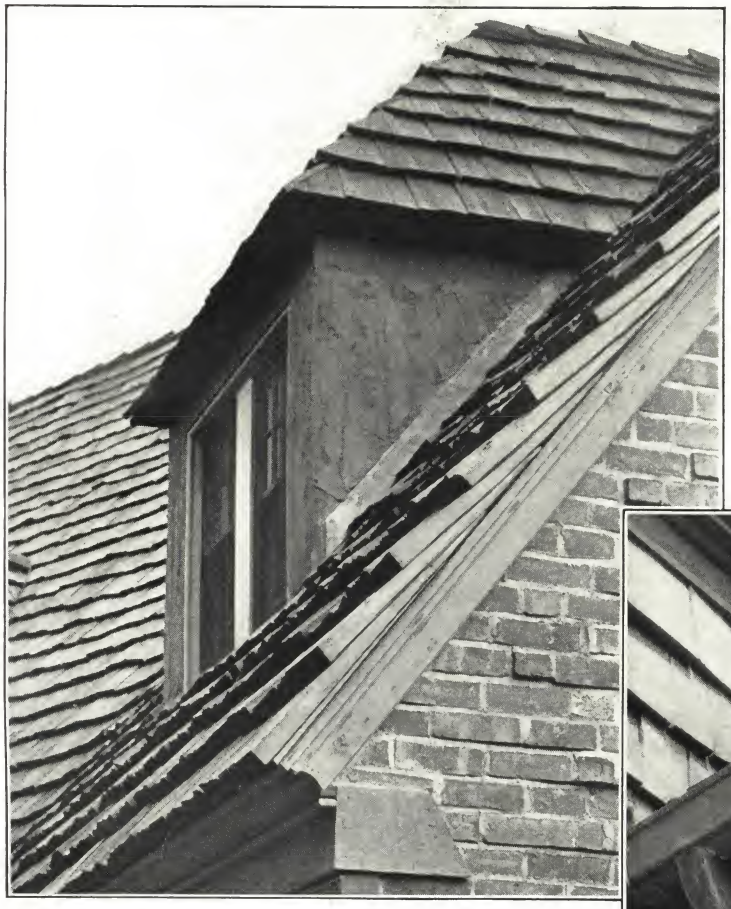
Actual appearance of Elhide Hand-Split Cedar Shingles as applied on a sidewall. In this case, the shingles are 1 in. thick at the butt, laid at an exposure of 10 in. The beautiful and interesting texture of the split cedar, which varies on each shingle, and the characteristic shadow lines are clearly evidenced by this illustration.

weighing at least 30 lbs. per 100 sq. ft., should be laid under all hand-split shingles. (The uneven surface of Elhide Shingles allows sufficient ventilation to prevent dry rot or decay.) For a starter course, we suggest the use of ordinary sawed shingles.

Samples—Sample shingles and prices on any thickness will be furnished upon request. We shall also be pleased to suggest layouts and to refer to representative installations in your vicinity.

Condensed Specification

All roofs and sidewalls shall be covered with Elhide Hand-Split Cedar Shingles (100% straight-grain) ..... inch butts, exposed ..... inches to the weather, as made by The Elhide Company, 130 Sixth Street, Cambridge, Mass. (Write for complete specification.)



Above:

Graduated Roof of Elhide Hand-Split Cedar Shingles on a Residence, Wellesley, Mass.

Walker, Walker & Kingsbury, Architects, Boston, Mass.

The first four courses are 1¾ ins. thick, 31 ins. long, laid at a 10-in. exposure. Balance of roof is covered with shingles which gradually diminish in both thickness and exposure to ½-inch butts, laid 6 inches to the weather, at the ridge

At Right:

Cornice of Boathouse, Manhasset, L. I., N. Y.

LaFarge, Warren & Clark, Architects, New York, N. Y.

The roof is covered with Elhide Hand-Split Cedar Shingles graduated from 1¾-inch butts laid at a 10-inch exposure at the eaves, to ½-inch butts, 6 inches to the weather, at the ridge. Shingles 1 inch thick are used on the sidewalls.

Elhide Graduated Roofs

The conventional wood shingle roof is not only the most typically American roof, but because of obvious advantages and proved worth, has been adapted in some manner to almost every form of present-day architecture. Elhide Hand-split Cedar Shingles retain all the desirable qualities of light-weight, warmth and weathering beauty that are inherent in the wooden shingle and, in addition, provide a rugged, textured surface; also an unusual durability free from upkeep expense obtainable only in a shingle rived by hand, entirely straight-grained and air-dried.

Heretofore, designers have turned to slate slabs, ¾ or 1 inch thick, when laying out a graduated roof. It has remained for The Elhide Company to produce for this purpose massive hand-split wooden shingles up to two inches in thickness.

The architect is now afforded an opportunity to design a graduated roof of unsurpassed massiveness and strength and yet retain all the beauty and characteristic charm of the wooden shingle enhanced by the ruggedness and texture of the hand-split surface.

For example, a graduated roof may be laid out in accordance with the following schedule:

Beginning at the eaves:

4 courses,	2 in.	thick,	10 -in. exposure
4 courses,	1¾ in.	thick,	9½-in. exposure
4 courses,	1½ in.	thick,	9 -in. exposure
4 courses,	1¼ in.	thick,	8½-in. exposure
4 courses,	1 in.	thick,	8 -in. exposure
4 courses,	¾ in.	thick,	7½-in. exposure
Balance	½ in.	thick,	7 -in. exposure

Upon presentation of roof plans and elevations, we shall be pleased to draw up similar layouts of correct proportions. (See "Application" and "Specification" for additional information.)



STANDARD SIZES OF ELHIDE HAND-SPLIT CEDAR SHINGLES
(Special thicknesses and lengths made to order)

Butt thickness.....in.	½	¾	1	1¼	1½	1¾	2
Length.....in.	25	25	25	31	31	31	31
Exposure as packed....in.	10	10	10	10	10	10	10
Width.....in.	Random—4 to 12						

SQUARES OF SHINGLES REQUIRED TO COVER 100 SQUARE FEET

Exposure, in.	6	7	8	9	10	11	12	13	14	15
Squares.....	1.67	1.43	1.25	1.11	1.00	.91	.83	.77	.71	.67

Area in square feet covered by one square of Shingles when laid at above exposures

60	70	80	90	100	110	120	130	140	150

Three Typical Examples

The informal cottage (right) at Darien, Conn., is an excellent example of a well-laid sidewall of Elhide Hand-Split Cedar Shingles. The desired effect of age and weather-beaten exposure is achieved in part by the prominent joints that appear between some of the shingles but, of course, the characteristic texture of Elhide Shingles is in itself the greatest assistance in securing a properly seasoned appearance. In this instance, ½-in. butt shingles were laid at an exposure of 10 in.

Paul Revere House, the oldest building now standing in Boston, was built about the middle of the seventeenth century. It was restored in 1908, and is now roofed with Elhide Hand-Split Cedar Shingles with butts ½ in. thick. It is a typical example of the many restorations and reproductions of early American architecture for which Elhide Shingles have been selected.



Cottage in Darien, Conn.
DAVIS & WALLDORFF, Architects, New Haven, Conn.



Paul Revere House
JOSEPH EVERETT CHANDLER, Restoration Architect, Boston, Mass.

The houses of that early period were roofed and sometimes sided with shingles which were split by hand from cedar logs and of such length that exposures of 10 in. or more were the usual practice. It is because Elhide Hand-Split Cedar Shingles are of such length and general appearance when laid that they are so often specified to meet these authentic requirements.

The entire roof and all sidewalls of the country residence (lower right) on the shores of Lake Erie, near Buffalo, N. Y., are covered with Elhide Hand-Split Cedar Shingles, 1½ ins. thick at the butt. It is an illustration of the exceptional and completely individual effect it is possible to obtain by the use of the extraordinarily thick shingles made by THE ELHIDE COMPANY.

A Partial List of Installations

OWNER	ARCHITECT
George Roberts, East Hampton, N. Y.	Aymar Embury II
M. T. Brewster, Hackensack, N. J.	Aymar Embury II
New England States Exhibition, Springfield, Mass.	Joseph Everett Chandler
P. A. Clark, Kingston, N. Y.	Edgar Salomonsky
John Hay Whitney, Manhasset, N. Y.	LaFarge, Warren & Clark
Muriel Vanderbilt Church, Newport, R. I.	Parker, Thomas & Rice
J. F. Schoellkopf, Jr., Lakeview, N. Y.	Philip Phillips
Mrs. William White, Haverford, Pa.	Willing, Sims & Talbutt
Dr. Philip G. Cole, Tarrytown, N. Y.	LaFarge, Clark & Creighton
H. P. Metcalf, Exeter, R. I.	W. T. Aldrich
Samuel Halsey, Sunapee Depot, N. H.	Prentice Sanger
Howard Coonley, Milton, Mass.	Prentice Sanger
Clarence L. Hay, Newbury, N. H.	Prentice Sanger
Robert Jaite, Akron, Ohio	A. G. Nosek, Jr.
Mrs. Prescott Slade, Mill Neck, N. Y.	Chester A. Patterson
Morris Brill, Mt. Kisco, N. Y.	Taylor & Levi
Gilbert Hood, Medford, Mass.	Kilham, Hopkins & Greeley
Mrs. J. P. Kellogg, Rumson, N. J.	Polhemus & Coffin
Country Club House, Concord, N. H.	Jens Frederick Larson
E. P. Swenson, Upper Saranac, N. Y.	Godwin, Thompson & Patterson
J. Wilton Peters, New Canaan, Conn.	Henry Otis Chapman
Donaldson Brown, Fishers Island, N. Y.	Henry Otis Chapman
Franklin Haines, Fishers Island, N. Y.	Henry Otis Chapman
Jefferson Penn, Reidsville, N. C.	Charles C. Hartman
Warwick Country Club, Warwick, R. I.	Albert Harkness
Mrs. Santerre, Peterboro, N. H.	Parsons, Wait & Goodell
Hosmer Johnson, Marblehead, Mass.	Owner, of Coolidge, Shepley, Bulfinch & Abbott



Residence near Buffalo, N. Y.
PHILIP PHILLIPS, Architect, East Aurora, N. Y.

JAMES LUMBER COMPANY

ESTABLISHED 1875

88 Broad Street
BOSTON, MASS.

"BLUE JAY" HAND MADE CYPRESS SHINGLES

"Blue Jay" Shingles are hand split—rived with the grain—which preserves all the wonderful weather-resisting qualities of heartwood cypress, "The Wood Eternal." No single generation lives long enough to renew a hand split and shaved cypress roof that has been properly laid.

"Blue Jay" Cypress Shingles are made by exactly the same methods as were followed by the pioneers of South Carolina and their slaves, who as far back as 1640 did a thriving business in this line. Some of the roofs on which they were laid in those days are still in service today—weatherproof after nearly three centuries of exposure.

Today, descendants of those same slaves, working in the same southern swamps, are felling selected trees, cutting bolts and with frow, maul and drawshave, are making "Blue Jay" Shingles for American homes.

When split and tapered, they are piled loosely and left to season and to weather in the sun and air. Therefore, as delivered to the job, "Blue Jay" Shingles are already semi-weathered.

Further exposure to inland air deepens their wonderful soft brown tones, while along the shore they weather to a silver gray.

To the Colonial type of house, "Blue Jay" Shingles add years—both in appearance and weatherproofness. For other types, or wherever desired, they may be painted or stained.

All "Blue Jay" Shingles are carefully selected, graded and fully guaranteed.

Sizes—"Blue Jay" Cypress Shingles are made in the two sizes most favored in Colonial days and still considered best:

24 in., with 5/8-in. butts and 1/8-in. tops.
20 in., with 1/2-in. butts and 1/8-in. tops.

Samples gladly supplied on request.

Laying—For roofing, the 24-in. size should be laid 7 in. to the weather, and the 20-in. size 6 in. to the weather. For sidewalls, the 24-in. shingles may be placed 9 or even 10 in. to the weather. The 20-in. size should be laid 7 or 8 in. to the weather.

Nailing—Specify copper (1¾ to 2¼ in. in length), "yellow metal" or old-fashioned dipped galvanized nails, 5d or 6d according to exposure. The less the amount of shingle exposed to weather the longer the nail should be. On sidewalls, 4d nails may be used. Prices on nails will be quoted if desired.

Staining—Although "Blue Jay" Shingles never have that "new," "raw" look, and never actually require staining—either for appearance or preservative purposes—they may be whitened or colored with paint or any standard stain.

Prices—Prices for "Blue Jay" Shingles loaded on cars Boston, Mass., shipped from stock, are as shown below. Freight and carting additional. Freight to most New England stations will not exceed $1.00 per square; carting, not exceeding 10 miles, about $1.00 per square.

20-in. Shingles*

Laid 6 in. to weather $17.00 per 100 sq. ft. covered
Laid 7 in. to weather 14.50 per 100 sq. ft. covered
Laid 8 in. to weather 13.00 per 100 sq. ft. covered

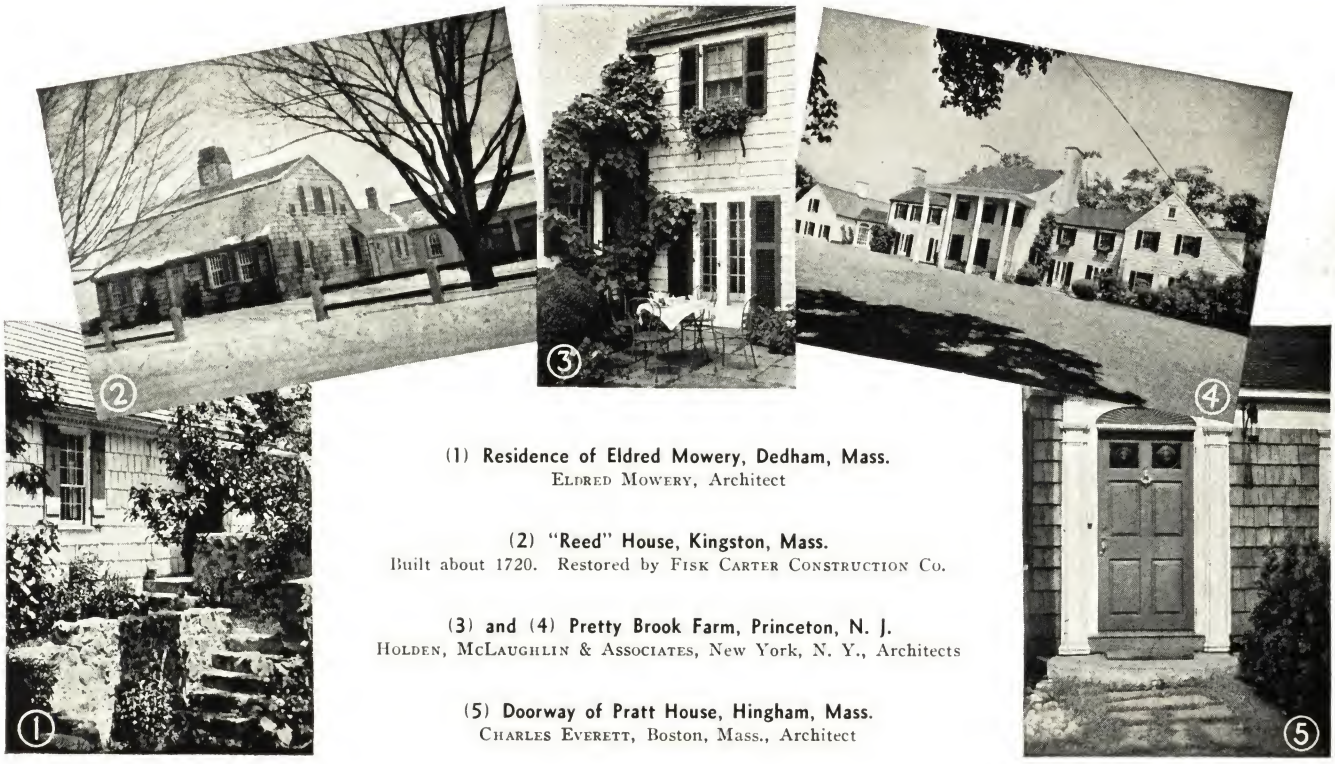
24-in. Shingles*

Laid 7 in. to weather $20.75 per 100 sq. ft. covered
Laid 8 in. to weather 18.00 per 100 sq. ft. covered
Laid 9 in. to weather 16.00 per 100 sq. ft. covered
Laid 10 in. to weather 14.50 per 100 sq. ft. covered

*For recommended exposures, see paragraph "Laying," above.

Prices for points outside of New England furnished upon request, based on shipments made from nearest available stock. Ample supplies always on hand.

Specifying—To obtain the genuine article specify as follows: "For roof and sidewalls use genuine cypress, clear all heart, hand made, split and shaved shingles, 'Blue Jay Brand,' supplied by JAMES LUMBER COMPANY, 88 Broad Street, Boston, Mass."



(1) Residence of Eldred Mowery, Dedham, Mass.
ELDRED MOWERY, Architect

(2) "Reed" House, Kingston, Mass.
Built about 1720. Restored by FISK CARTER CONSTRUCTION CO.

(3) and (4) Pretty Brook Farm, Princeton, N. J.
HOLDEN, MCLAUGHLIN & ASSOCIATES, New York, N. Y., Architects

(5) Doorway of Pratt House, Hingham, Mass.
CHARLES EVERETT, Boston, Mass., Architect

WEATHERBEST STAINED SHINGLE COMPANY, INC.

Manufacturers of Weatherbest Red Cedar Stained Shingles

NORTH TONAWANDA, N. Y.

FACTORIES: NORTH TONAWANDA, N. Y., ST. PAUL, MINN., CLEVELAND, OHIO

Products

WEATHERBEST EDGE GRAIN RED CEDAR STAINED SHINGLES for roofs and sidewalls; WEATHERBEST 24-in. COLONIAL WHITE STAINED SHINGLES; WEATHERBEST THATCHED EFFECT STAINED SHINGLES; WEATHERBEST "DOUBL-THIK" STAINED SHINGLES, WEATHERBEST OLD COLONY HAND RIVED SHAKES; WEATHERBEST BRUSH COAT SHINGLE STAINS.

Used on Roofs and Sidewalls

WEATHERBEST stained shingles are used on sidewalls as well as roofs and are adaptable to practically every type and style of building—from the small cottage or bungalow to the stately country home. The soft, semi-transparent colors add much to the attractiveness of a home. WEATHERBEST stain emphasizes the grain in the wood just enough so that the flat tone of a painted shingle or surface is absent.

Reliability

There is twenty years' experience behind this rigorous WEATHERBEST policy: *"Not to cheapen materials or process to meet price competition."*

Each bundle of WEATHERBEST stained shingles is protected with WEATHERBEST "Visibl-Pak" covers and carries the green WEATHERBEST label and is our guarantee of perfect material and lasting colors.

Quality of Weatherbest Shingles

Only the finest grade of all clear, strictly 100% edge (vertical) grain, red cedar is used in the manufacture of WEATHERBEST stained shingles. Every shingle is perfect from tip to butt. Extreme care is exercised that all shingles are entirely free from any trace of dampness before being subjected to the WEATHERBEST process of staining.

Quality of Weatherbest Stain and Staining Process

WEATHERBEST stain consists of the strongest color pigments obtainable, high grade wood creosote preservatives and pure linseed oil as binder. These ingredients are mixed in our factories by our color and oil experts in the correct proportion to insure colors that are rich and soft in tone, and, above all—*durable*.

All shingles are unbundled at our factories and stained separately—not bundle-dipt as is the case with many other stained shingles. The WEATHERBEST process treats each shingle thoroughly and perfectly. Three shingle-by-shingle inspections occur during the WEATHERBEST process of staining.

Weatherbest Sizes, Colors and Covering Capacity

WEATHERBEST stained shingles are furnished in the following sizes:

16 in. WEATHERBEST XXXXX	5 butts to 2 in.
16 in. WEATHERBEST "Doubl-Thik"	5 butts to 3½ in.
18 in. WEATHERBEST Eurekas	5 butts to 2 in.
18 in. WEATHERBEST Perfections	5 butts to 2¼ in.
24 in. WEATHERBEST No. 1 Royals	½ in. butts
24 in. WEATHERBEST "Doubl-Thik"	1 in. butts

Note: See second following page for sizes of Weatherbest Old Colony Shakes and Weatherbest 25-in. Resawn Cedar Shakes.

WEATHERBEST colors consist of 40 different shades of greens, browns, reds and grays. WEATHERBEST stained shingles are also furnished in a color combination similar to weathered straw for WEATHERBEST thatched effect roofs, and in many variegated and blended color schemes. Special colors are also furnished without extra charge. Color samples on request.

NUMBER OF SQUARE FEET A SQUARE OF WEATHERBEST WILL COVER AT VARIOUS EXPOSURES

Length of shingles, inches	Exposure to the weather, inches									
	4½	5	5½	6	6½	7	7½	8½	10	11½
16	90	100	110	121	131	141	151	.....	.....	.....
18	.....	.....	100	110	120	129	138	157	.....	.....
24	.....	.....	.....	.....	.....	.....	76	85	100	115



A Weatherbest Home at Spring Lake, Mich.

ALEX MCCOLL, Architect

On this charming home the architect specified a WEATHERBEST variegated green roof and sidewalls of 24-in Heavy Butt WEATHERBEST in Prime White

Weatherbest Variegated Color Roofs

WEATHERBEST stained shingles in several shades of one color, or different colors, may be used on roofs with decidedly pleasing results. For this purpose, there are standard WEATHERBEST variegated color schemes in browns, greens, reds, grays, etc., worked out to just the correct proportion of colors. No extra labor is required to lay, as the different colored shingles are mixed and then rebundled at our factories so that the carpenter lays them as received. Ask for panels in miniature showing variegated colors.



Roof Detail of Home of Albert Tilt, Jr., Round Hill, Greenwich, Conn.
TREANOR & FATIO, Architects
WEATHERBEST 18-in Perfection Stained Shingles in a special blend of dark brown to red. Shingles laid extremely irregular with doubling of courses at some sections. Specifications on request. H. C. Atwater, Inc., Contractor. Photo—Studio of Harold Haliday Costain, Scarsdale, N. Y.

Weatherbest Blended Color Roofs

Another roof treatment developed by WEATHERBEST is the blended color roof. This consists usually of four to seven shades blending from dark to light of any particular color or even blending from one color to another. WEATHERBEST blend roofs are prepared in our factory and the shingles properly proportioned and packed ready for laying in proper order so that no extra labor is required. So carefully are the various shades blended that the eye cannot detect where the actual changes occur. Where WEATHERBEST blend roofs are desired blue prints should be sent to our Service Department in order that the proper proportions of each color can be worked out and the prints marked for proper laying.

Ask for panels in miniature showing variegated color and blended roofs.

There are many ways WEATHERBEST can be laid on roofs to give unusual effects. Our Architects' Service Department will gladly suggest effects and furnish laying specifications.

24-in. Weatherbest Colonial White Shingles

The large 24-in. heavy butt, WEATHERBEST Colonial white stained shingles are used extensively on sidewalls for the wide course effect. The pure, non-glaring white of WEATHERBEST Colonial white stain combines to make a sidewall that is far more attractive than the monotonous white of a painted clapboard siding. WEATHERBEST Colonial white stained shingles are first treated at our factories with a filler coat of our No. 500 white preserving stain. After they are laid on the sidewalls, the shingles should then receive two light brush coats of WEATHERBEST Colonial white stain to produce the true white-washed effect. Send for literature on Colonial white.

Weatherbest Thatched Straw Effect Roofs

Combining attractiveness with long life, a WEATHERBEST thatched effect stained shingle roof offers the means of a radical but artistic departure from the conventional sharp angle roof.

WEATHERBEST thatched stained shingles are furnished ready for application. They come bent with the grain (lengthwise) to a 20-in. radius for the rounded surface of hips and valleys and for capping the ridges; bent with the grain to a 10-in. radius for the curves or roll at rakes; bent to a 20-inch radius against the grain (crosswise) for the curve at eaves and rounding of ridges, and flat for the flat surfaces of the roofs. Butts are specially sawn so that when laid, irregular, wavy courses will result. Furnished in any color desired.

Full information and standard specifications for constructing a WEATHERBEST thatched effect stained shingle roof is given in our book, "The Construction of WEATHERBEST Thatch Roofs," which is furnished on request.

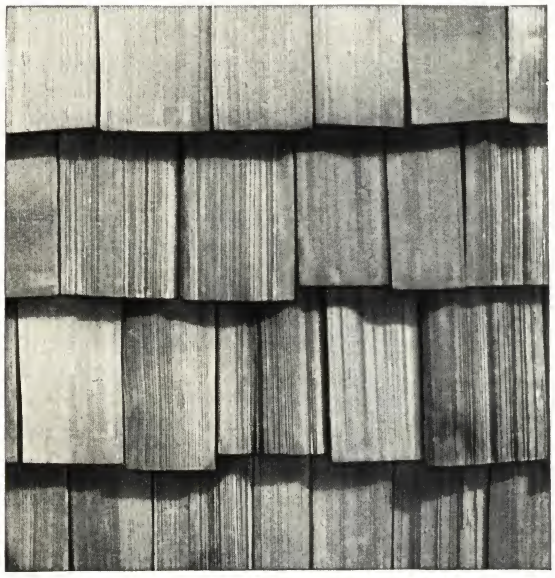
When thatched effect roofs are specified we ask that a set of plans be sent to us in order that we may estimate the quantities required of the different shingles.



William Sparks Residence, Jackson, Mich.
CLAIRE ALLEN & SONS, Architects
For the roof, WEATHERBEST Thatch in Variegated Green; for the walls, 24-in. WEATHERBEST finished in WEATHERBEST Colonial White

Weatherbest Old Colony Hand Rived Shakes

WEATHERBEST Old Colony shakes are split and tapered by hand in much the same manner as those made by our forefathers in the East from pine and white cedar; in the South from cypress, and on the Western Coast from red cedar. The lasting qualities of these old-time hand split shakes are well known.



Weatherbest Old Colony Shakes

Hand splitting of WEATHERBEST Old Colony red cedar shakes results in a very uneven surface and the grain is perfectly straight. It gives them an artistic unevenness that imparts an old-time atmosphere to a roof or sidewall. But at the same time, WEATHERBEST Old Colony shakes conform with specified measurements in order to meet the more rigid requirements of modern-day architecture. They are available in lengths of 18, 25, 31 and 37 in., the latter allowing a maximum exposure of 18 in. on sidewalls and 12 in. on roofs.

WEATHERBEST shakes are stained any color desired. We suggest that sidewalls be in WEATHERBEST weathered gray or a silver gray color, and for roofs, either a WEATHERBEST variegated brown or weathered gray. We will be only too glad to send full size samples of shakes stained any color desired.

To those desiring the quaintness characteristic of early America, we unhesitatingly recommend these genuine WEATHERBEST Old Colony hand rived shakes for roofs and sidewalls.

Following is a brief description of the different sized Old Colony Shakes. Full information and illustrations of their use on various types of homes is contained in a book gladly sent on request.

The 8-in. Length—Random Widths. Thickness at butts is from ⅜ to ½ in. allowing slight variations over or under in a small proportion. One square laid on sidewalls at standard 8½ in. exposure covers 100 sq. ft. At 5 in. standard exposure on roof one square will cover 67 sq. ft.

The 25-in. Length—Random Widths. Thickness at butts is from ⅜ to ⅝ in. allowing slight variations over or under in a small proportion. One square laid on sidewalls at standard 12 in. exposure covers 100 sq. ft. At 8 in. standard exposure on roof one square will cover 66 sq. ft.

The 31-in. Length—Random Widths. Thickness at butts is from ¾ to 1 in. allowing slight variations over or under in a small proportion. One square laid on sidewalls at standard 15 in. exposure covers 100 sq. ft. At 10 in. standard roof exposure one square covers 68 sq. ft.

The 37-in. Length—Random Widths. Thickness at butts is from ¾ to 1¼ in. allowing slight variations over or under in a small proportion. One square laid on sidewalls at standard 18 in. exposure covers 100 sq. ft. At 12 in. standard roof exposure one square covers 66 sq. ft.

Weatherbest 25-in. Resawn Cedar Shakes

These shakes are rough and uneven on the one side and smooth sawn on the other. They are of random widths but not all edge grain as are Weatherbest Old Colony Shakes. The length runs from 24 to 26 in. and thickness at butts is from ⅝ to 1¼ in. with an average of ⅞ in. Laid on sidewalls at standard 10-in. exposure one square covers 100 sq. ft. At 7½-in. standard roof exposure one square covers 76 sq. ft. Samples of these and Old Colony Shakes gladly sent on request.

Standard Specifications for Weatherbest Old Colony Sidewalls and Roofs

For Sidewalls—WEATHERBEST Old Colony Genuine Hand Rived Tapered Red Cedar Shakes stained (insert size and color) laid to (insert inches) weather exposure and applied with zinc coated nails over sheathing and building paper.

For Roofs—WEATHERBEST Old Colony Genuine Hand Rived Tapered Red Cedar Shakes stained (insert color and size or variegation) laid to (insert inches) weather exposure and applied with zinc coated nails over tight sheathing and slaters' felt.

Weatherbest Standard Specifications

To guard against substitution of inferior material, we advise incorporating the following in specifications:

Shingles: To be (insert size and color and inches exposure to the weather) WEATHERBEST, all clear, all edge grain stained shingles, as manufactured by WEATHERBEST STAINED SHINGLE COMPANY, INC., of North Tonawanda, N. Y., and St. Paul, Minn.



Frederick E. Weyerhaeuser Residence, Manitou Island, White Bear Lake, Minn.

EDWIN H. LUNDIE, Architect

Nearly a carload of 25-in. WEATHERBEST Old Colony Shakes used for the sidewalls.

PINE CRAFT
Weather Proof
FRAMES

"THE FRAMES WITH THE WEDGE JOINTS"

CATALOG NO. 7-A • 1931 - 32

WHITE PINE SASH COMPANY
SPOKANE, WASHINGTON

PINE CRAFT WEATHER-PROOF FRAMES

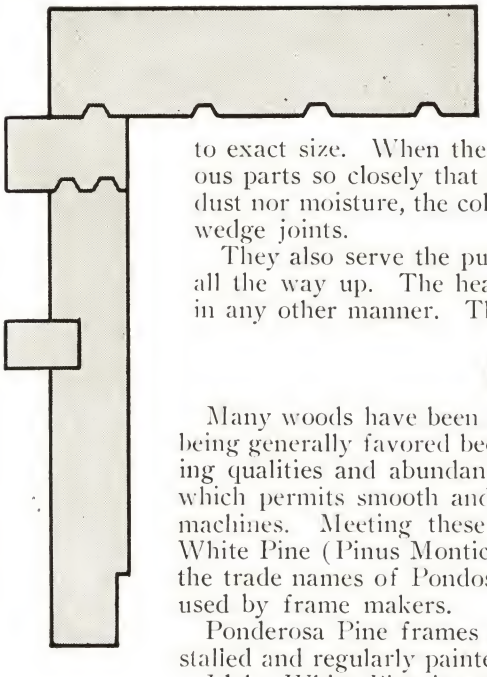
Stock Frames in Varying Details for Use from Coast to Coast

Pine Craft Weather-Proof Frames are a product of the White Pine Sash Company, Spokane, Washington, one of the country's largest producers of pine sash and frames. Much time was spent and many experiments were made in developing the weather-proof features, which are explained below.

The fact that this construction (originated by Pine Craft) has been widely imitated by other manufacturers testifies to the merit of the idea.

The Pine Craft trade mark is registered in the United States Patent Office. This trade mark is represented by a distinctive label, a copy of which appears on the back cover of this catalogue. One of these labels is affixed to each frame bundle.

Pine Craft Weather-Proof Frames are made in a variety of styles and sizes for all manner of construction and to suit the peculiar needs of the territory where used. In addition to the stock patterns shown herein and which are generally used for the sake of service and economy, we are equipped to manufacture frames to architects' details, where special treatment of the window openings is desired.



Wedge Joint Construction

The adjoining half size cut shows a cross section of a Pine Craft Weather-Proof Frame. The various members are united by wedge-shaped tongues and grooves, milled to exact size. When the frame is nailed up, these tongues and grooves unite the various parts so closely that they present to the elements a front of solid wood. Neither dust nor moisture, the cold blasts of winter, nor the hot winds of summer can pass the wedge joints.

They also serve the purpose of lining up the casings. The side casings are parallel, all the way up. The head casing is parallel with the sill. They cannot be assembled in any other manner. The result is that storm sash and screens fit perfectly.

Materials Used

Many woods have been used for the building of frames, the soft pines being generally favored because of their weather resisting and paint holding qualities and abundant supply. They are also extremely workable, which permits smooth and accurate machining to pattern on high speed machines. Meeting these requirements to a surpassing degree, Idaho White Pine (Pinus Monticola) and Ponderosa Pine, formerly sold under the trade names of Pondosa Pine and California White Pine, are widely used by frame makers.

Ponderosa Pine frames are moderately priced, and when properly installed and regularly painted, will give a lifetime of faithful service.

Idaho White Pine is one of the few genuine white pines available in commercial quantities. Frames made of this wood are slightly higher in price than Ponderosa Pine frames, but will withstand neglect to a remarkable degree and with reasonable care will outlast the useful life of any building in which they may be installed.

Pine Craft employs both species in the manufacture of frames, and furnishes frames of 100% Idaho White Pine, 100% Ponderosa Pine, or any combination of the two species, local preference being the determining factor.

Oak door sills are made from carefully selected oak sill stock, thoroughly air dried. The sawn ends are primed with linseed oil to prevent checking.

WHITE PINE SASH COMPANY

SPOKANE, WASHINGTON

CONSTRUCTION DETAILS

Sash opening sizes vary in different parts of the country (see "Window Opening Sizes" below). Pine Craft frames are made the proper opening size for the locality where sold. The standard width of sash run is $1\frac{13}{32}$ in. for $1\frac{3}{8}$-in. sash and $1\frac{25}{32}$ in. for $1\frac{3}{4}$-in. sash. Window frame sills are pitched $2\frac{1}{4}$ in. to 1 ft., providing perfect drainage and yet not so steep that stock sizes of storm sash and screens cannot be used. Door sills are pitched $1\frac{1}{4}$ in. to 1 ft.

Most frames are shown with $4\frac{1}{2}$-in. casings, but any Pine Craft dealer can furnish these in narrower widths if desired.

PULLEYS

Pine Craft frames are fitted with Dillon Jam-Proof Pulleys or Grand Rapids Pulley No. 18, both with everlasting bronze bearings, and both can be furnished in either lacquer or galvanized finish.

Pulleys with special face plates can be furnished where required.

For Dillon Jam-Proof Pulleys as made by Stanley Works, see Manufacturers' Index.

GRADES

Pine Craft frames are furnished in two grades. "Clear" grade frames have all exposed faces clear. "No. 1" grade frames may have pulley stiles and sills containing sound knots, not over $1\frac{1}{2}$ in. in diameter. Other parts are practically the same as furnished in Clear grade frames. Clear grade frames may be identified by black and gold labels, No. 1 grade frames by blue and white labels.

LOCALITY USES

Custom and usage have decreed that certain types of frames shall be used in certain territories. Pine Craft recognize this fact and Pine Craft dealers carry the proper types of frames for the territory they serve. These territories are quite well defined and for convenience are set forth below, together with frame patterns most commonly used.

	Cellar frames	Frame house		Brick veneer		Brick wall	
		Window frames	Door frames	Window frames	Door frames	Window frames	Door frames
New York City area and northern New Jersey...	776	702-703 711	750-751 756	726	762	730 736	765
Boston area.....	772	719	752-A				
Western Masachusetts and northern Connecticut...	772	709	752	726	762	730 736	765
Central and western New York	771	701-711	750-756	725	761	730 736	765
Philadelphia and southern New Jersey.....	778	715	757			737 738	768 769
Pittsburgh and western Pennsylvania	780	717-718	759	729	764	734	767
Ohio-Indiana	770	711-713	750	726	762	732 736	765
Michigan	777	707	754-755	728	763-763-A		765
Chicago and west.....	771 772	709-711	750-752	726	762	732 736	765
St. Louis and southwest..	771 772	700-701 720	750-752	726	762	732	765
See pages.....	12	4-6	7-8	9	9	10	11

Casement frames are not shown in the above schedule, as their use is relatively small. They are, however, shown in this catalogue under the numbers 740-743-745-746. Casement Frame No. 740 is in general use in all territories. Nos. 743-745 and 746 are used in the Philadelphia territory. See page 6.

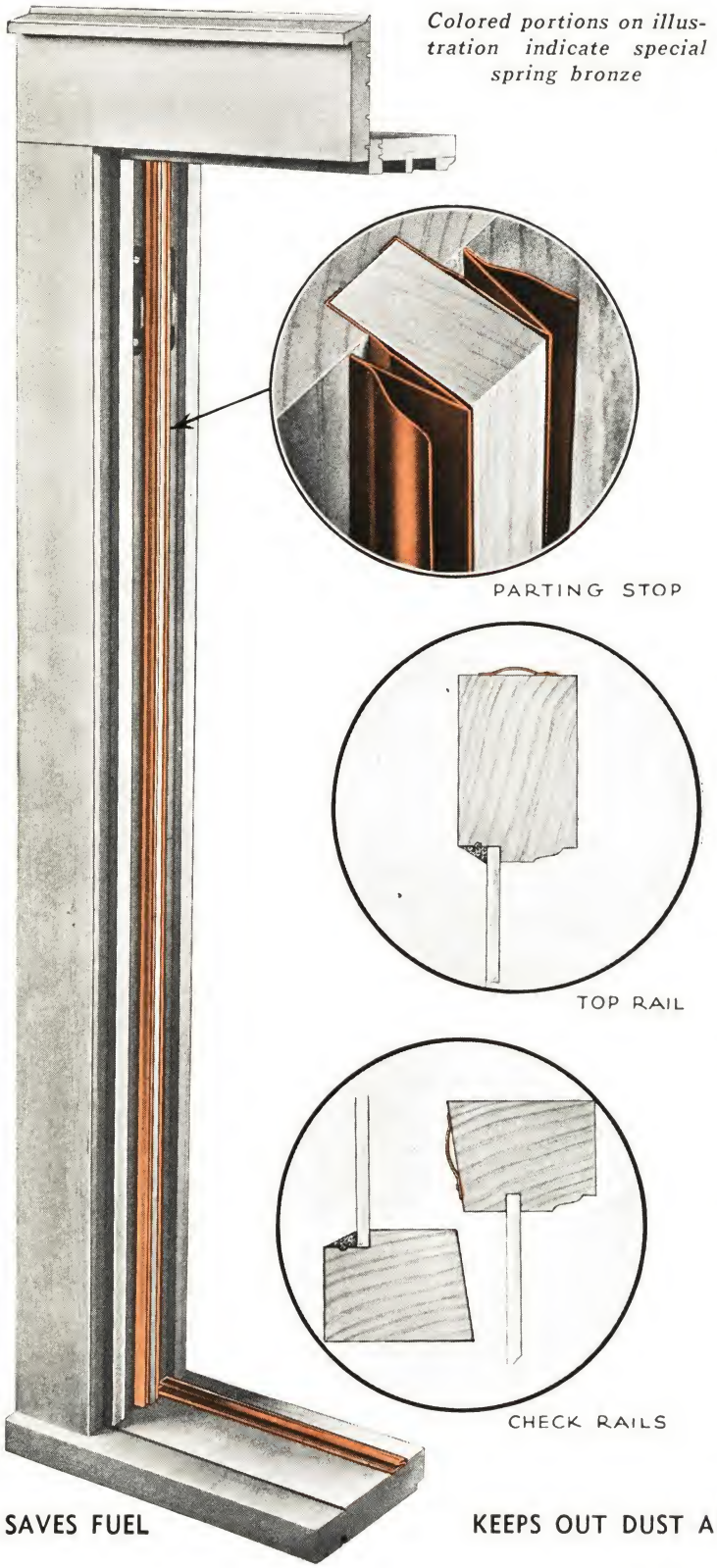
There is more or less over-lapping of the territories shown, and this schedule should be used only as a general guide. Other territories are not quite so well defined, but some patterns of frames shown herein are considered proper for use in all important building centers.

WINDOW OPENING SIZES

		Add to glass size Width	Height
Boston area	Boston openings	3⅝-in.	5-in.
New York and northern New Jersey	New York openings	4 -in.	6-in.
Eastern Pennsylvania and southern New Jersey	Philadelphia openings	4⅝-in.	6¼ or 6⅜-in.
Western Pennsylvania and Ohio	Ohio openings	4½-in.	6 or 6⅛-in.
Michigan, Illinois and West, 2-Lt. windows	Western openings	4 -in.	6-in.
Indianapolis market openings		5 -in.	6½-in.
Baltimore and Washington, D. C., market openings		4½-in.	6¼-in.

PINE CRAFT WEATHER-PROOF FRAMES COMPLETELY WEATHERSTRIPPED

For Frame, Brick Veneer or Masonry Construction



Colored portions on illustration indicate special spring bronze

Weather-Proof and Weatherstripped — To the weather-proof features of the Pine Craft Frame has been added the necessary complement — a weatherstripped opening. Pine Craft Frames are made weather-proof by Wedge Joint Construction and now the sash openings are sealed by the use of special spring bronze weatherstrips. The side weatherstrip attaches to the parting stops, the "S" shaped fold making double contact with the sash (see illustration at left). A strip of similar design is attached to the sill, the bottom rail of the sash resting thereon. Between the check or meeting rails is used a single curved strip, which does not interfere with locking the window. The same style is also attached to the top of the top rail, completing the assembly and assuring practically an *air tight window*. These weatherstrips also end the annoyance of rattling windows.

Where Used — Residences, apartments, office buildings, hospitals and all heated buildings having double hung windows.

Advantages—Pine Craft Weatherstrip seals *all* the crack around the window; top, bottom and center as well as at the sides. In the average residence the length of crack around double hung windows is approximately seventeen feet, of which about 60% is at the sides and about 40% at the top, bottom and center. Obviously, if only the sides of the sash are weatherstripped almost half of the total crack is left open to the elements. Pine Craft Weatherstrip seals *all* the crack more efficiently.

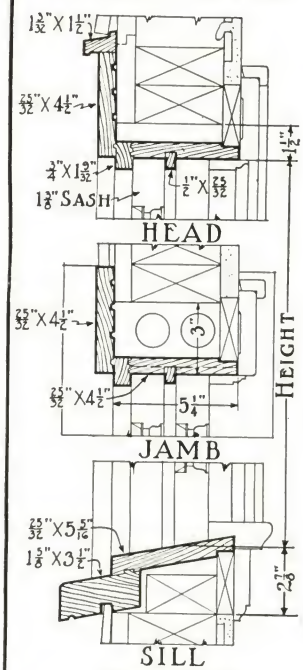
The side weatherstrip extends a full half inch from the face of the pulley stile and because of the "S" shaped fold, forms double contact with the sash instead of only single contact as with most metal weatherstrips. The flexibility of this strip compensates for any swelling, shrinkage or warping of the sash and allows them to run smoothly.

How Furnished—Pine Craft Weatherstripped Frames are furnished with the side strips attached to the parting stops and the horizontal strips included in the frame bundle. If Pine Craft Fitted Sash are ordered with the frames they are furnished already fitted for the frame, with bottom rail bevelled and the top rail, check rail and bottom rail weatherstrips attached. The bottom rail weatherstrip may be attached to the sill as shown in the illustration if desired, but the preferred method is to attach this strip to the bottom rail.

SAVES FUEL **KEEPS OUT DUST AND DIRT** **PREVENTS DRAUGHTS**

PINE CRAFT WEATHER-PROOF FRAMES
WOOD FRAME CONSTRUCTION

FRAME NO. 700.



SCALE: 1½"=1'-0"

WINDOW FRAMES

Frame No. 700 is in general use throughout the southwest. No. 701 is used largely in middle New York State and in the midwest. No. 702 and No. 703 are favorites in the New York metropolitan district and in northern New Jersey. Frame No. 707 is used mostly in Michigan, while No. 709 is preferred in western Massachusetts, northern Connecticut and the central northwest. Mullion centers are shown on page 8. All of these frames can be furnished equipped with the Pine Craft Weatherstrip shown on the opposite page.

Stock Sizes

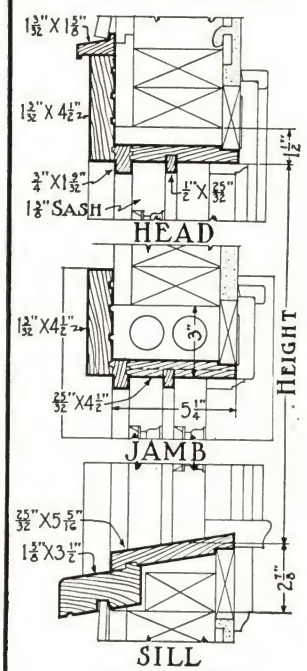
Widths—Every 2 in. from 12-in. to 48-in. glass size inclusive, and in addition 21-in. and 27-in.

Heights—Every 2 in. from 12-in. to 48-in. glass size inclusive, and in addition 15-in., 19-in., 21-in., 27-in. and 31-in.

To determine window opening size add for wood allowance as indicated on page 2.

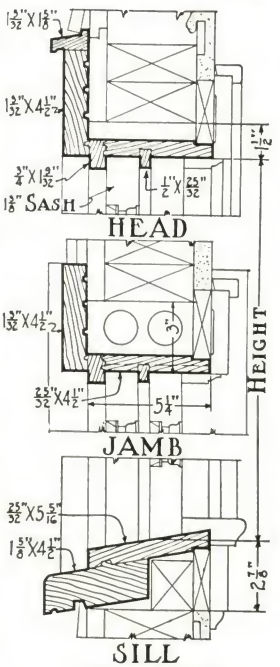
Patent No. 1,790,428

FRAME NO. 701.



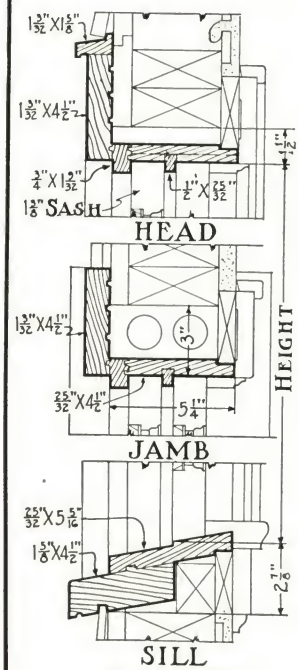
SCALE: 1½"= 1'-0"

FRAME NO. 702.



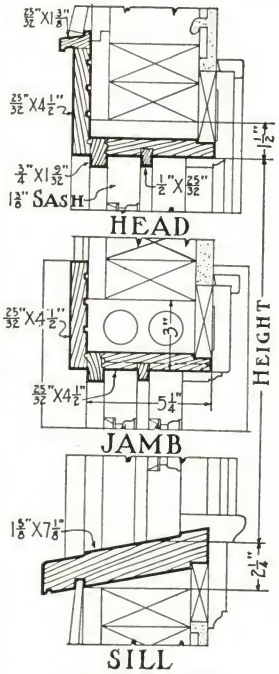
SCALE: 1½"=1'-0"

FRAME NO. 703.



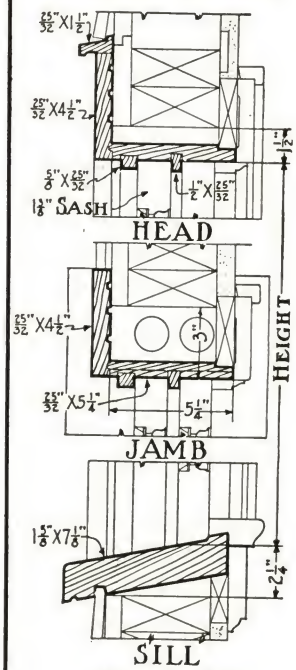
SCALE: 1½"=1'-0"

FRAME NO. 707.



SCALE: 1½"=1'-0"

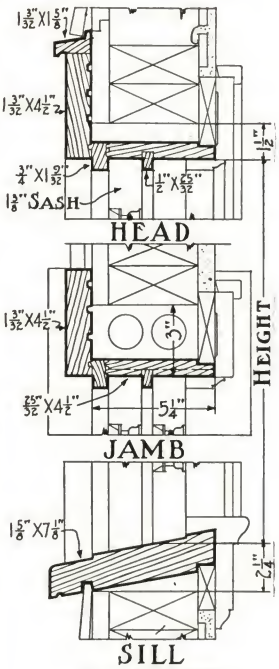
FRAME NO. 709.



SCALE: 1½"=1'-0"

WOOD FRAME CONSTRUCTION
(Continued)

FRAME NO. 711.



SCALE: 1½"=1'-0"

WINDOW FRAMES

Frame No. 711 is used in a broad area extending from western New York State to and including the central northwest. No. 713 is used almost altogther in Ohio. No. 715 is for Philadelphia and adjacent territory and No. 717 and No. 718 are favored in Pittsburgh and western Pennsylvania. Frame No. 719 is the style adopted by New England. Mullion centers are shown on page 8. All of these frames can be furnished equipped with the Pine Craft Weatherstrip shown on page 3.

Stock Sizes

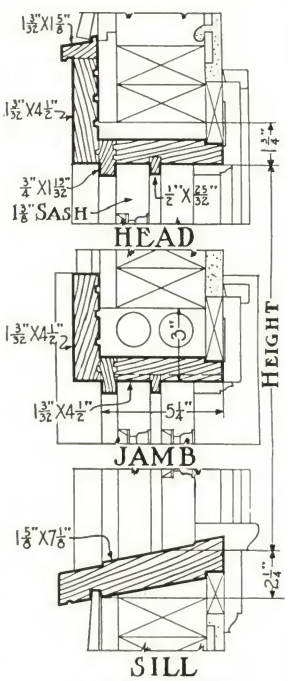
Widths—Every 2 in. from 12-in. to 48-in. glass size inclusive, and in addition 21-in. and 27-in.

Heights—Every 2 in. from 12-in. to 48-in. glass size inclusive, and in addition 15-in., 19-in., 21-in., 27-in. and 31-in.

To determine window opening size add for wood allowance as indicated on page 2.

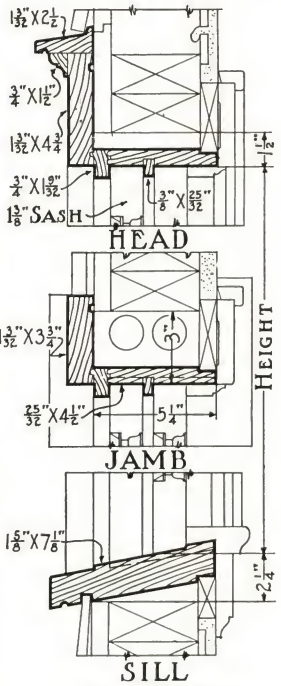
Patent No. 1,790,428

FRAME NO. 713.



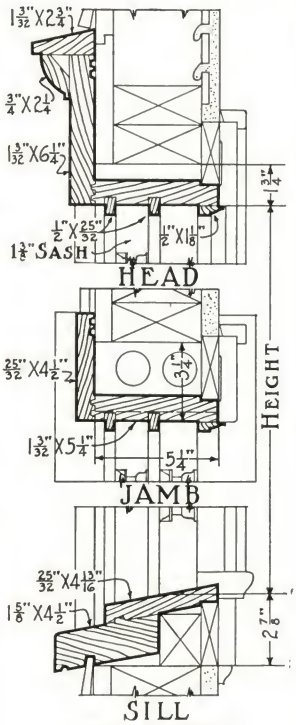
SCALE: 1½"=1'-0"

FRAME NO. 715.



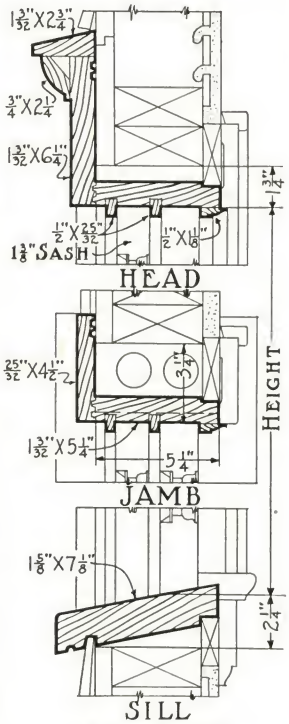
SCALE: 1½"=1'-0"

FRAME NO. 717.



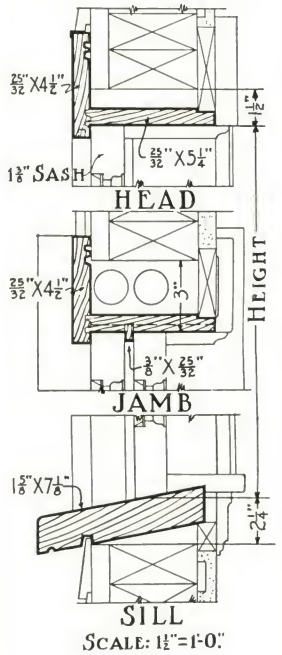
SCALE: 1½"=1'-0"

FRAME NO. 718.



SCALE: 1½"=1'-0"

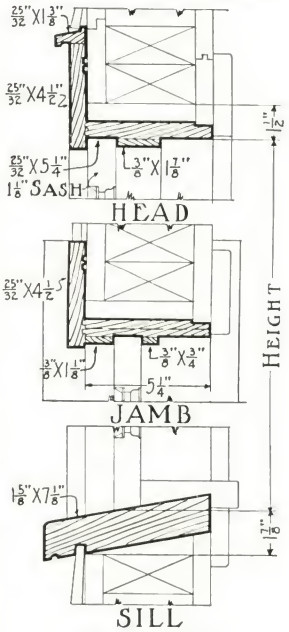
FRAME NO. 719.



SCALE: 1½"=1'-0"

WOOD FRAME CONSTRUCTION
(Continued)

FRAME NO. 720-A
FOR PLAIN RAIL WINDOWS.



SCALE: 1½"=1'-0"

WINDOW FRAMES

Frames No. 720-A and No. 720-B are for Plain Rail windows. They are mostly used in the south, and to some extent in other parts of the country. Frame No. 720-B is for light construction, where the siding is applied directly to the studs.

Stock Sizes

Same as on opposite page.

Patent No. 1,790,428

CASEMENT FRAMES

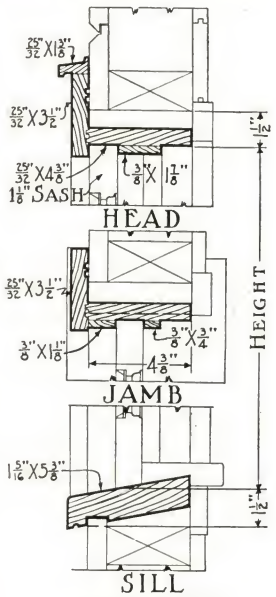
Frames No. 740 and No. 743 shown below are for frame construction. No. 740 is in general use in all parts of the country, while No. 743, No. 745 and No. 746 are used in and around Philadelphia. No. 745 and No. 746 are for masonry construction.

Stock Sizes

Widths—Every 2 in. from 1 ft. 4 in. to 4 ft. 4 in.

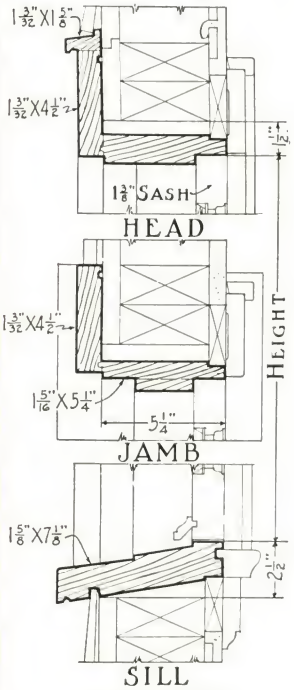
Heights—Every 2 in. from 1 ft. 9 in. to 4 ft. 5 in. and in addition 4 ft. 9 in., 5 ft. 1 in., 5 ft. 5 in. and 5 ft. 9 in.

FRAME NO. 720-B.
FOR PLAIN RAIL WINDOWS.



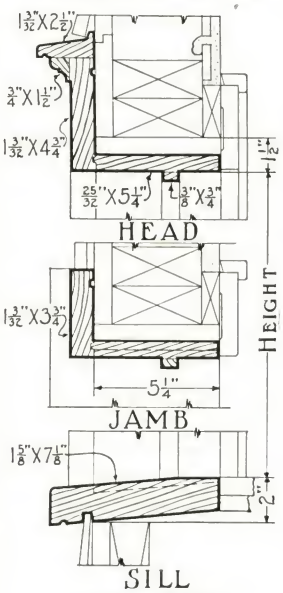
SCALE: 1½"=1'-0"

FRAME NO. 740.



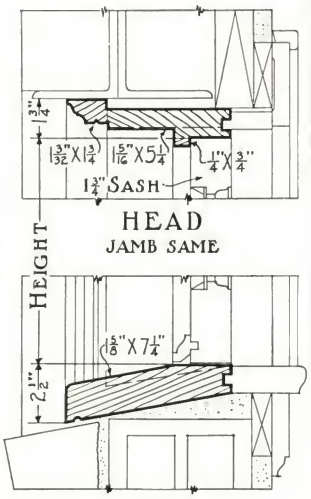
SCALE: 1½"=1'-0"

FRAME NO. 743.



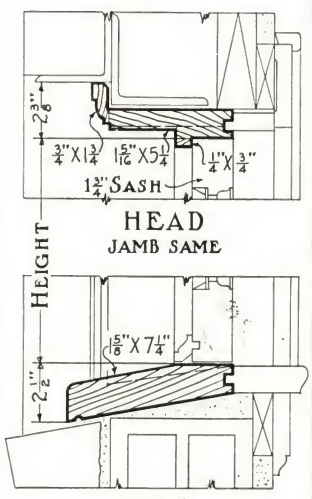
SCALE: 1½"=1'-0"

FRAME NO. 745.



SCALE: 1½"=1'-0"

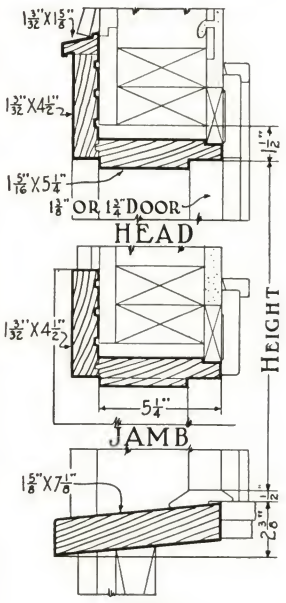
FRAME NO. 746.



SCALE: 1½"=1'-0"

WOOD FRAME CONSTRUCTION
(Continued)

FRAME NO. 750.



SCALE: 1½"=1-0"

DOOR FRAMES

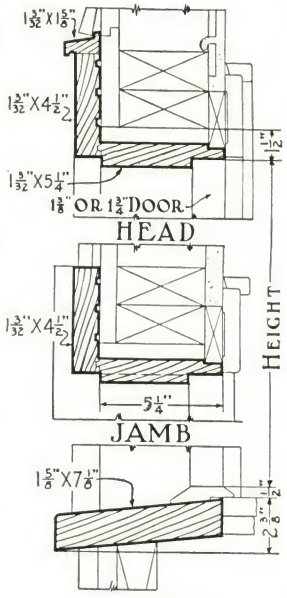
Door Frame No. 750 is in general use throughout the country. No. 751 is largely used in the New York metropolitan district. No. 752 is used with window frame No. 709, while No. 752-A is for New England. This frame has a tongue and groove joining the side to the head casing. No. 754 and No. 755 are the choice of Michigan builders. No. 756 is used chiefly in the New York metropolitan district and surrounding territory.

Stock Sizes

Widths—2 ft. 6 in., 2 ft. 8 in., 2 ft. 10 in. and 3 ft. 0 in.

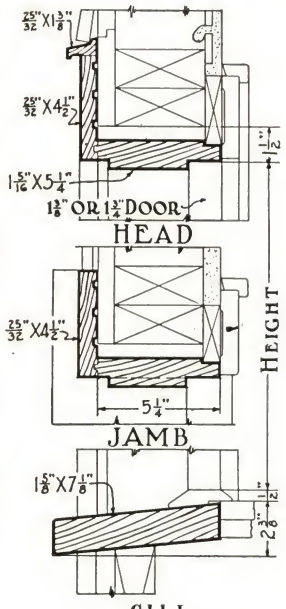
Heights—6 ft. 6 in., 6 ft. 8 in., 6 ft. 10 in. and 7 ft. 0 in.

FRAME NO. 751.



SCALE: 1½"=1-0"

FRAME NO. 752.

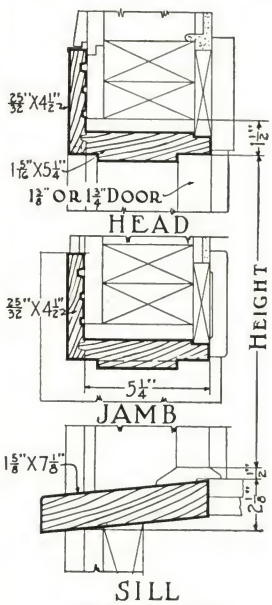


SCALE: 1½"=1-0"

FRAME NO. 753.

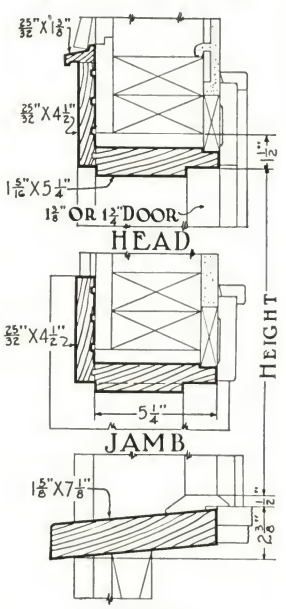
SAME AS NO. 752 EXCEPT JAMBS ARE 1⅝" THICK.

FRAME NO 752-A.



SCALE: 1½"=1-0"

FRAME NO. 754.

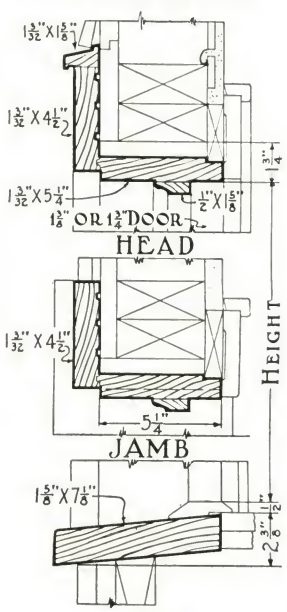


SCALE: 1½"=1-0"

FRAME NO. 755.

SAME AS NO. 754 EXCEPT JAMBS ARE 1⅝" THICK.

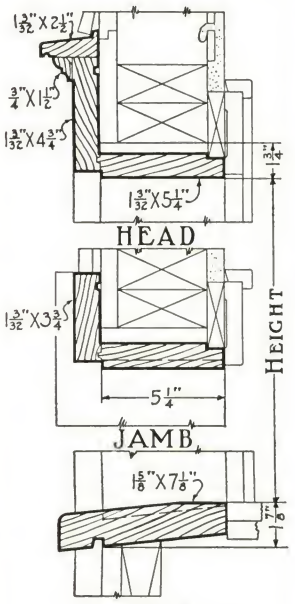
FRAME NO. 756.



SCALE: 1½"=1-0"

WOOD FRAME CONSTRUCTION
(Continued)

FRAME NO. 757.



SCALE: 1½"=1-0."

DOOR FRAMES

Door Frame No. 757 is used in the Philadelphia market. No. 759 is the distinctive Pittsburgh style.

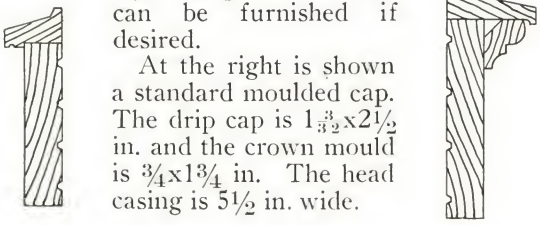
Stock Sizes

Widths—2 ft. 6 in., 2 ft. 8 in., 2 ft. 10 in. and 3 ft. 0 in.

Heights—6 ft. 6 in., 6 ft. 8 in., 6 ft. 10 in. and 7 ft. 0 in.

ALTERNATE CAPS

The illustration at the left shows a rabbeted style drip cap, which can be furnished if desired.



At the right is shown a standard moulded cap. The drip cap is $1\frac{3}{32}$x2½ in. and the crown mould is ¾x1¾ in. The head casing is 5½ in. wide.

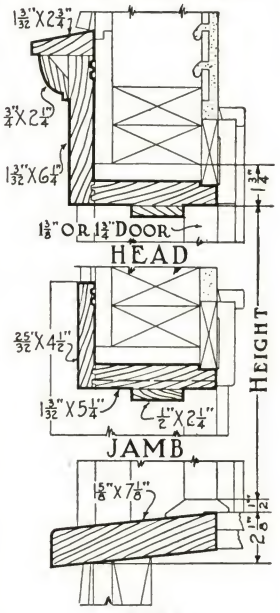
MULLION CENTERS

(A) For Frame Nos. 700, 707, 728
(B) For Frame Nos. 701, 702, 703, 711, 715
(C) For Frame No. 709
(D) For Frame No. 713
(E) For Frame Nos. 717, 718
(F) For Frame No. 719
(G) For Frame Nos. 726, 727
(H) For Frame No. 729
(I) For Frame No. 730
(J) For Frame No. 732
(K) For Frame No. 734
(L) For Frame No. 736
(M) For Frame No. 737
(N) For Frame No. 738

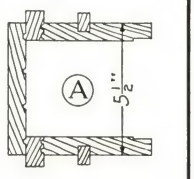
Note: The distance between sash at the mullion is generally 5½ in. However, the New York metropolitan district prefers mullions 5⅝ in. between sash, while around Boston this distance may be either 6 in. or 8 in. For frames having $1\frac{3}{32}$-in. pulley stiles the distance between sash should not be less than 6 in.

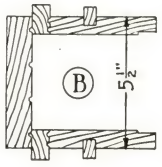
Patent No. 1,790,428

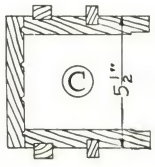
FRAME NO. 759.

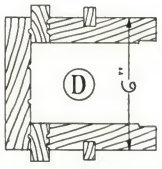


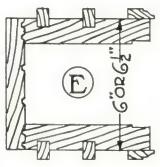
SCALE: 1½"=1-0."

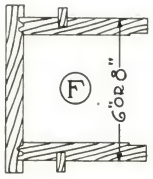


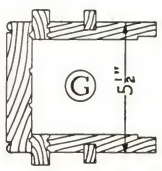




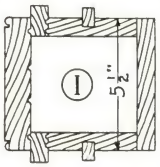


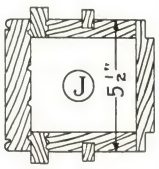


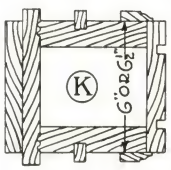


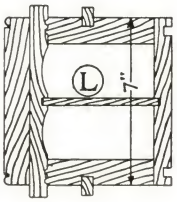


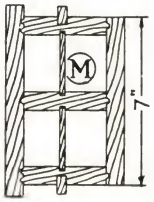


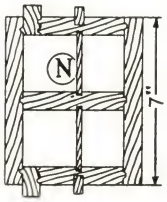






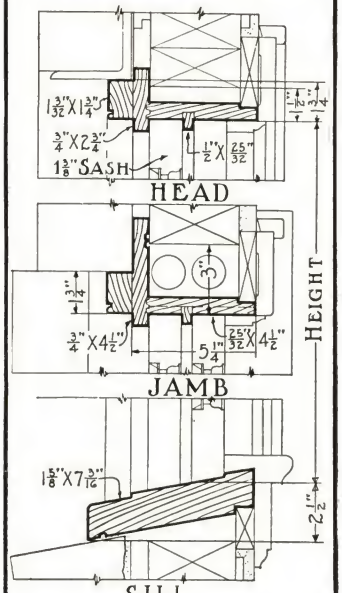






BRICK VENEER CONSTRUCTION

FRAME NO. 725



SCALE: 1½"=1'-0"

FRAME NO. 726.
SAME AS NO. 725 EXCEPT JAMBS ARE 6" OVER ALL.

WINDOW FRAMES

Brick Veneer Window Frames No. 725 and No. 726 are in general use. No. 725 is sometimes used in New York State with subsill construction. No. 728 is the frame used in Michigan, while No. 729 is the Pittsburgh style. Mullion centers are shown on page 8. These frames may be furnished equipped with the Pine Craft Weatherstrip shown on page 3. Stock sizes are same as shown for box frames on page opposite.

Patent No. 1,790,428

DOOR FRAMES

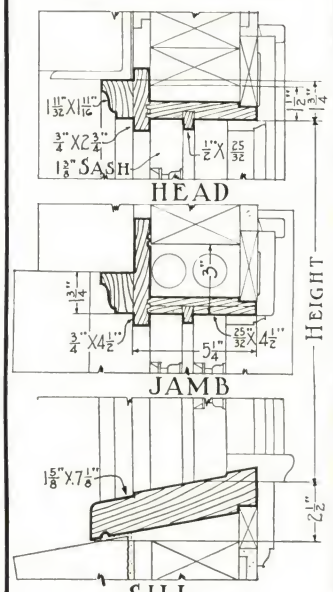
Brick Veneer Door Frames No. 761 and No. 762 are used with Window Frames No. 725 and No. 726 respectively. No. 763 and No. 763-A are Michigan patterns. No. 764 is used in the Pittsburgh market.

Stock Sizes

Widths—2 ft. 6 in., 2 ft. 8 in., 2 ft. 10 in. and 3 ft. 0 in.

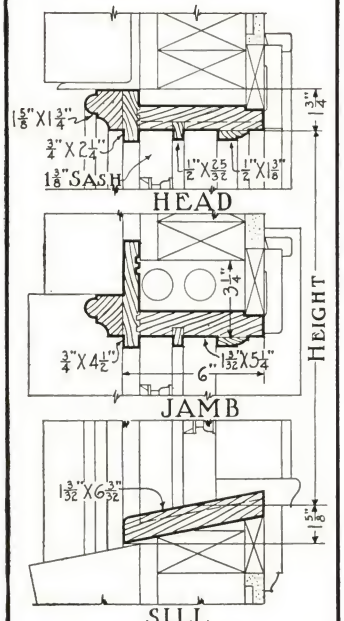
Heights—6 ft. 6 in., 6 ft. 8 in., 6 ft. 10 in. and 7 ft. 0 in.

FRAME NO. 728.



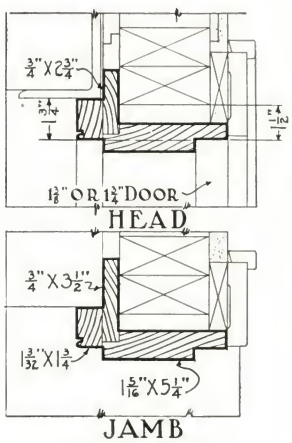
SCALE: 1½"=1'-0"

FRAME NO. 729.



SCALE: 1½"=1'-0"

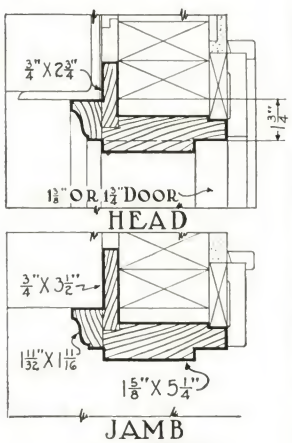
FRAME NO. 761.



SCALE: 1½"=1'-0"

FRAME NO. 762.
SAME AS NO. 761 EXCEPT JAMBS ARE 6 1/16" WIDE.

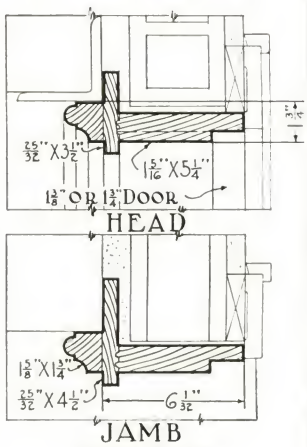
FRAME NO. 763.



SCALE: 1½"=1'-0"

FRAME NO. 763-A.
SAME AS NO. 763 EXCEPT JAMBS ARE 1 5/16" THICK.

FRAME NO. 764.



SCALE: 1½"=1'-0"

MASONRY CONSTRUCTION

WINDOW FRAMES

Frame No. 730 is the overwhelming choice of builders in the New York metropolitan district and in northern New Jersey, and to a smaller extent in other parts of the country. No. 732 is used principally in the south and southwest. No. 734 is the brick frame used in Pittsburgh. No. 736 is for 1¾-in. windows and is in general use for large buildings. No. 737 and No. 738 are Philadelphia types. Mullion Centers are shown on page 8. These frames may be furnished equipped with the Pine Craft Weatherstrip shown on page 3.

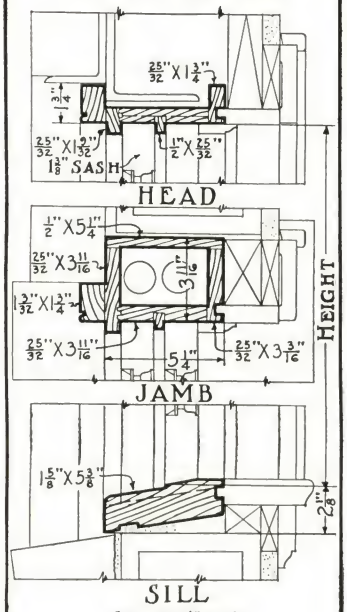
Stock Sizes

Widths—Every 2 in. from 12-in. to 48-in. glass size inclusive, and in addition 21-in. and 27-in.

Heights—Every 2 in. from 12-in. to 48-in. glass size inclusive, and in addition 15-in., 19-in., 21-in., 27-in. and 31-in.

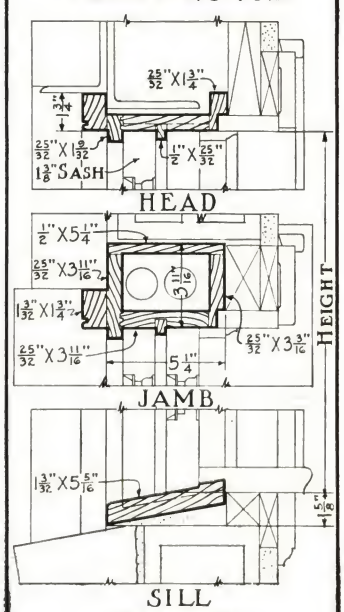
Patent No. 1,790,428

FRAME NO. 730.



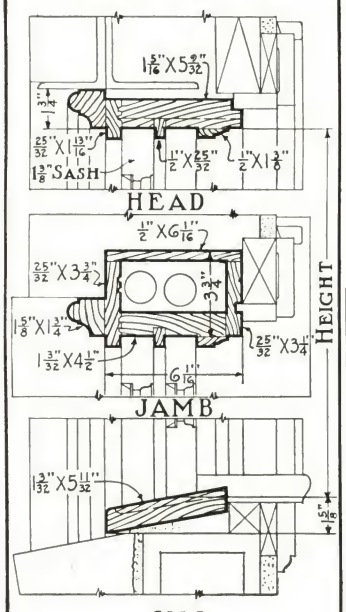
SCALE: 1½"=1'-0"

FRAME NO. 732.



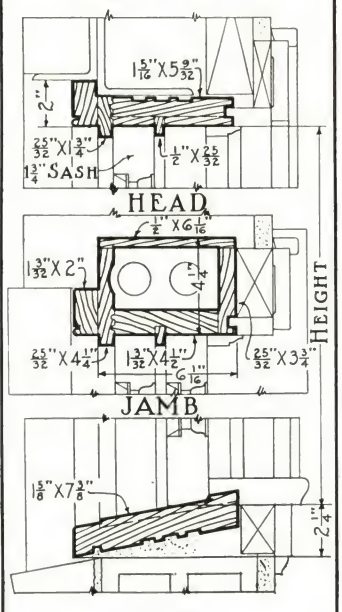
SCALE: 1½"=1'-0"

FRAME NO. 734.



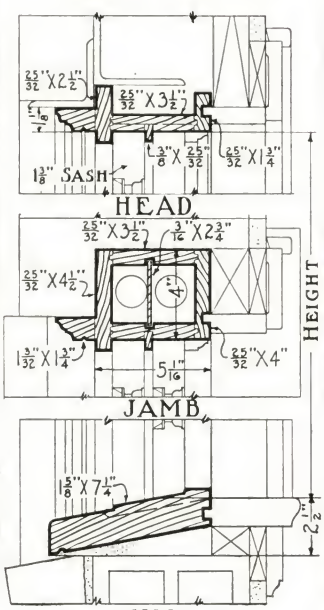
SCALE 1½"=1'-0"

FRAME NO. 736.



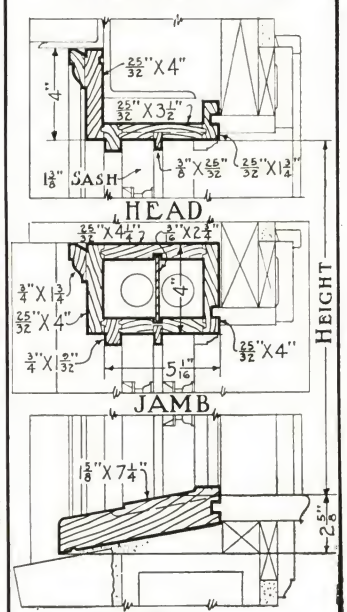
SCALE: 1½"=1'-0"

FRAME NO. 737.



SCALE: 1½"=1'-0"

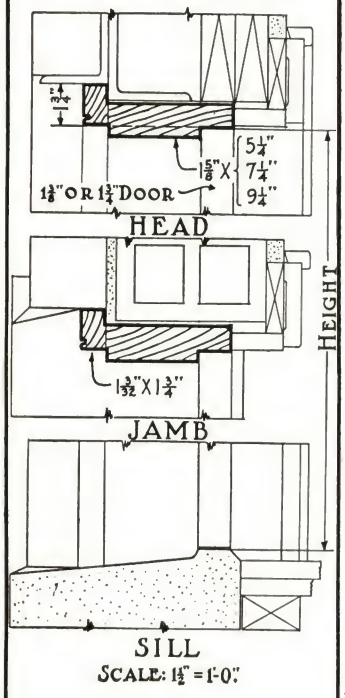
FRAME NO. 738.



SCALE: 1½"=1'-0"

MASONRY CONSTRUCTION
(Continued)

FRAME NO. 765.



SCALE: 1½" = 1'-0"

DOOR FRAMES

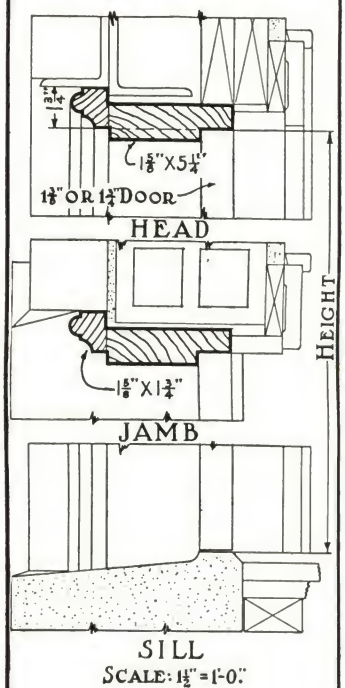
Door Frame No. 765 is almost universally used for masonry construction. It is furnished in several widths of jamb. Frame No. 767 is the frame preferred in Pittsburgh. No. 768 and 769 are Philadelphia patterns.

Stock Sizes

Widths—2 ft. 6 in., 2 ft. 8 in., 2 ft. 10 in. and 3 ft. 0 in.

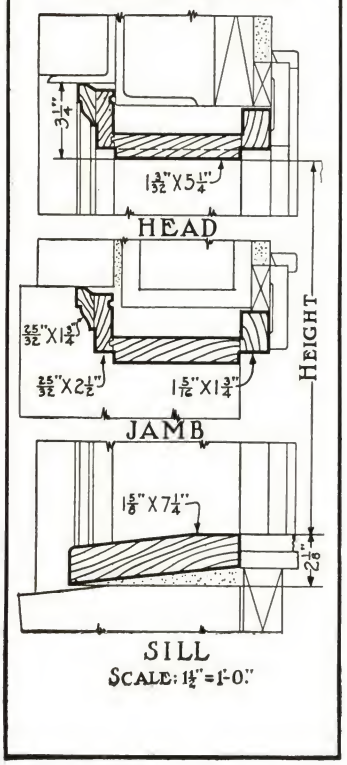
Heights—6 ft. 6 in., 6 ft. 8 in., 6 ft. 10 in. and 7 ft. 0 in.

FRAME NO. 767.



SCALE: 1½" = 1'-0"

FRAME NO. 768.



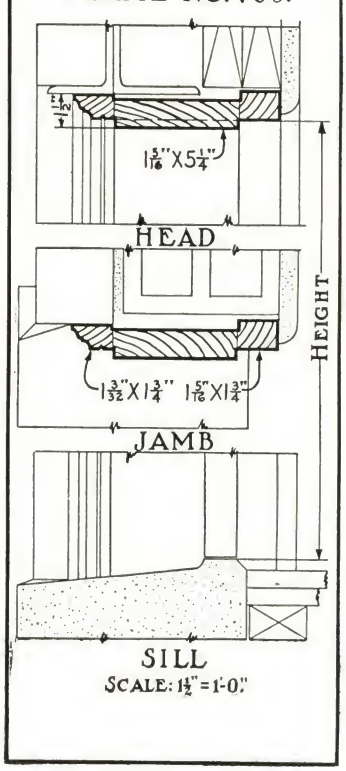
SCALE: 1½" = 1'-0"

INSIDE DOOR JAMBS



Above are shown two common types of Inside Door Jambs. The one on the left has a planted stop. These jambs are generally furnished 5¼ in. wide, although in some sections jambs up to 5⅝ in. wide are used.

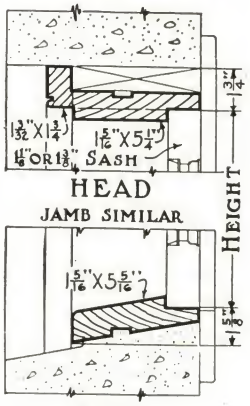
FRAME NO. 769.



SCALE: 1½" = 1'-0"

CELLAR FRAMES

FRAME NO. 770.



SCALE: 1½"=1'-0"

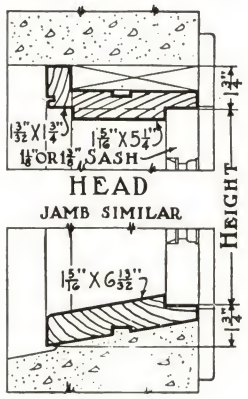
Of the Cellar Frames shown on this page, No. 770, No. 771, No. 772 and No. 773 are in general use. No. 776 is used in the New York metropolitan district and northern New Jersey. No. 777 is the choice of Michigan builders. No. 778 is used in Philadelphia and No. 780 in the Pittsburgh market.

Stock Sizes

Widths—1 ft. 8 in. and every 2 in. to 3 ft. 10 in., inclusive.

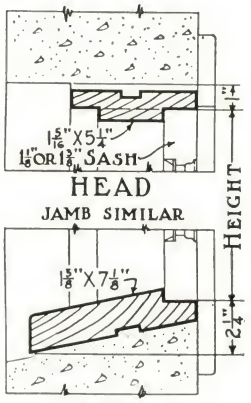
Heights—Every inch from 1 ft. 3 in. to 3 ft. 5 in., inclusive.

FRAME NO. 771.



SCALE: 1½"=1'-0"

FRAME NO. 772.



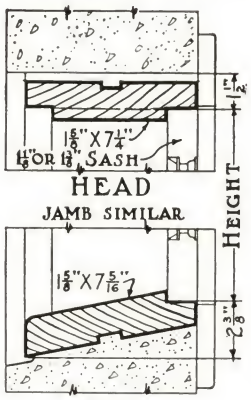
SCALE: 1½"=1'-0"

Stock Sizes (General)

Common stock sizes have been shown on the preceding pages, and are generally specified for the sake of service and economy. Pine Craft dealers, however, can furnish intermediate or odd sizes if required.

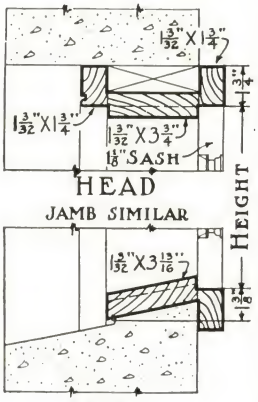
Dealers should be consulted before detailing or specifying, as they seldom carry all the sizes shown, many of which are infrequently used.

FRAME NO. 773.



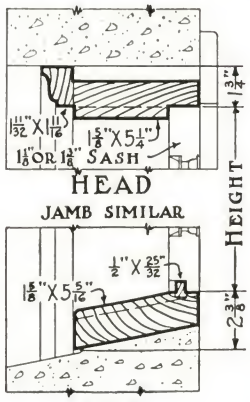
SCALE: 1½"=1'-0"

FRAME NO. 776.



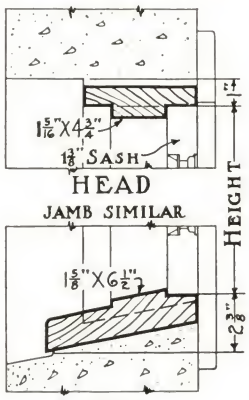
SCALE 1½"=1'-0"

FRAME NO. 777.



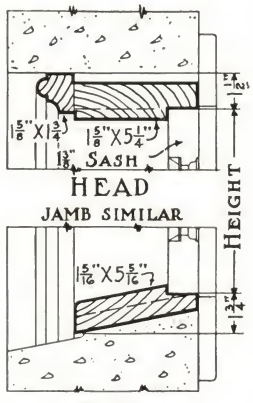
SCALE: 1½"=1'-0"

FRAME NO. 778



SCALE: 1½"=1'-0"

FRAME NO. 780.



SCALE: 1½"=1'-0"

WEATHER-PROOF FRAMES



THIS LABEL PROTECTS YOUR SPECIFICATION

- BLACK & GOLD ON CLEAR GRADE
- BLUE & WHITE ON NO.1 GRADE

Plants

SPOKANE, WASHINGTON
MISSOULA, MONTANA

Distributing Warehouses

NEW YORK CHICAGO

ANDERSEN FRAME CORPORATION

BAYPORT, MINNESOTA

Products

ANDERSEN FRAMES made of Wood for all types of Windows and Doors in any kind of construction or style of architecture.

ANDERSEN WEATHERSTRIPS for all Andersen Frames.

For Andersen Noiseless Sash Pulleys, see Andersen Foundry Co. in Manufacturers' Index.

Materials Used in Andersen Frames

When so specified, clear Genuine White Pine with a minimum of sapwood is used for all parts. This wood has been known to stand exposed to the weather for centuries without protection. Such durability, combined with even texture and the ease with which this wood takes and holds paint, makes Genuine White Pine a perfect wood for window and door frames.

Andersen Frames are also made of Pondosa Pine, with all important joints primed with aluminum paint. The same construction features and extra protection of aluminum paint make it possible to guarantee the same permanent satisfaction with either frame. Specifications for Andersen Frames should specify either Genuine White Pine or Pondosa Pine.

Andersen Noiseless, Wearproof Sash Pulleys are furnished installed in all frames for double hung windows. For detailed description of this patented pulley, see Andersen Foundry Co. in Manufacturers' Index.

Andersen Manufacture

These frames are completely manufactured in the world's largest and most modern frame plant. More than 27 years of experience in specializing in frame manufacture and standard methods of production result in a product that is far superior to frames made to special details in the small local shop. Quantity production of standard designs also means that these better frames can be furnished at considerably lower prices than special frames. Smooth milling and absolute accuracy in cross milling on high speed machines are standard requirements for Andersen Frames. This accuracy and the reinforced construction permit a great saving of labor time in fitting windows and inside trim to the frames. It is not necessary to do an individual job of measuring and cutting on each window or sash, nor is it necessary to cut each set of trim to fit one special frame. The windows and trim can be fitted to standard dimensions and any window or set of trim will fit any frame of the same size.

Construction of Andersen Frames

There is an Andersen Frame for every opening in any wall. There are frames for basement sash, double hung windows, casement sash, stationary sash and doors. Each of these types can be had in a special design for your particular construction whatever it may be.

Incorporated in these various frame designs are many exclusive construction features which make leakproof joints and provide a tight joining between the frame and the wall. The most outstanding feature is the locked sill-joint on all double hung window frames for frame wall construction and all casement sash frames. This new joint permanently locks the sill and jambs together and prevents leakage of water. It is a combination of sill dadoed and jamb dadoed construction with none of the disadvantages of either. It eliminates the necessity of blocking under the sill as the jamb lugs automatically support the sill. The locked sill-joint cannot be racked or opened up. (Pat. R.E. 17,552.) Other important features in this frame line are the 3 in. to the foot sill slope on all frames. Architects have long specified this as the standard, realizing that it makes a much better job than the sill with less slope. For complete drainage, so that no dirt nor water can lodge to start decay, the blind stops are chamfered at their lower ends. All frames for masonry construction have multiple mortar clinch grooves. Tests conducted by the University of Wisconsin showed that this reduces air infiltration 42% between the frame and the masonry.

Andersen Frame wall frames have provision for wide blind stops. These can be easily applied in the dealer's shop or on the job. By installing the frames in this way 54 per cent of the air leakage around the frame is stopped according to other tests by the Wisconsin laboratories.

Space does not permit showing our full size details in this catalogue but we shall be pleased to send you complete tracing details and full descriptions of Andersen frames. Architects have found these to be of considerable value and assistance.

Frame Sizes

Andersen Frames are made to receive all standard sizes of windows, sash and doors. Double hung window frames are made to receive either 1⅜ or 1¾-in. windows. Door and casement frames can be furnished with either 1⅜ or 1¾-in. rabbets.

Weatherstripping

There are Andersen Weatherstrips made of special spring phosphor bronze to fit all Andersen Frames. The weatherstripping for double hung windows is inexpensive; requires no labor for installation, no nailing, routing, rabbeting or inconvenience; and it is remarkably effective in reducing air leakage. You can also obtain weatherstrips for door and casement frames which can be applied at the factory or on the job at very little expense. We have laboratory tests on this product for your information—we will be glad to send you copies.

Distribution

All Andersen products are distributed through wholesale jobbers throughout the country who carry adequate stocks at all times. Any building material dealer can furnish Andersen Frames and Andersen Weatherstrips either from his own stock or by drawing upon his jobbers.

Service

The ANDERSEN FRAME CORPORATION puts an unqualified guarantee on all products.

We also maintain an Architectural Service Department equipped to adapt our standard frame designs to any wall construction. This service is free and we shall be glad to have you send us your requirements or we can have our representative call upon you to help you in laying out the best window arrangement for your building.

For further information and large size tracing details address ANDERSEN FRAME CORPORATION—Department S, Bayport, Minnesota.

F. W. STEVENS & SON, INC.

Manufacturers of Unit Casement Windows

70 Needham Street, NEWTON HIGHLANDS, MASS.

Products

STEVENS UNIT CASEMENT WINDOWS and SCREENS. Patented in United States of America and Canada.

Unit Casement Windows

Advantages—A completely assembled product including frames, sash, glass, screens, weatherstrips. Suitable for all kinds of construction, and architect's details. Guaranteed to be weathertight. Complete control of ventilation without direct drafts. Our ventilated transom window is especially suited for schoolhouses and hospitals. Transoms operated without disturbing screens or shades, or may be fixed.

Ease with which windows can be cleaned on the outside from within—thus eliminating danger in cleaning.

Simplicity of construction. May be installed in old frames without disturbing interior or exterior finish.

Materials—***Frames***—Either for brick or wood construction from good seasoned white pine made to our standard or architect's details.

Sash—1¾ in. thick from best white pine.

Glass—Selected quality in the varying thicknesses. Glazed with the best glazing compound.

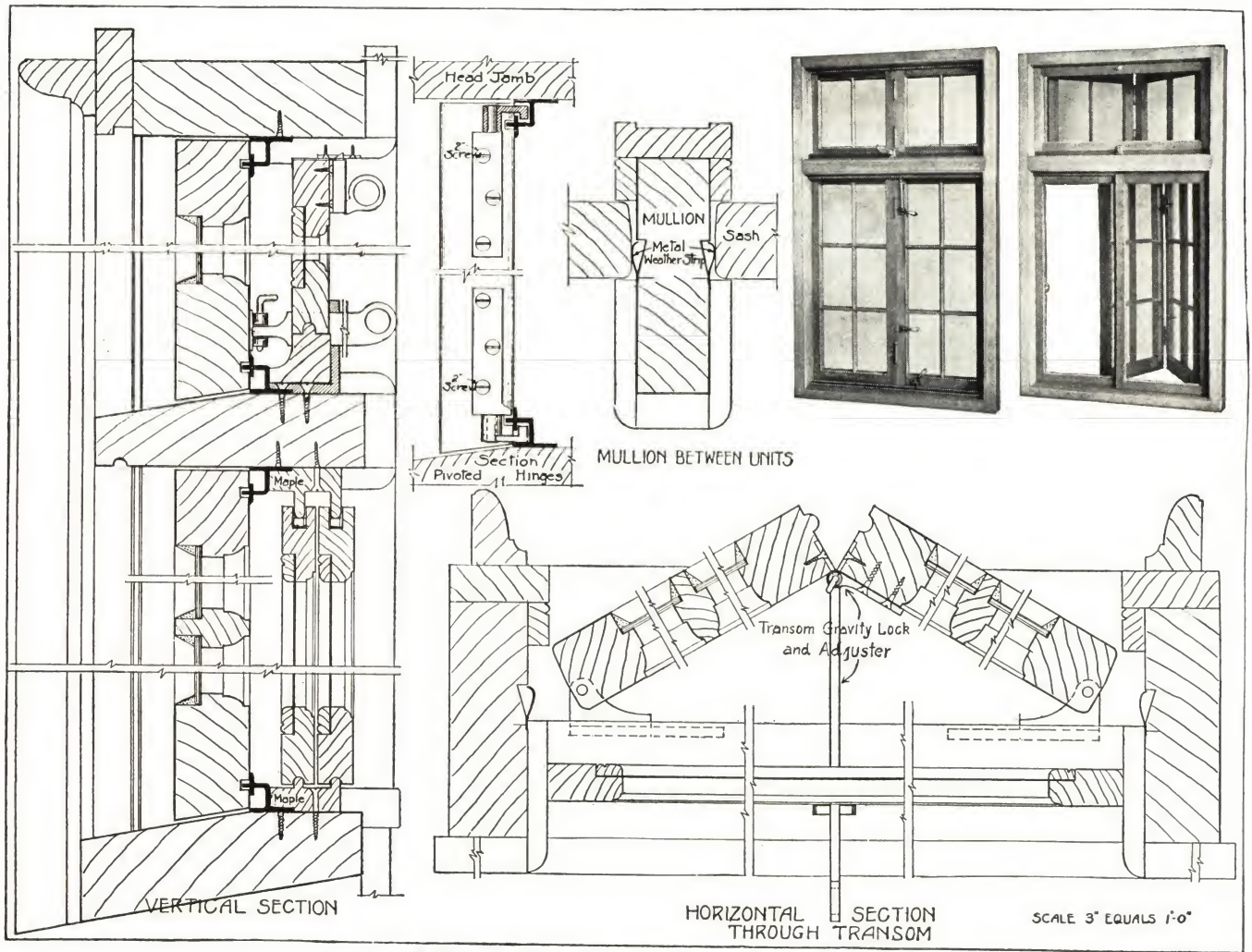
Screens—Made from best of rift sawed white pine, wired with 16-mesh dark copper screen cloth.

Hardware—All solid brass to our special detail, and completely fitted to sash. Special finishes of hardware may be furnished.

Installation—Windows are delivered at the building assembled, and carpenter has only to set units in openings designated on the plans. This completes the job in so far as the operation of sash and screens is concerned.

We do not furnish interior trim. For frame construction make rough openings 5 in. wider and higher than size of sash to be used.

Operation of Sash—A slight outward push in the center of each pair of sash will make the units fold together; they can then be slid to either side, or they may be placed in any position so as to give as little ventilation as desired. For single sash or groups of three,



Details of Stevens Unit Casement Windows with Transom

the odd single sash opens similar to the units, except that one of the pivoted corner hinges is replaced by an arm, one end of which is secured to sash, other being fastened to jamb, allowing sash to remain rigid in outswung position.



Note: Sashes may be glazed with "Vitaglass," the health-giving window glass, which transmits the curative ultra-violet rays of daylight.

Further information and full sized details for either brick or wood construction furnished upon request.

Hardware for Stevens Unit Casement Windows

The extruded brass track (Fig. 1) is screwed to stool and head jamb the entire width of each opening; the horizontal projecting tongue of track acts as a weatherstrip, fitting into a groove in the sash. The pivoted hinges (Fig. 2) are of cast brass; each hinge slides in extruded track from which it is impossible to become disengaged. Commercial spring bronze weatherstrips are furnished full length for each pair of jambs. Butts are 3x2 in. and are solid wrought brass; two or more being required for each pair of sash, depending on height of sash. The polished cast brass handle and lock (Fig. 3) is used as a lock, a slight turn securely fastening the sash. Polished cast brass top lock for use on high sash (Fig. 4); one lock required for each pair of sash. Transom gravity lock and adjuster for operating transom only (Fig. 5). Loose pin butt (Fig. 6). Handle to open and close the window (Fig. 7).

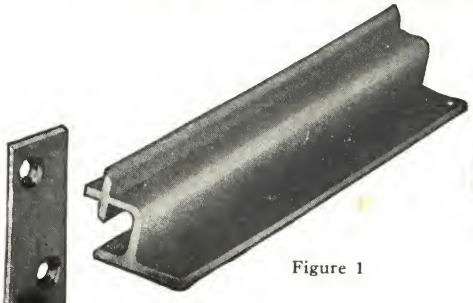


Figure 1

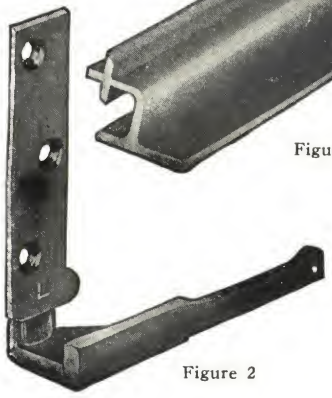


Figure 2

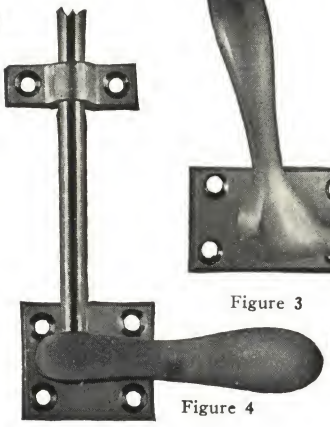


Figure 4



Figure 3



Figure 6



Figure 7

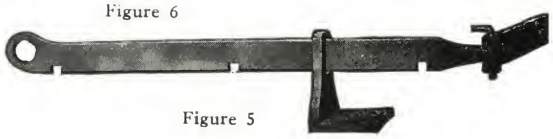


Figure 5

A Few Installations and Their Architects

Tampa Municipal Hospital, Tampa, Fla., Stevens & Lee, Boston, Mass., and M. Leo. Elliott, Tampa, Fla.
Deaconess Hospital, Boston, Mass., E. W. Dearing
Quincy City Hospital, Quincy, Mass., Stevens & Lee
Norwood Hospital, Norwood, Mass., J. Williams Beal Sons
Lawrence Memorial Hospital, Medford, Mass., Chas. B. Dunham
Heywood Memorial Hospital, Gardner, Mass., Stevens & Lee
Home for Aged, Somerville, Mass., Charles M. Baker
Children's Hospital, Washington, D. C., Stevens & Lee
Palmer Memorial Hospital, Boston, Mass., E. W. Dearing
Mary Lane Hospital, Ware, Mass., Stevens & Lee
Freeman Hospital, Joplin, Mo., E. W. Dearing
Nurses Home, Fall River Hospital, Fall River, Mass., E. M. Corbett
St. Luke's Hospital, New Bedford, Mass., Stevens & Lee
Waltham Hospital, Waltham, Mass., J. R. Worcester, Engr.
First Church of Christ, Scientist, Wellesley Hills, Mass., E. W. Dearing
Nurses' Home, Lawrence Memorial Hospital, Medford, Mass., Charles B. Dunham
Wellesley Friendly Aid Society, Wellesley Hills, Mass., Stevens & Lee



Tampa Municipal Hospital, Tampa, Fla.
Architects: Stevens & Lee, Boston, Mass. and M. Leo Elliott, Tampa, Fla.

THE COMPOUND AND PYRONO DOOR CO.

Manufacturers of Compound Key-Veneered Doors; Pyrono Fireproof Veneered Doors and Trim

ST. JOSEPH, MICH.

SALES OFFICES

BOSTON, MASS., 40 Central Street
CHICAGO, ILL., 612 No. Michigan Avenue
CLEVELAND, OHIO, 2200 Morrison Avenue, Lakewood
COLUMBUS, OHIO, 596 So. Ohio Avenue
DETROIT, MICH., 420 U. S. Mortgage Building
LOCKPORT, N. Y., 399 High Street
NEW YORK, N. Y., 2622 Grand Central Terminal
PITTSBURGH, PA., 725 Grant Building
ST. LOUIS, MO., 717 Louderman Building
ST. PAUL, MINN., 318 New York Building
WICHITA, KAN., Lusco Brick & Stone Co., 201 W. Douglas Street
CANADA: Piggot Building, HAMILTON, ONT.

For Trimount Sound-Insulated Doors, see Manufacturers' Index

COMPOUND KEY-VENEERED WOOD DOORS

Guarantee

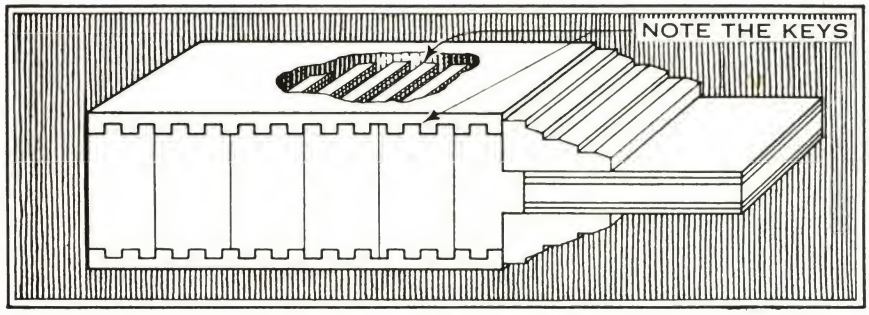
Full and complete without reservations. Covers defects in material and workmanship.

Construction

Stiles and rails have 7/8-in. core strips of chestnut or white pine cut from air dried lumber and thoroughly kiln dried. No scraps or refuse blocks used in cores.

Heavy sawed veneers applied in this way practically eliminate veneer trouble. Doors outlast the building.

Finishing Department—A very complete and adequate finishing department is maintained for the purpose of applying whatever part of the finish is desired by the customer. It is frequently a great convenience to have stain and filler, or even a complete finish applied before shipment is made.



Key-Veneered Construction

Showing method of applying veneers by tongue and groove process which gives twice the gluing contact of the ordinary method of applying the veneers flat and locks the structure in an inseparable bond

Veneers are sawed 1/4-in. thick, tongued and grooved to the core and rolled on under pressure by special patented process.

All panels are five-ply with face veneers either sawed, rotary cut or sliced, as the architect may specify.

Panel cores are all thoroughly re-dried, with face veneers ironed flat and re-dried in plate driers.

All wood stock goes into work dried within three to four percent of moisture and continues through a mill where atmospheric moisture is kept to a minimum.

Advantages of Construction—Glue surface between core and veneer is double that of any other veneer construction. (See illustration for core and veneer contact.) The shearing strain that is bound to occur between hardwood veneer and softwood core is overcome by this construction.

Strains and stresses are further neutralized by reversing the grain in core strips. All surplus glue and all air pockets are *rolled out* and are absolutely eliminated with this process.

Specifications Key-Veneered Panel Doors

All interior stile and rail doors shall have stile and rail cores built up of strips of softwood not thicker than 7/8-in., glued together under pressure, with 3/4-in. edge strips of same wood as face veneer. All stile and rail veneers shall be sawed 1/4-in. thick to finish $\frac{3}{16}$-in. thick, and shall be tongued and grooved to the core with at least four tongues and four grooves to the inch and glued with best grade of glue. Tongues and grooves shall be cut not less than $\frac{1}{16}$-in. deep.

All panels shall be laminated five-ply with grain crossed on alternate plies. All stile and rail joints to be mortise and tenon construction.

All doors to be hand or belt smoothed and entirely free from cross grain sander scratches on plain surfaces and from knife marks on mouldings and moulded edges.

Outside doors to conform to above specifications, except to be put together with waterproof glue.

All doors to receive one coat of stain and shellac (including filler if necessary), or lead and oil priming before shipment.

X-ray Lead Lined Doors

A membrane of unbroken sheet lead built into the center of a finely finished wood door, with bolts protected by lead sleeves and lead caps all concealed by the face veneer without surface plugs. Lead sheathed "split jambs" also furnished complete for X-ray rooms. Consult our Engineering service.

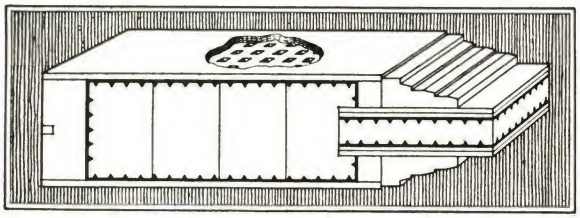
PYRONO FIREPROOF WOOD DOORS

Process of Construction

The PYRONO process is a mechanical method of fireproofing wood cores in the manufacture of doors and trim.

In PYRONO construction, cores of non-resinous wood are used and these when assembled are covered with pure, long fiber asbestos sheathing mechanically bonded to their surfaces, excluding oxygen, thus preventing ignition and assuring against spread of flame from the place of origin to other parts of a building—the one essential province of a fire door.

Designs—Flush doors with or without inlay. Panel doors, any arrangement of panels. Sash doors with glass lights not exceeding 720 sq. in. PYRONO doors and trim furnished in all cabinet woods used in interior finish.



Section of Stile or Rail Illustrating Pyrono Asbestos Interlined Fireproof Construction

Appropriate Use

PYRONO doors are used for stairways, elevators, corridors and partitions, in office buildings, hotels, hospitals, apartments, schools, dormitories and similar types of fireproof buildings.

Fully Tested

PYRONO, first introduced in 1910, has fully demonstrated in official tests and actual fires its perfect efficiency as a fire retardant. The most convincing proof of the fire resisting qualities lies in the fact that not one case of failure of a PYRONO door is recorded in the many actual fires which have occurred in buildings, great and small, protected by these doors.

Specifications of Pyrono Fireproof Doors

Pyrono Panel Doors—Fireproof paneled veneered doors to be constructed as follows: Stile and rail cores to consist of narrow softwood strips, thoroughly kiln-dried, not more than ⅞-inch thick and glued together under pressure. This wood core to be covered on face and edges with pure long fibre asbestos sheathing thoroughly glued and indented with not less than twenty-five indentations to the square inch. Each indent to be perforated at its base to perfect the glue bond between core and veneer. Hardwood veneer as specified to be applied to face of such stiles and rails, and edge strips to match veneer to be applied to all edges.

Panels shall be laminated seven-ply with grain crossed on alternate wood plies. The ply next to the core on each side shall be pure long fibre asbestos sheathing thoroughly glued and indented to the core as indicated for stile and rail construction. Face veneer to be as specified by architect. All panels to be not less than ¾-inch thick.

All stile and rail joints to be of mortise and tenon construction.

All doors shall be hand or belt smoothed and entirely free from cross grain sander scratches.

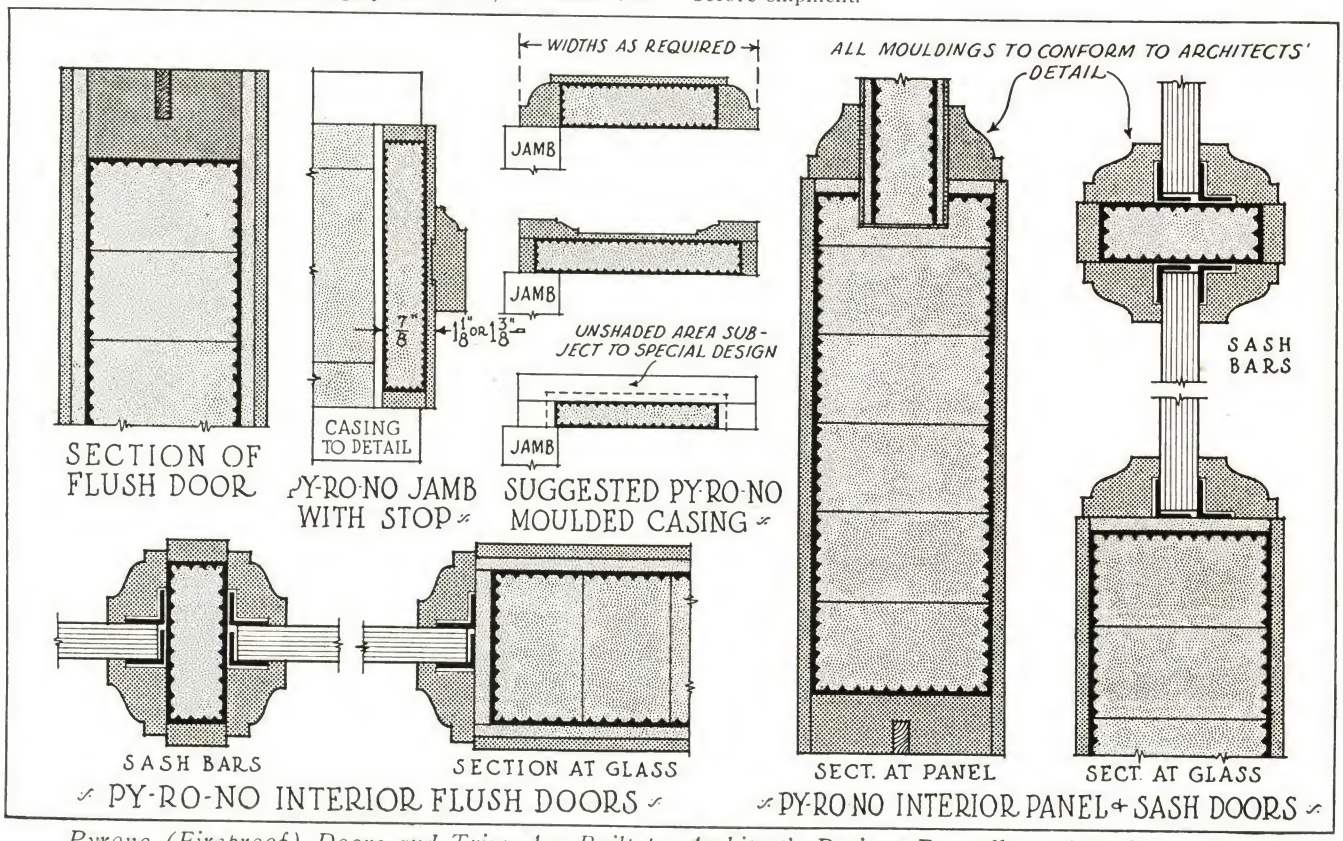
All doors to receive one coat of stain and shellac (including filler if necessary), or lead and oil priming before shipment.

Pyrono Flush Doors—Fireproof flush veneered doors to be constructed as follows:

Cores to consist of narrow softwood strips, thoroughly kiln-dried, not more than ⅞-inch thick, glued together to form stiles, cross rails and flush panels, and framed together with mortise and tenon joints. This wood core to be covered on face and edges with pure long fibre asbestos sheathing thoroughly glued and indented to the core, with not less than twenty-five indents to the square inch. Each indent to be perforated at its base to perfect the glue bond between core and cross band.

Hardwood edge-strips of same wood as face veneer to be applied on all edges and door to be completed by application of ⅛-inch cross-band and face veneer not more than ⅛-inch thick.

All doors to be hand or belt smoothed and absolutely free from machine or sander marks that will appear on application of stain or varnish. All doors to receive one coat of stain and shellac (including filler if necessary), or lead and oil priming before shipment.



Pyrono (Fireproof) Doors and Trim Are Built to Architect's Designs Regardless of Period or Type

ESTABLISHED 1886

W. D. CROOKS & SONS

For Over Forty Years Manufacturers of Hardwood Veneered Doors, Exclusively

GENERAL OFFICE AND MILLS
WILLIAMSPORT, PA.

Products

HARDWOOD VENEERED DOORS of every description to architects' specifications and details.

FLUSH DOORS.

STOCK DOORS of all designs.

FOLDING PARTITION (ACCORDION) DOORS.

CROOKS 1886 DOORS

TRADE-MARK

Guarantee

W. D. CROOKS & SONS guarantee to replace in the white any Crooks door that proves defective in material or workmanship.

Trade-mark is stamped on top and bottom rail of each door.

Policy

Limited Quantity—Unlimited Quality.

A limited output has been the policy of this organization since its beginning over forty years ago. The company's heads believe this the only possible means of maintaining its standard on custom-built doors to architects' details, which constitute 75% of its sales.

Construction

Crooks doors are veneered with any foreign or domestic wood specified. All veneer is shrunk in a re-drying machine. It is then mechanically tested to prove the absence of moisture.

Core is "built-up" of narrow chestnut or white pine, kiln dried strips, which are glued together and kept in retainers in hot rooms until perfect joints are assured. Core is then planed to even thickness and veneers applied under hydraulic pressure. Material is again held in retainers in hot rooms until all moisture is eliminated from the glue.

Succeeding operations are practically identical in all factories, the only difference being in the skill with which the work is performed.

Stock Doors

Over 10,000 stock doors in chestnut, birch, plain red oak, red gum and walnut are always on hand for immediate shipment. Twenty designs of red oak entrance doors are included. These are made with ¼-in. *sawed* veneers and waterproof glue.

Sample (Special) Doors

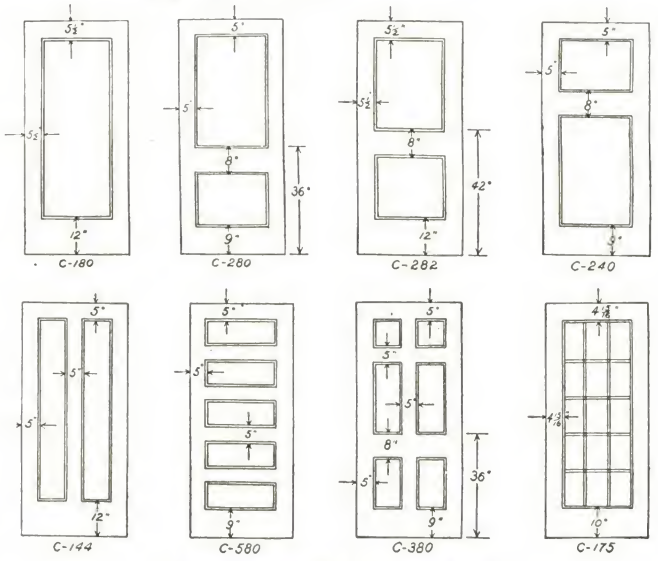
The company welcomes the opportunity to make and submit full size sample doors at actual cost. This suggestion has recently found favor with architects on a number of large buildings.

General Specifications and Details

A set of specification and detail sheets covering the best method of construction for all types and designs of veneered doors will be mailed upon request.

Standard Designs

There is always a saving in the cost of manufacture where a standard design can be used. The style of moulding on these designs is optional but should not exceed ½ in. in width.

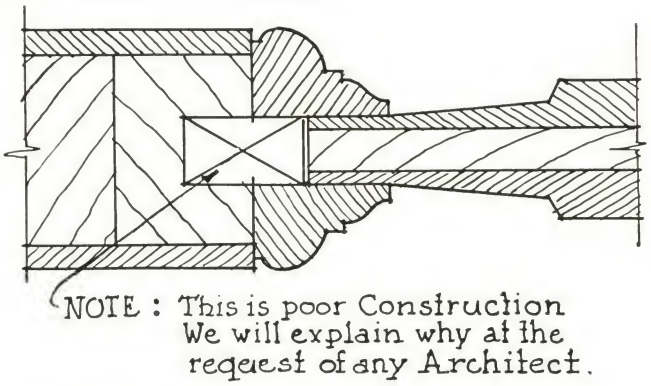


Crooks Standard Door Designs

Dimensions are overall including width of moulding

Good and Poor Construction

The construction shown in the sketch below is quite generally used even for the better class of door work. Why it is impractical and how W. D. CROOKS & SONS overcome the dangers of such constructions will be gladly explained on request.

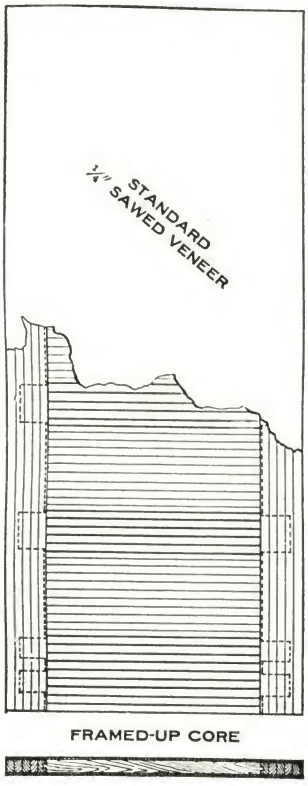


Specifications for Crooks Non-warping Flush Door

Flush Doors to be Crooks Non-warping Construction as manufactured by W. D. CROOKS & SONS, of Williamsport, Pa.

Core—To be chestnut or white pine, to contain not more than 5% moisture. Stile core to be built up of strips not more than 1¾ in. by thickness of core, rails and panels to be built up of pieces not over 3 in. wide, glued with waterproof glue under heavy pressure.

Frame—Core of stiles, rails and panels to be *framed*, mortised and tenoned (or doweled) to make five cross



panel flush surface. All tenons or dowels well glued and door assembled under heavy pressure.

Core Door—Core of door to be sanded smooth, ready for face veneer.

Face Veneer—Face veneer to be *sawed* (not rotary cut) standard ¼ in. thick, not less than $\frac{3}{16}$ in. when sanded, and to be matched book-leaf. All joints in face veneer to be parallel with edges of door and well glued. Edges same wood as face veneer and at least ¾ in. thick.

Gluing—Face veneer to be glued to core with waterproof glue under heavy pressure and held in retainers until glue is set.

Redrying—Doors to be redried after veneering to remove all moisture contained in glue.

Sanding—Face of door to be sanded in such a manner that when varnish is applied, machine or sander marks will not show through finish.

Special Doors to Architects Design

W. D. Crooks & Sons for over forty years have co-operated with architects in all parts of the country in the construction of special doors to the design of the architect. This work has given us an experience and an insight into the problems of the architect which enables us to work with him in securing the most satisfactory results for all concerned.

Folding Partition (Accordion) Doors

We manufacture doors for folding partitions in any size or thickness and design, flush or paneled, in accordance with architect's details, ready for applying hardware and installation by contractor at building. Because of the large sizes usually required, rigid construction is all important; this we follow in manufacture.

Construction Suggestions

The information given in the following suggestions for special doors is of a practical nature and should be of value to the specification writer.

Use *sawed* veneers on cores of kiln-dried, soft wood strips.

Exterior doors, as well as all heavy duty doors, such as schoolhouse and church doors, should be detailed mortise and tenon construction.

Doors with flush or raised moulding should be mortised and tenoned.

Detail one panel doors not less than 1¾ in. thick, with panel not less than ½ in. thick.

Doors veneered with two kinds of wood should be at least 1¾ in. thick.

Doors over 2 ft. 8 in. wide or 7 ft. high should be made 1¾ in. thick.

Sanitary (flush) doors should be detailed at least 1¾ in. thick.

Solid stuck mould should not be detailed wider than ¾ in.

Bars in sash doors should be at least ¼ in., not to exceed ½ in. between glass.

All panels, both flat and raised, should be laminated.

Specify waterproof glue and standard ¼-in. *sawed* veneers on all exterior doors.

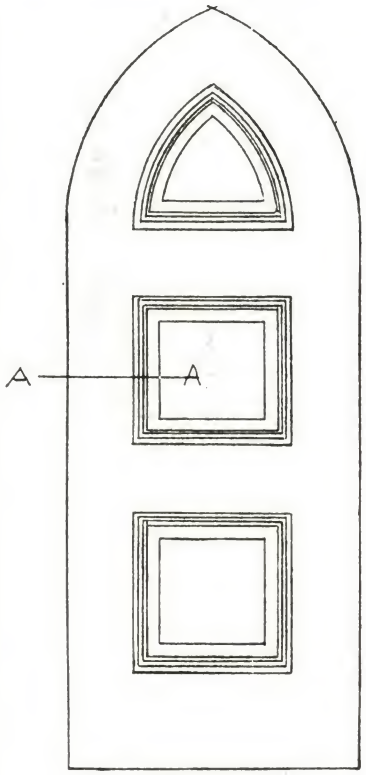
Always specify hand sanding when expensive foreign or domestic woods are used. The results far exceed the added cost.

Sanitary (flush) doors should be hand cleaned.

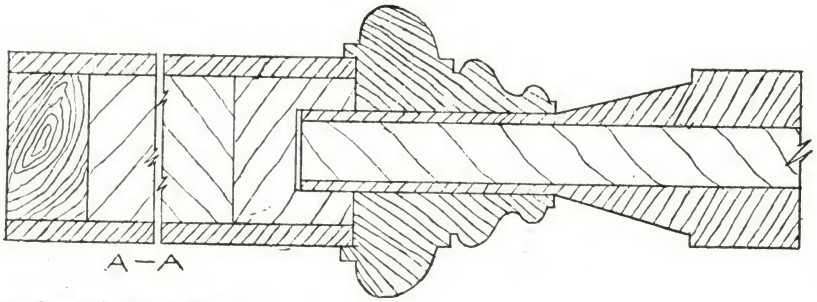
List of Prominent Users of Crooks Doors

The following users are listed to further indicate the quality of Crooks doors.

House and Senate Chambers of U. S. Capitol, Washington, D. C.
Pennsylvania State Capitol, Harrisburg, Pa.
Architects Building, Philadelphia, Pa.
Sterling Memorial Library, Yale University, New Haven, Conn.
Sterling Law Buildings, Yale University, New Haven, Conn.
Institute of Biology, Harvard University, Cambridge, Mass.
War Memorial and Boldt Tower, Cornell University, Ithaca, N. Y.
Duke University (10 buildings), Durham, N. C.
Administration Building, Board of Education, Philadelphia, Pa.
Detroit-Leland Hotel, Detroit, Mich.
Senior High School and ten grade schools, Philadelphia, Pa.
John D. Rockefeller, Jr. Residence, Pocantico Hills, N. Y.
Providence Courthouse, Providence, R. I.
Delaware State Capitol, Dover, Del.
Orange Memorial Hospital, East Orange, N. J.
Office Building (Durant) General Motors Corp., Detroit, Mich.
West Virginia State Capitol, Charleston, W. Va.
Pennsylvania State College (7 buildings), State College, Pa.
Mayflower Hotel, Washington, D. C.
Convention Hall, Atlantic City, N. J.
St. Petersburg Times Publishing Co., Office Building, St. Petersburg, Fla.
Public Ledger Building, Philadelphia, Pa.
Utica State Hospital (7 buildings), Utica, N. Y.
Philadelphia General Hospital, Philadelphia, Pa.
Bridgeport Y. M. C. A., Bridgeport, Conn.



Elevation



Section

Typical Special Door Detail

CARNAHAN MANUFACTURING CO.

Veneered Doors and Millwork Since 1870

303 Mill Street
LOOGOOTEE, IND.

Products

STOCK and SPECIAL VENEERED DOORS.

Also Interior Trim, Stairs, Wainscoting, Panels and Moulding.

Special Millwork and Facilities for Production

The CARNAHAN MANUFACTURING CO. makes a specialty of interior and exterior millwork made to architects' detailed plans. All the details of mouldings, etc., are carefully cut and detailed drawings are followed accurately.

The workmanship is of the highest grade, as our equipment consists of the most advanced type of machinery and the men are thoroughly trained.

Large quantities of materials are carried in our yards and storage buildings so as to have seasoned stock from which to execute work on short notice.

Panel Doors

Stile and rail doors are made with white pine cores thoroughly dried, using the best of glue and the very latest methods of manufacturing.



No. 22



No. 13



No. 12



No. 8



No. 41



No. 37

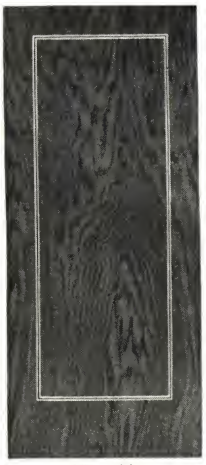
Standard Veneered Interior and Front Doors

Flush Doors

We manufacture flush doors with both the hollow core (Evans Process) and solid white pine core construction. The Evans Process construction is highly recommended where a light sound resisting door is required as it is approximately one-half the weight of the solid core door and is as sound resisting as a hollow partition. A sample cross section will be mailed upon request.



No. 100
Inlay B



No. 100
Inlay A



No. 100
Inlay C



No. 108



No. 104



No. 100

Evans Process Sanitary Flush Doors

Guarantee

All Carnahan Millwork and Doors are thoroughly guaranteed.

Installation of Carnahan Doors

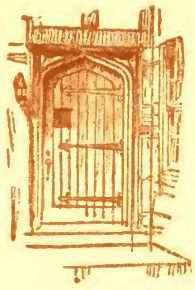
Let us send you a list of installations in your vicinity.

MANUAL OF VENEERED DOORS

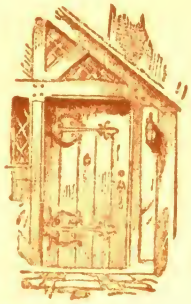




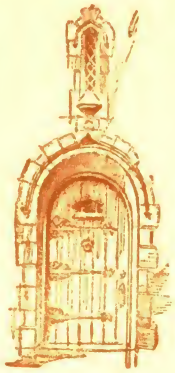








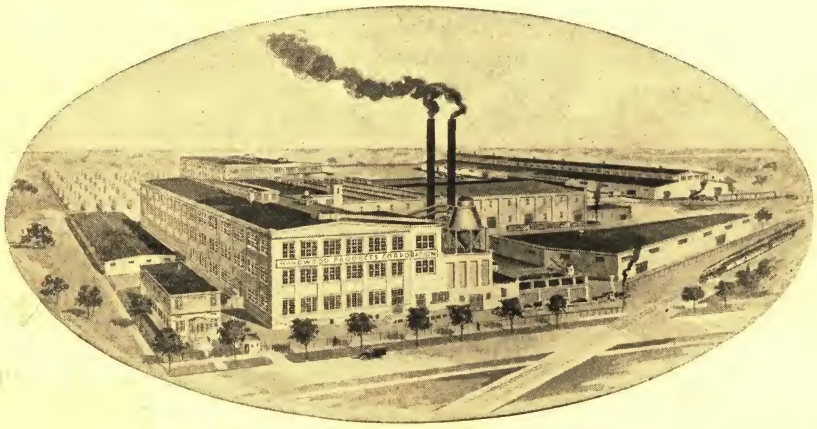




HARDWOOD PRODUCTS CORPORATION

NEENAH
WISCONSIN

Quality Is Never an Accident But Always the Result of High Intention, Sincere Effort, Intelligent Direction and Skillful Execution



HARDWOOD PRODUCTS CORPORATION PLANT

QUALITY

QUALITY VENEERED DOOR installations are never accidents.

MECHANICAL EQUIPMENT or large volume production does not in itself produce quality. QUALITY must emanate from a determined desire on the part of the organization and every one connected with it to give the highest grade of workmanship and materials for the price quoted.

The QUALITY of HARDWOOD PRODUCTS CORPORATION VENEERED DOORS is based on the cumulative experience of a corps of master craftsmen whose long, uninterrupted association with the Company and its policies have made them quality-conscious.

HARDWOOD PRODUCTS CORPORATION doors are not orphans. Each door is stamped with our name on the top rail, assuring a guaranteed door.

It may be said that there is very little difference between doors as made by one manufacturer and another, under the same specifications, but this little difference may be an important consideration.

THE PURPOSE OF THIS MANUAL

It is the purpose of this MANUAL to coordinate all important factors of veneered door design and construction in a proper relationship, for the benefit of the ARCHITECT, DEALER, and BUILDER.

Our recommendations, as incorporated in this MANUAL, are based on the experience of many years as manufacturers of veneered doors exclusively, our production over the last twelve years alone being over 3,000,000 doors of varied woods and details of construction.

GUARANTY

WE UNQUALIFIEDLY GUARANTEE EVERY HARDWOOD PRODUCTS CORPORATION DOOR MADE ACCORDING TO OUR RECOMMENDATIONS AND AS DESCRIBED IN THIS MANUAL TO BE FREE FROM DEFECTS OF WORKMANSHIP AND MATERIAL, AND WILL REPLACE ANY DOORS THAT PROVE TO BE DEFECTIVE WITHIN THE MEANING OF OUR SPECIFICATIONS AND RECOMMENDATIONS.

INDEX

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Panel and Glazed Doors	2	New York State Specification Doors	14
Flush or Sanitary Doors	10	Practical Suggestions and Economies	15
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SPECIFY HARDWOOD PRODUCTS CORPORATION DOORS

HARDWOOD PRODUCTS CORPORATION

MAIN OFFICE AND FACTORY

NEENAH, WISCONSIN

SALES OFFICES

NEW YORK, N. Y.
1021—101 Park Avenue
Telephone: Ashland 7594

CHICAGO, ILL.
1310—333 No. Michigan Ave.
Telephone: State 6088

CLEVELAND, OHIO
416 Midland Bank Bldg.
Telephone: Main 1465

SAN FRANCISCO, CAL.
3045 19th St.
Telephone: Valencia 2241

THE COMPANY—ITS FACILITIES AND PRODUCTS

The Company

Located in the heart of the hardwood country, the company has been continuously in business for twenty (20) years, specializing in the manufacture of high quality hardwood-veneered and solid-softwood doors.

Responsibility

Our rating in R. G. Dun's and Bradstreet's is over $1,000,000 —first grade of credit.

Facilities

We operate one of the largest plants in the country devoted to the manufacture of hardwood-veneered and solid-softwood doors.

Our plant is equipped with the most modern and efficient door machinery.

During the last twelve (12) years we have manufactured over 3,000,000 doors for buildings in all sections of the United States and Canada.

Standard (Stock) Doors

We manufacture a complete line of Standard Hardwood-veneered and Solid-softwood Doors in a variety of standard designs.

Standard Thicknesses—1⅜ and 1¾ in.

Standard Widths—2 ft., 2 ft. 2 in., 2 ft. 4 in., 2 ft. 6 in., 2 ft. 8 in., 2 ft. 10 in. and 3 ft.

Standard Heights—6 ft. 8 in., 6 ft. 10 in. and 7 ft.

Standard Stile Widths—4⅞ and 5½ in.

Standard Rail Widths—4⅞, 5½, 8¼, 9½ and 12 in.

Note: *Standard stile and rail widths work to economical milled stock lumber and veneer sizes. Widths are full stile and rail widths and in the case of solid stuck mouldings include the moulding.*

Flush Doors

The constantly increasing demand for Hardwood Products Corporation flush doors is evidence in itself of the high quality of their construction. As a result of our drying and seasoning methods, using specially designed equipment, we have eliminated the common defects in the ordinary flush door, such as checks, ridges and waves in the face veneer.

The construction is five-ply laminated. All face veneer and cross-banding is thoroughly re-dried in veneer plate dryers before the material enters the manufacturing plant.

Flush doors are far more durable than other doors.

We can furnish this type of door as well as any other type in a fireproof construction to meet the building code of the City of New York. This fireproof feature is described on page 14.

Standard Thickness—1¾ in.

Standard Widths—2 ft., 2 ft. 2 in., 2 ft. 4 in., 2 ft. 6 in., 2 ft. 8 in., 2 ft. 10 in., 3 ft., 3 ft. 4 in., 3 ft. 8 in. and 4 ft.

Standard Heights—6 ft. 8 in., 6 ft. 10 in., and 7 ft.

Semi-special Doors

These doors have all the characteristics of special doors with the advantages of certain standardization economies. By using our standard door thicknesses (1⅜ and 1¾ in.) and our standard widths of stile (4⅞ and 5½ in.) and rails (4⅞, 5½, 8¼, 9½ and 12 in.) a considerable saving in cost can be made with no apparent loss in individual design. Special assembly of stiles and rails to suit the designer's taste may be made. Mouldings may be of special design profiles.

Special Doors

Due to specialization and our unusual mill facilities, we are able to produce—at surprisingly reasonable cost—special design doors of the highest standard of material and workmanship, in accordance with architect's details.

Fire-resisting Wood Doors

We have a complete plant for fully fireproofing wood and are manufacturing doors made of this fireproofed wood which will meet the rigid requirements of the building code of the City of New York. This code requires that doors in all buildings over 150 ft. high shall be either of steel or of fireproofed wood which will meet the prescribed tests.

X-Ray or Lead-lined Flush Doors

As a standard construction for our lead-lined Flush Doors we have adopted specifications similar to those prescribed by the New York State Building Code, which we believe to be superior to any other type of construction. See description and details, pages 11 and 13.

Standard Thickness—2⅛ in.

Standard Widths—2 ft., 2 ft. 2 in., 2 ft. 4 in., 2 ft. 6 in., 2 ft. 8 in., 2 ft. 10 in., 3 ft., 3 ft. 4 in., 3 ft. 8 in. and 4 ft.

Standard Heights—6 ft. 8 in., 6 ft. 10 in., 7 ft.

Sound-proof Flush Doors

These highly sound-resistant flush veneered doors of very practical construction are made of two ⅞ in. thick doors glued to a ⅜ in. thick center of Flax-li-num insulation. The Flax-li-num center has a wood edge 2½ in. wide by ⅜ in. thick forming a solid wood edge around the perimeter of the door. Sound Proof Flush Doors are particularly adapted to use in hospitals and for communicating doors in hotels.

Standard Thickness—2⅛ in.

Standard Widths—2 ft., 2 ft. 2 in., 2 ft. 4 in., 2 ft. 6 in., 2 ft. 8 in., 2 ft. 10 in., 3 ft., 3 ft. 4 in., 3 ft. 8 in. and 4 ft.

Standard Heights—6 ft. 8 in., 6 ft. 10 in., 7 ft.

Laminated (Three Ply) Flooring

The Hardwood Products Corporation, beside doors, manufacture an exceptionally high grade laminated (3 ply) flooring of random widths and lengths showing artificial crack lines, plugs and keys, both plain and period patterns, in plain White Oak and Quartered White Oak plain or fumed, plain Red Oak, Walnut, Teak and other accepted flooring woods.

STANDARD PANELED AND GLAZED DOORS

Construction Standards and Special Features—Specification Data

Kiln Drying and Seasoning of Material

Note: *As a result of our special drying and seasoning methods we have practically eliminated the common defects in the ordinary stock door such as checks, ridges and waves in the panel face veneers and core joints showing through the stile and rail face veneers. Our specially designed drying and seasoning equipment insures permanently smooth veneered surfaces in the finished doors.*

Cores—All core blocks are kiln-dried to from 3 to 4 per cent moisture in a specially designed core kiln.

Panels—All face veneer, center stock and cross-banding is thoroughly re-dried in veneer plate-driers and all moisture removed before the material enters the manufacturing plant. After gluing up, the finished panels are re-dried before sanding to remove the excess moisture contained in the glue.

Stiles and Rails—Before stiles and rails are machined and clamped into the finished door, they are thoroughly seasoned and moisture from the glue removed so that the finished door will contain, as nearly as possible, the same percentage of moisture (on the average about 6 per cent) as will obtain at the point of delivery and installation.

Glue

We strongly recommend the use of a selected, high grade vegetable glue for interior doors. However, where specified we can furnish our doors with the face veneers applied with waterproof glue. Laboratory tests have shown that this waterproof glue, although not affected by moisture, does not make quite as strong a glue joint as a high-grade vegetable glue.

Core Material and Construction

All core material used in building up stiles and rails is composed of clear white pine blocks. The core blocks are put together with special tongue and groove joints (see details) assuring maximum glue surface for strength and perfect, permanent alignment. Both edges of the stile and rail pine cores are finished with ⅞ in. interlocking hardwood strips.

Note: *Wherever necessary, we are prepared to furnish doors according to New York State Specifications which provide for alternating full length core strips and, in some cases, heavier veneers than usual. See detail, page 14.*

Face Veneers

Rotary-cut Veneers—Unless otherwise specified, standard (stock) Oak, Birch and Gum doors are veneered with *rotary-cut veneers, carefully selected to guard against the* rupture of the wood fiber. They cost somewhat less than sliced or sawed veneers.

Note: *Our experience proves that properly manufactured rotary-cut veneer gives a satisfactory surface.*

Sliced or Sawed Veneers—Where so specified we are prepared to furnish (at somewhat higher cost) sliced or sawed veneers. All quarter figured gum, quartered oak, walnut and mahogany veneers are either sliced or sawed.

Plain Oak—Furnished in both Red and White Oak. Stile and rail veneers should be not less than ⅛ in. thick before sanding and panel veneers not less than $\frac{1}{16}$ in. thick before sanding.

Note: *Specify whether Red or White (Red usually costs less than White); thickness for stiles and rails and for panels; rotary-cut, or sliced or sawed.*

Quartered White Oak—Furnished in large or small flake figure and in special figure, sliced or sawed veneers only. Stile and rail veneers should be not less than $\frac{1}{16}$ in. before sanding and panel veneers not less than $\frac{1}{20}$ in. before sanding.

Note: *Specify whether large or small flake or special figure. If special figure is desired, specify that manufacturer shall submit samples for approval. Specify thickness for stiles and rails and for panels.*

Birch and Gum—Furnished in Unselected, Selected Red and Selected White. The regular grades are what is commercially known as unselected, meaning unselected as to color, otherwise clear sound wood of first quality. In both Birch and Gum the outer part of the log is known as "White" and on the large logs the inside is "Red." Unselected veneers are successfully used where a medium or dark stain is applied. Either Selected Red or White Birch or Gum costs considerably more than Unselected. Stile and rail veneers should be not less than ⅛ in. thick before sanding and panel veneers not less than $\frac{1}{16}$ in. thick before sanding.

Note: *If Selected Red or White are desired, so specify, otherwise it will be understood that Unselected will be furnished. Specify thickness for stiles and rails and for panels; rotary-cut or sliced or sawed.*

Quartered Figured Gum—Produced only from the heart of Figured Red Gum logs, considered a cabinet wood, and furnished in sliced or sawed veneers only. Stile and rail veneers should be not less than $\frac{1}{16}$ in. thick before sanding and panel veneers, if highly figured, not less than $\frac{1}{4}$ in. thick before sanding. Panels should be made five (5) ply.

Note: *Specify thickness for stiles and rails and for panels. If special figure is desired, specify that manufacturer shall submit samples for approval or specify the price per sq. ft. See "Selection of Hardwood Door Veneers," page 15.*

Walnut—Furnished in half-round rotary-cut or sliced or sawed. Half-round rotary-cut is the cheapest, and the figure and texture of the veneer is not as good. Stile and rail veneers *should not be less than $\frac{1}{16}$ in. thick before sanding and panel* veneers not less than $\frac{1}{28}$ in. before sanding.

Note: *Specify thickness for stiles and rails and for panels; half-round rotary-cut or sliced or sawed. If special figure is desired, specify that manufacturer shall submit samples for approval or specify the price per sq. ft. See "Selection of Hardwood Door Veneers," page 16.*

CONDENSED SPECIFICATIONS

Paneled and Glazed Doors

For full specifications see Page 18

STANDARD DESIGN DOORS

Describe design. This will embrace standard construction and layout.

SPECIAL DESIGN DOORS

Cores

White Pine with strips not over 1¾ in. wide, tongued and grooved and dried to from 3 to 4% moisture.

Veneers

Specify thickness on stiles, rails and panels *before sanding.* Unless mentioned, standard thickness will be furnished.

Sanding

Specify kind of sanding wanted. "Well sanded" is interpreted as machine sanding. Better class jobs should be specified "belt sanded," which is almost equivalent to hand cleaning.

Miscellaneous

Specify thickness of panel; specify whether solid stuck or nailed-in mould. Unless otherwise mentioned, dowel construction is assumed.

Unless mentioned, or detailed sections are made, all dimensions will be assumed to be within standard.

Be specific on kind of wood. For example, if Red Birch (Heart) is wanted, be sure to add "(Heart)."

GUARANTY

We Unqualifiedly Guarantee every HARDWOOD PRODUCTS CORPORATION *door, made according to our recommendations and as described in this Manual, to be free from defects of workmanship and materials, and will replace any doors that prove to be defective within the meaning of our specifications and recommendations.*

Mahogany—Furnished in sliced or sawed veneers only. Stile and rail veneers should not be less than 1/10 in. thick before sanding and panel veneers not less than 1/28 in. before sanding.

Note: *Specify thickness for stiles and rails and for panels. If special figure is desired, specify that manufacturer shall submit samples for approval or specify the price per sq. ft. See "Selection of Hardwood Door Veneers," page 16.*

Dowel Construction

Unless otherwise specified, all cross rails are doweled to stiles with our special doweled construction. Dowels are of clear birch or oak not less than 1/2 in. in diameter (5/16 in. for 2 1/4 in. doors and thicker) with four (4) grooves cut the length of the dowel to permit glue to pass freely up and around the entire length of the dowel. Dowels are 5 in. long accurately set 2 1/4 in. apart O. C. and one-half their length in the stile and one-half in the rail. Dowel holes are accurately bored to provide a perfectly tight fit.

Note: *See "Doweled versus Mortised and Tenoned Construction," page 15.*

Panel Thicknesses

Our standard panels are 1/32 in. thick, three (3) ply. Where a thicker panel is desired we recommend 7/16 in. thick, five (5) ply.

Sanding and Finishing

Unless otherwise specified, we furnish machine sanding on all paneled and glazed doors of stile and rail construction.

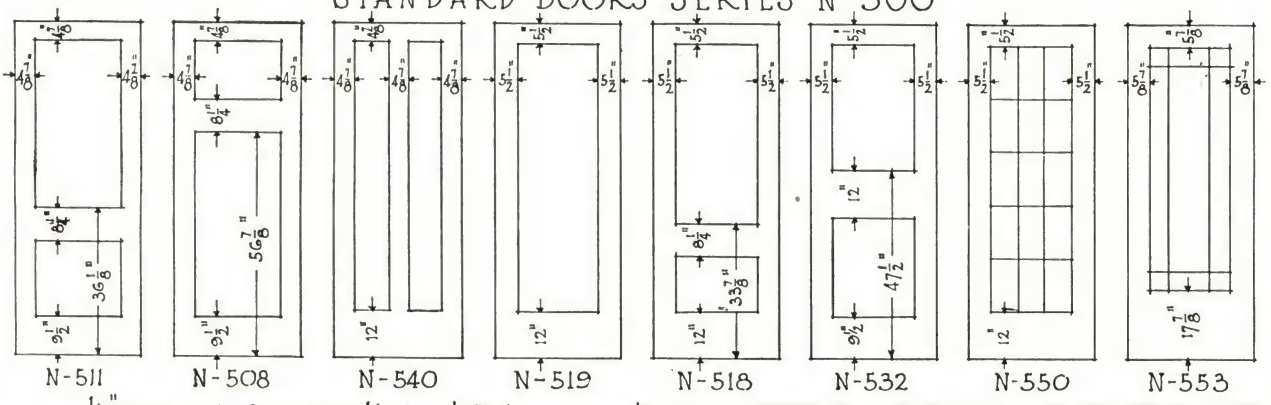
We take particular pride in the quality of our machine sanding and can assure a perfectly smooth surface which requires practically no retouching by the painter. Cross-sander marks on the cross rails cannot be avoided.

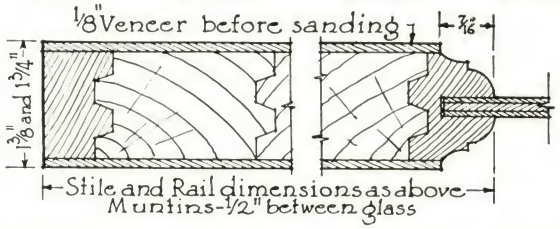
Where a higher grade of sanding is required, ready for painter's finish, we recommend belt sanding or hand sanding, for which an additional charge is made.

Regardless of specifications, we belt sand the panels on all cabinet woods, such as Walnut, Mahogany, Quartered Oak, etc.

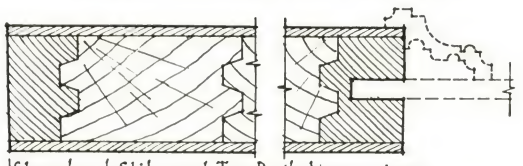
STANDARD DETAILS—HARDWOOD PRODUCTS CORPORATION'S DOORS

STANDARD DOORS SERIES N-500



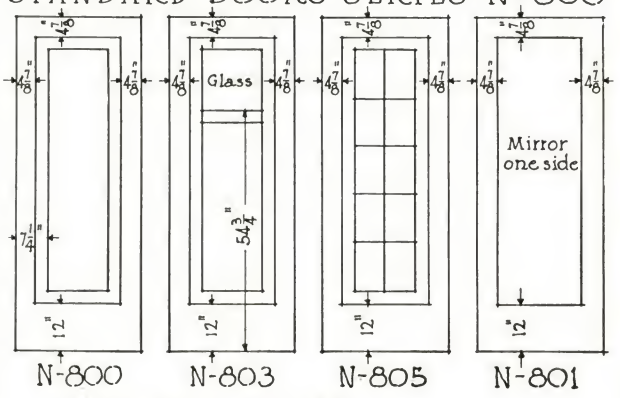


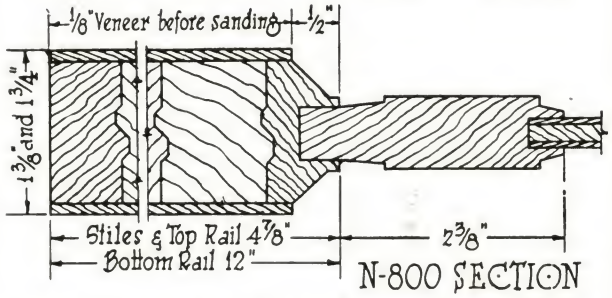
SEMI-SPECIAL DOORS



Standard panel designs as above or Special designs as desired with Special panel moldings Panel Splines may be added if desired at slight added cost. These doors are economical

STANDARD DOORS SERIES N-800





Designs above are a few of the most popular of series N-800

STANDARD (STOCK) PANELED AND GLAZED DOORS

Note Stile and Rail Dimensions



N-501
4⅞"-9½"



N-503
4⅞"-9½"



N-504
4⅞"-9½"



N-508
4⅞"-8¼"-9½"
(N-509 same with 1 lt. above)



N-511
4⅞"-8¼"-9½"



N-512
4⅞"-8¼"-9½"



N-513
5½"-8¼"-12"



N-514
4⅞"-9½"



N-518
5½"-8¼"-12"



N-519
5½"-12"



N-521
6½"-18½"



N-540
4⅞"-12"



N-541
4⅞"-12"



N-542
4⅞"-12"
(N-543 same with 3 vert. pan.)



N-545
4⅞"-9½"



N-546
4⅞"-8¼"-9½"



N-548
4⅞"-9½"
(N-549 same 5½"-12" stiles and rails)



N-550
5½"-12"



N-551
4⅞"-9½"



N-553
5⅞"-17⅞"



N-554
5½"-12"



N-574
5½"-12"
(N-571 same with 8 lts. above)



N-575
5½"-12"
(N-572 same with 8 lts. above)



N-576
5½"-12"
(N-570 same with 8 lts. above)
(N-573 same with 1 lt. above)



N-577
5½"-12"
(N-578 same with 3 pan. below)



N-800
4⅞"-12"
(Inner Frame)



N-803
4⅞"-12"
(Inner Frame)



N-805
4⅞"-12"
(Inner Frame)

SPECIAL AND SEMI-SPECIAL PANELED AND GLAZED DOORS

For Descriptions of Semi-Special and Special Doors, See Pages 1 and 3



N-519
Grille



N-544



N-550
Mirror Backs



Louver



Louver
(Sliding Panel)
(See detail, page 8)



10 Pan. Special Head



15 Pan. Special



6 Pan. Special



10 Pan. Special



N-615



N-620



N-622



N-624



N-626



N-628



N-814



Special "A"



Special "B"



Special "C"



Special "D"



Special "E"



Special "F"

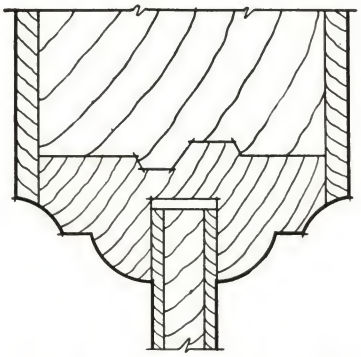


Special "G"

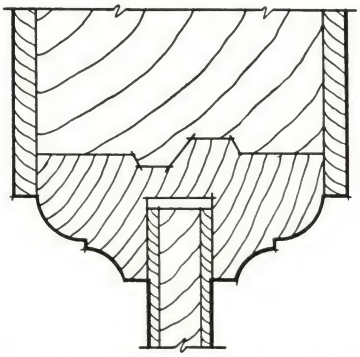


Special "H"

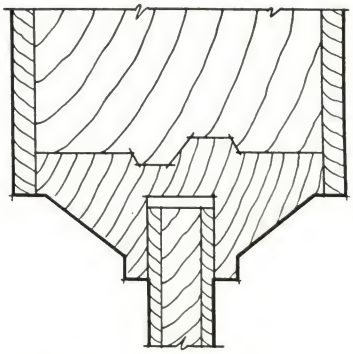
FULL SIZE DETAILS OF STANDARD (STOCK) DESIGNS OF 7/16" WIDE SOLID MOULDINGS



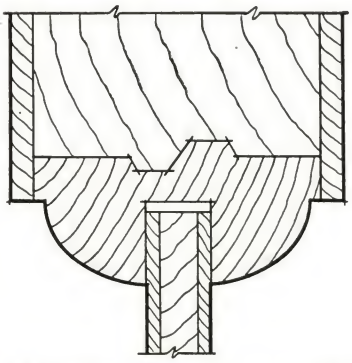
No. 2 Cove & Bead



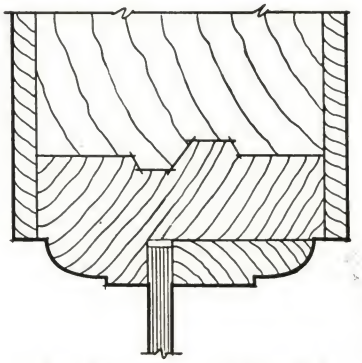
No. 25 Bead & Cove



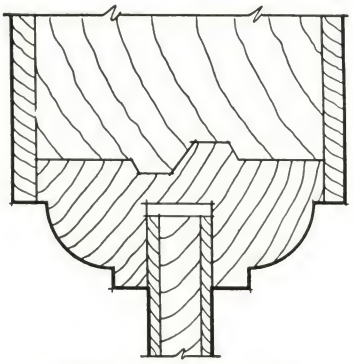
No. 295 P. G.



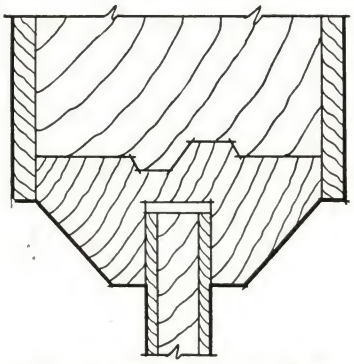
No. 70 Quarter round



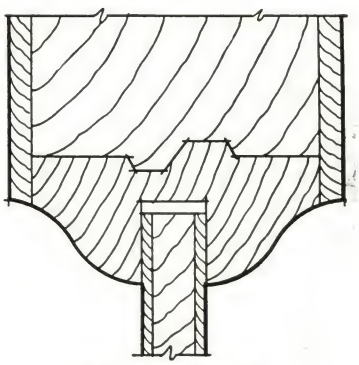
No. 35 Bead (Sash)



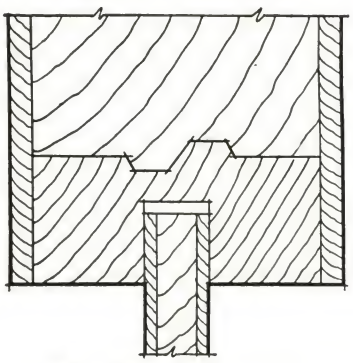
No. 147 Ovolo



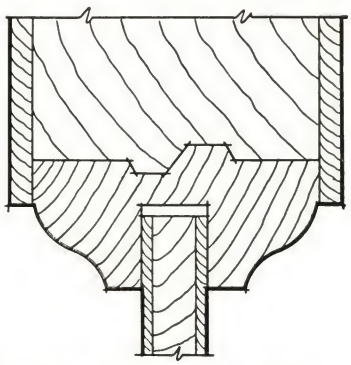
No. 440 Special P. G.



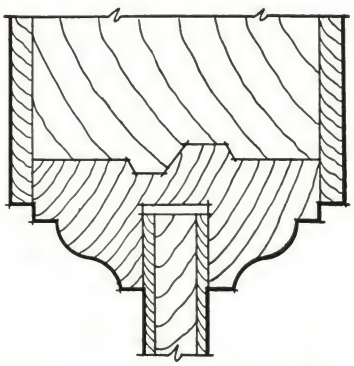
No. 52 O. G.



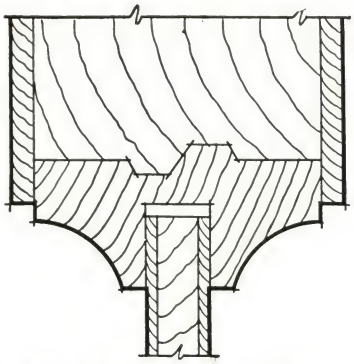
No. 77 Square



No. 531 Reverse O. G.



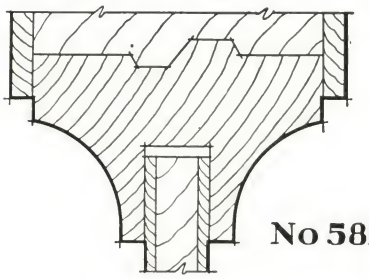
No. 288 Reverse O. G. with quirk



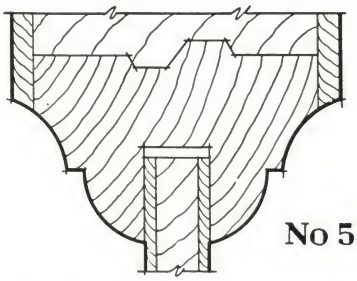
No. 384 Special Cove

SUGGESTIONS FOR ¾" WIDE SOLID MOULDINGS

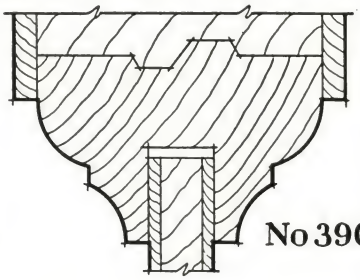
(TO REPLACE NAILED-IN MOULDINGS) On this page we present several cross-sections of solid mould profiles ¾" wide which can be manufactured at a slight increase over the standard 7/16" or ½" mould. Architects will realize a very substantial saving per door by specifying a ¾" wide solid mould of practical design in preference to a nailed-in flush mould. The solid mould eliminates the unsightly nail holes necessary in inserting the nailed-in mould and the possibility of the nailed-in mould pulling away from the stiles and rails.



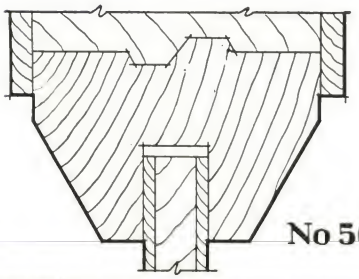
No 581



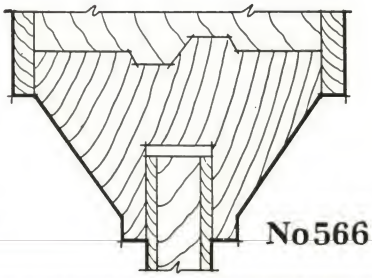
No 590



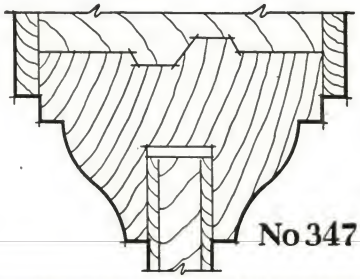
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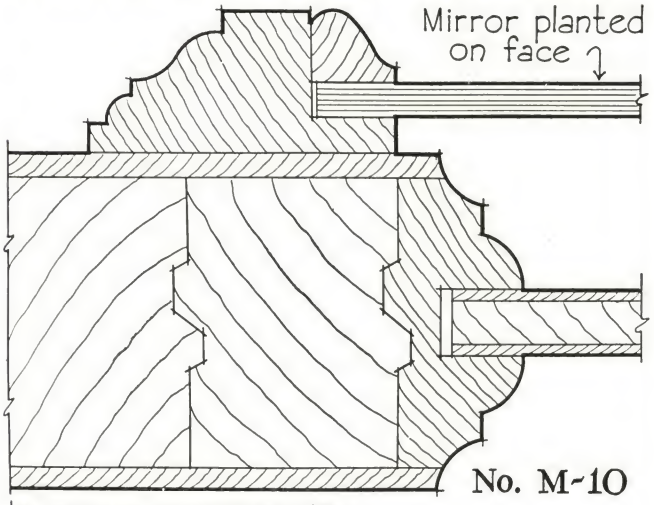


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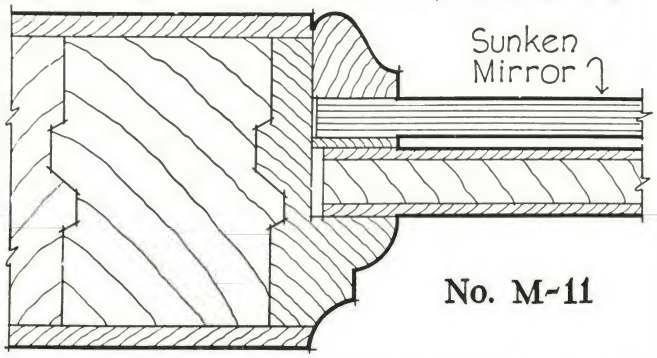


No 347

MIRROR DOOR DETAILS



No. M-10

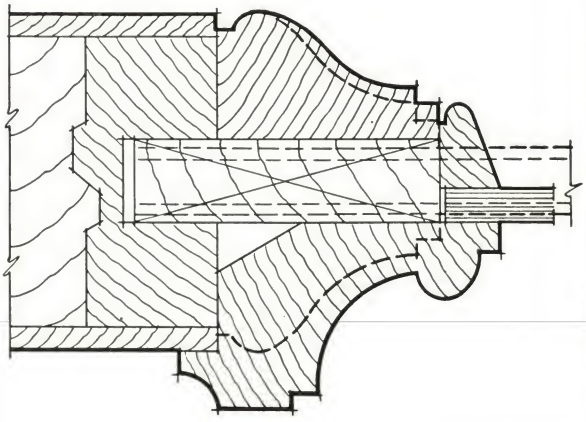


No. M-11

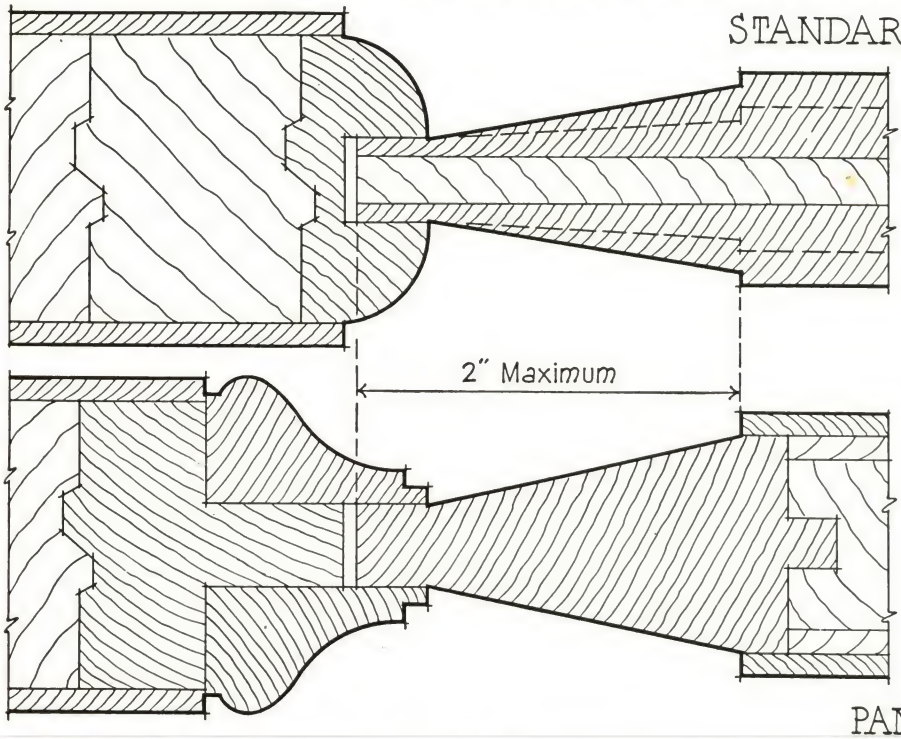
GLAZED DOOR DETAILS

Where nailed-in mouldings are required, it is suggested that details be drawn to stock profiles of flush and raised mouldings, as illustrated in the sketch below. The heavy lines indicate construction at glass with raised moulding one side, flush moulding one side and fillet. The dotted lines indicate the construction at panels with either flush moulding or raised moulding two sides.

Adherence to these profiles will prove an economy.



RAISED PANEL CONSTRUCTION



STANDARD ¾" OR 1⅛" BEVEL RAISED PANEL CONSTRUCTION

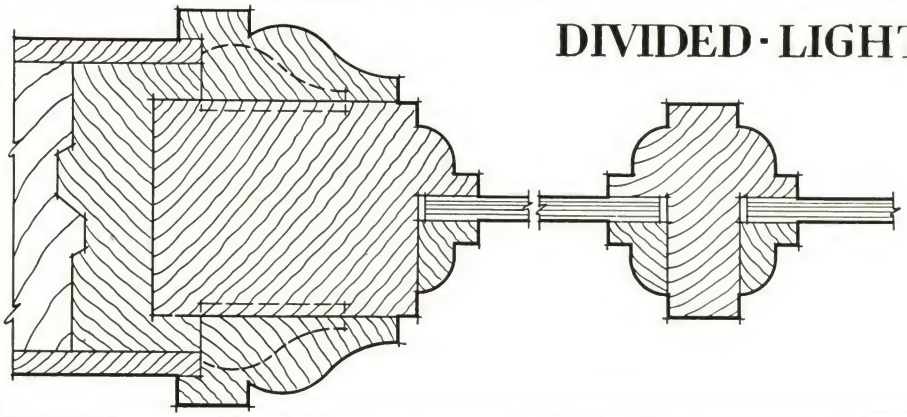
Specify 7/16" wide groove as thinner groove necessitates a heavier face veneer.

If possible specify panel raise as not over 2" from edge of panel to shoulder of raise. If this dimension is wider than 2" it results in difficulty in shaping which increases the cost.

Panel constructions adapted to either solid mouldings or nailed-in mouldings are illustrated.

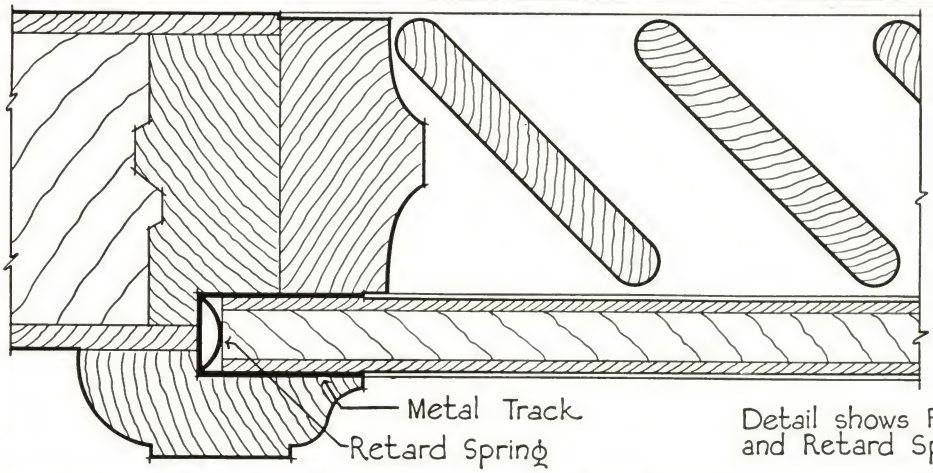
SUGGESTED MITRED RAISED FRAME PANEL CONSTRUCTION

DIVIDED-LIGHT DOORS



Wherever a nailed-in mould is specified on divided-light doors we recommend an insert frame as suggested in the accompanying detail.

We do not recommend bars coped to a nailed-in mould.

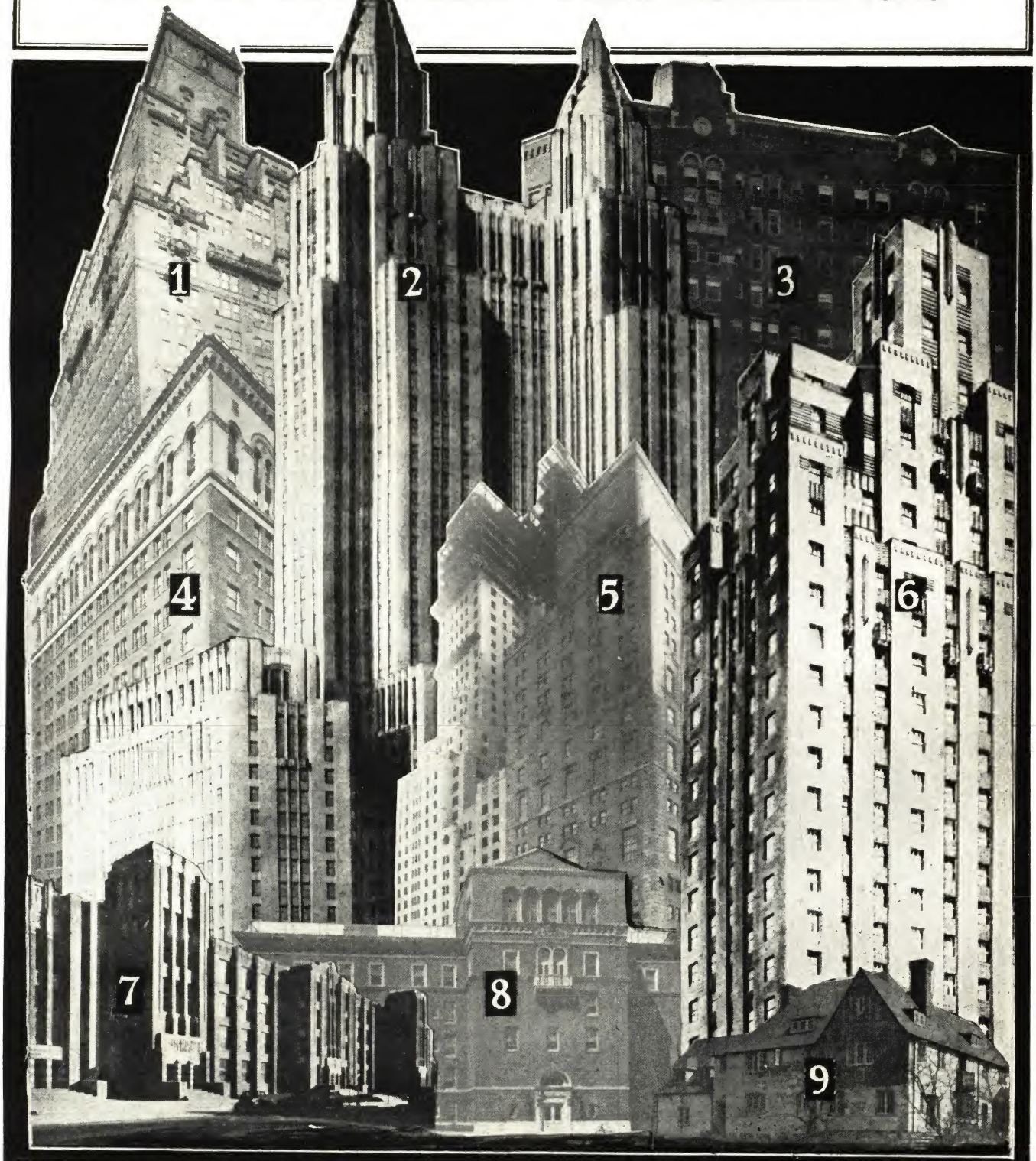


STOCK LOUVER SLIDING PANEL CONSTRUCTION

See cut of this door on page 5.

Detail shows Rail Section. Metal Track and Retard Spring on Stile Section only

A FEW OF OUR RECENT DOOR INSTALLATIONS



(1) Apartment House, 480 Park Ave., New York, N. Y.
(2) Waldorf-Astoria Hotel, New York, N. Y.
(3) Barclay Hotel, Chicago, Ill.
(4) Financial Center Building, San Francisco, Cal.
(5) New York Athletic Club, New York, N. Y.
(6) Wellington Hotel, New York, N. Y.
(7) Von Steuben Junior High School, Chicago, Ill.
(8) Presbyterian Hospital, Denver, Colo.
(9) Residence, Winnetka, Ill.

FLUSH OR SANITARY DOORS

Construction Standards and Special Features—Specification Data

Door Construction

Our Flush Doors are of five ply laminated construction.

Kiln Drying and Seasoning of Material

Note: *As a result of our special drying and seasoning methods we have practically eliminated the common defects in the ordinary stock door such as checks, ridges and waves in the face veneers and core joints showing through the face veneers. Our specially designed drying and seasoning equipment insures permanently smooth veneered surfaces in the finished doors.*

Cores—All core blocks are kiln dried to from 3 to 4 per cent moisture in a specially designed core kiln.

Face Veneer and Cross-banding—All face veneer and cross-banding is thoroughly re-dried in veneer plate-driers and all moisture removed before the material enters the manufacturing plant.

After each gluing operation in the application of cross-banding and face veneer, the doors are allowed to season in our drying rooms to remove all excess moisture from the glue and to equalize all stresses and strains resulting from the gluing process.

Glue

We strongly recommend the use of a selected, high grade vegetable glue for interior doors. However, where specified and desired we can furnish our Flush Doors with the face veneers applied with waterproof glue. Laboratory tests have shown that this waterproof glue, although not affected by moisture, does not make quite as strong a glue joint as a high grade vegetable glue.

Core Material and Construction

Our Flush Door cores are built up of *clear white pine* blocks, seasoned and dried to 3% moisture in our specially designed core kilns. The core blocks are machined with a tongue and groove joint (see detail page 13), giving maximum gluing surface. The use of core blocks minimizes warping, since each block counteracts any warping tendency in adjacent blocks.

We consider our core block construction to be much superior to cores made up of strips or staves running the full length of the door, and have found from experience in manufacturing flush doors over many years that our type of core construction is superior to any other.

At the time of laying up the cores, a ⅞ in. strip of hardwood, to match the face veneer, is applied to both vertical edges of the door. These hardwood edge strips provide a solid edge for supporting the door hinges and also protect the Pine core from atmospheric moisture.

The top and bottom edges of all of our flush doors are thoroughly painted before leaving the factory, thus protecting the exposed pine cores from moisture, and still making it possible for the doors to be trimmed and fitted, without breaking off the thin edge strips used by some manufacturers.

CONDENSED FLUSH DOOR SPECIFICATIONS

For full specifications see Page 18

All flush doors shall be five-ply veneered, as manufactured by the HARDWOOD PRODUCTS CORPORATION. These doors shall be of a thickness specified by the architect.

Cores

White Pine with strips not over 1¾ in. wide, tongued and grooved and dried to from 3 to 4 per cent moisture.

Face Veneers

Unless otherwise specified, face veneers of Birch, Plain Oaks and Plain Gum, to be 1/28 in. thick; cabinet woods, such as Mahogany and Walnut, to be 1/28 in. thick (before sanding).

Edge Strips

Edge strips shall be not less than ¾ in. wide, of the same wood as face veneer. Top and bottom edges of doors to receive two coats lead and oil before leaving factory.

Cross-bands

Cross-bands to be ⅛ in. thick.

Inlaid

All inlaid doors shall be stained before inlaid, with approved color, to prevent staining of inlays. Inlaid doors to be given one coat of shellac after inlay and before shipping.

Cross-bandings

Our standard flush door construction includes heavy cross-bandings ⅛ in. thick, since the best veneered surfaces can be obtained with the use of a heavy cross-banding between core and face veneer. After applying the cross-bandings to the core, the glue is allowed to thoroughly set, after which the door is run through double drum sanding machines to insure a perfectly flat, even surface on which the face veneers are applied.

Thickness of Face Veneers

We recommend the use of face veneers not to exceed 1/16 in. thick before sanding, and in the case of cabinet woods—such as Mahogany, Walnut about 1/28 in. and Quarter-sawed Oak—about 1/20 in. thick. With our White Pine core construction and heavy cross-bandings, the use of heavier face veneers is not only unnecessary but undesirable, particularly where the face veneers have one or more joints. The joints in a thick veneer will show up through the finish after a time, to a greater extent than with a thin face veneer. In the manufacture of exterior doors we apply all face veneers with high grade waterproof cement, and do not advise thick veneers for that reason. Specifications should clearly indicate all doors which will be exposed to outside weather.

Note: *See particularly "Selection of Hardwood Door Veneers," page 15.*

Inlays

Beautiful and decorative effects can be obtained by Inlay on Flush Doors which recalls the finest in woodcraft of the past.

Inlaying is an ancient art and possesses a charm differing distinctly from other woodworking arts. Ebonized wood and White Holly or a combination of both are generally used and show beautiful contrasting effects with almost any kind of face veneer. Special designs of inlay in varying foreign woods can also be furnished when specified.

By a special process, our inlays are firmly imbedded in the door and so perfectly fitted as to be without cracks or openings.

The standard width of stock inlay is ¼ in.

Sanding and Finishing

After the final operation of applying the face veneers and re-drying, all of our flush doors are carefully belt-sanded, using a hand block. This insures a perfect veneered surface, practically equal to a hand-smoothed job. The doors when they leave our factory are ready for the painter without the necessity of going over the face veneers with sandpaper. In the event that standard drum or machine sanding is permissible, we make a reduction in cost.

Since we do not recommend top and bottom hardwood edge strips on flush doors, the top and bottom edges of all of our flush doors are thoroughly painted before leaving the factory to protect the exposed pine cores from moisture.

GUARANTY

We unqualifiedly guarantee every HARDWOOD PRODUCTS CORPORATION *door, made according to our recommendations and as described in this Manual, to be free from defects of workmanship and materials, and will replace any doors that prove to be defective within the meaning of our specifications and recommendations.*

X-RAY OR LEAD-LINED FLUSH DOORS

Note: *As a standard construction we have adopted specifications similar to those prescribed by the New York State Building Code, which we believe to be superior to any other type of construction.*

Kiln Drying and Seasoning of Material

Note: *Our specially designed drying and seasoning equipment insures permanently smooth veneered surfaces in the finished doors.*

Cores—All core lumber is kiln dried to from 3 to 4 per cent moisture.

Face Veneer and Cross-banding—All face veneer and cross-banding is thoroughly re-dried in veneer plate-driers. After each gluing operation, the doors are allowed to season in our drying rooms to remove all excess moisture from the glue.

Glue

A special glue is used to apply the cross-banding to the lead center. Elsewhere a selected, high grade vegetable glue is used.

Core Material and Construction

In preparing the core for the lead-lined door, we have a special process which enables us to glue two layers of $\frac{1}{16}$ in. cross-banding to the $\frac{1}{8}$ in. thick lead center. A layer of $\frac{3}{4}$ in. hardwood lumber core is then applied on each side after which the entire cored slab is bored and bolted together with large flat head elevator bolts which are spaced 8 in. on center. The bolts are countersunk about $\frac{1}{8}$ in. and the space above the bolt heads is then filled by a tight-fitting lead plug driven flush with the surface of the hardwood core. See detail, page 13.

In order to eliminate difficulties with bolts in mortising lead-lined doors for locks, we leave a space about 3-0 from the floor on one edge of the door and mark this edge for identification purposes by boring a shallow hole on the top of the door on the lock side edge.

Cross-bandings

Our standard flush door construction includes heavy outside cross-bandings $\frac{1}{8}$ in. thick.

Thickness of Face Veneers

We recommend the use of face veneers not to exceed $\frac{1}{16}$ in. thick before sanding and in the case of cabinet woods—such as Mahogany, Walnut about $\frac{1}{28}$ in. and Quarter-sawed Oak—about $\frac{1}{20}$ in. thick.

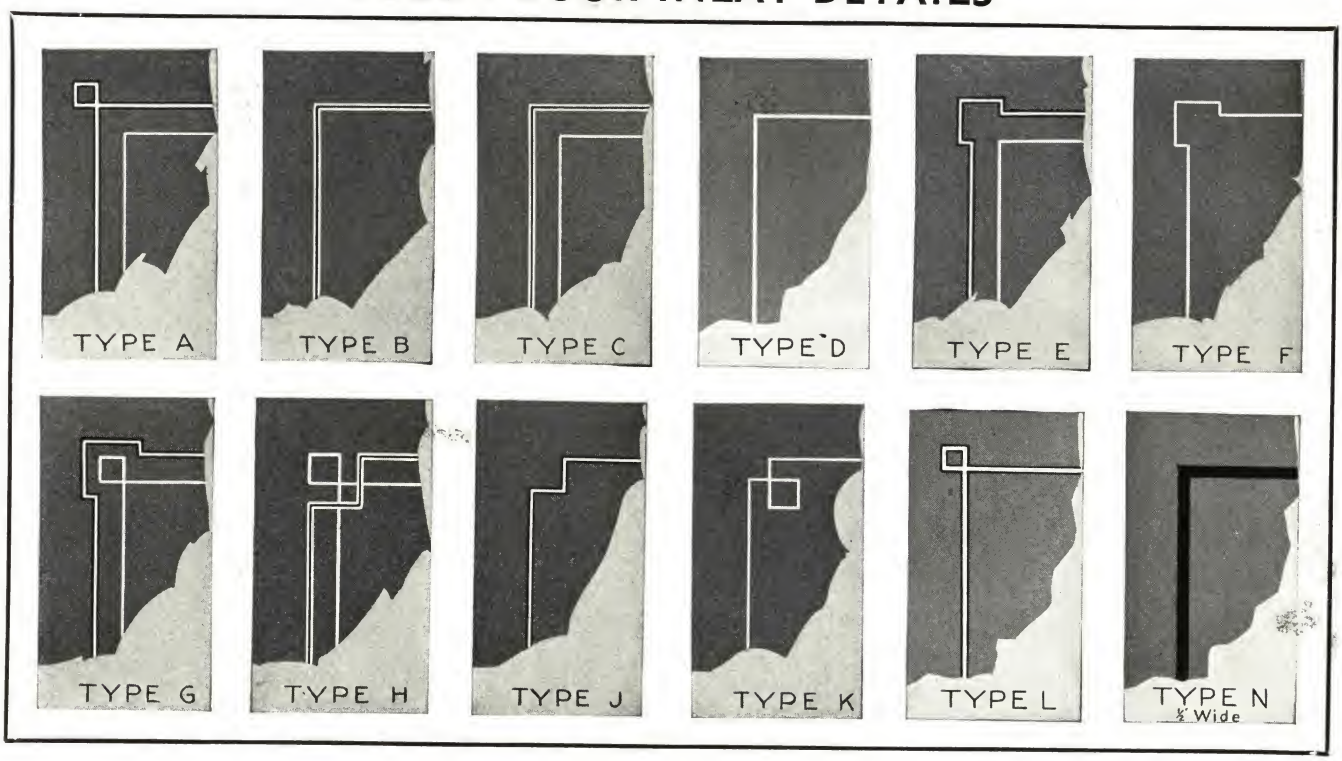
Sanding and Finishing

After the final operation of applying the face veneers and re-drying, all of our flush doors are carefully belt-sanded using a hand block. This insures a perfect veneered surface, practically equal to a hand-smoothed job, ready for the painter without the necessity of going over the face veneers with sandpaper. In the event that standard drum or machine sanding is permissible, we make a reduction in cost.

SOUND-PROOF FLUSH DOORS

The manufacturing construction standards and special features applying to our Standard Flush or Sanitary Doors as set forth on page 10 apply likewise to our Sound-proof Flush Doors. The door is made up of two $\frac{7}{8}$ in. thick Flush Doors glued to a $\frac{3}{8}$ in. center of sound absorbing Flax-li-num. The Flax-li-num center is surrounded with a hardwood edge $2\frac{1}{2}$ in. wide and $\frac{3}{8}$ in. thick of the same wood as the face veneers, forming a solid wood edge around the perimeter of the door. Tests prove this construction highly sound insulating. See detail, page 13.

FLUSH DOOR INLAY DETAILS



STANDARD AND SPECIAL FLUSH DOORS

For Details of Standard Inlays, See Page 11


N-590


N-590
B Inlay


N-590
A Inlay


N-590
D Inlay and Numerals


N-590
Spec. Inlay


N-591


N-595


N-596


N-597
H Inlay


N-598


N-604


N-605


N-590
Louver


N-600


N-607


N-608


N-610


N-610½


N-611


N-612


N-614


N-618


N-655


N-656


N-657


N-658


N-659


N-660


N-660
Crest


Lantern


N-661


N-662


N-663


Radio A


Radio B


N-664

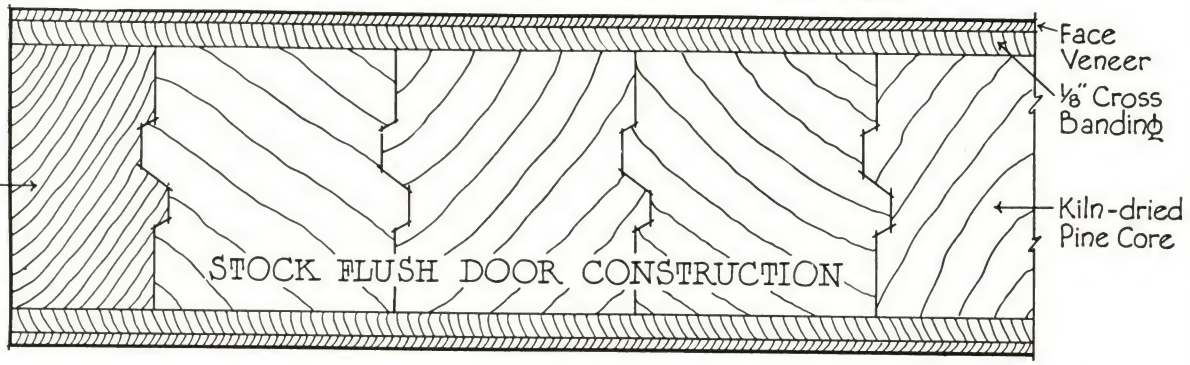

N-665

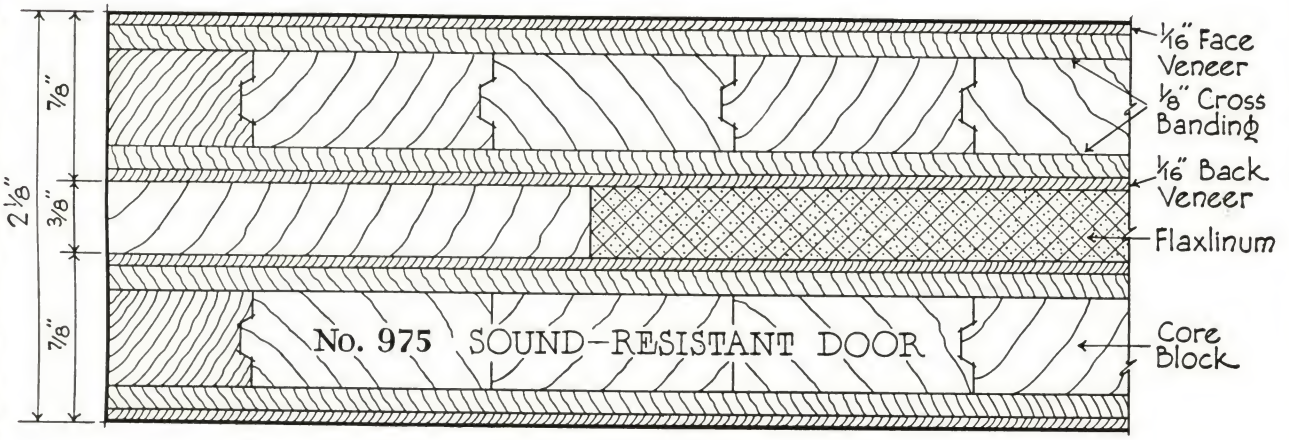

N-675

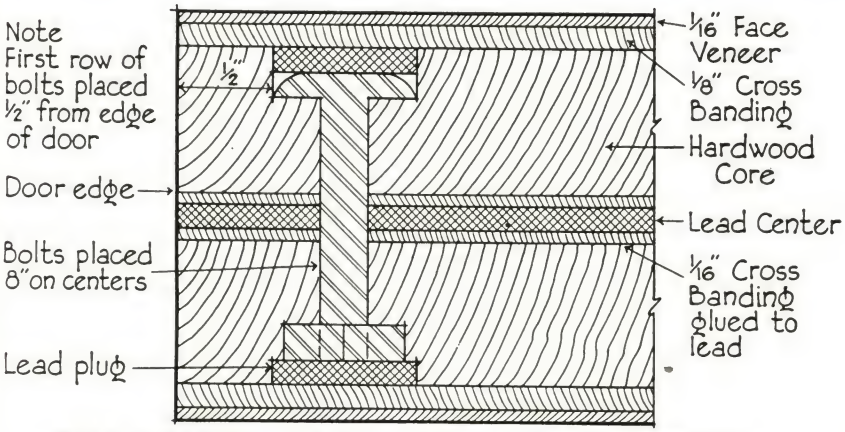

Flush Raised Panel


N-680 (Grooved)

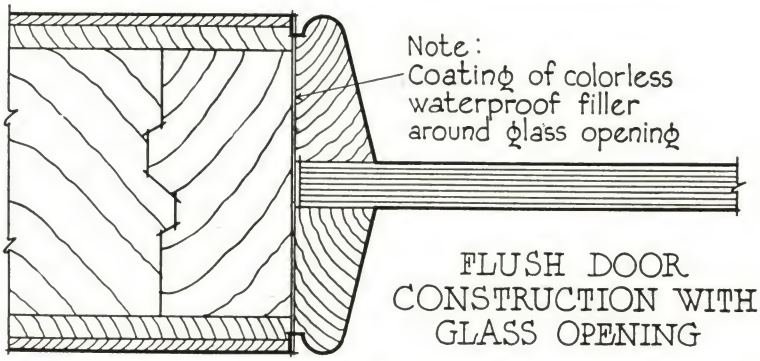
FLUSH OR SANITARY DOORS



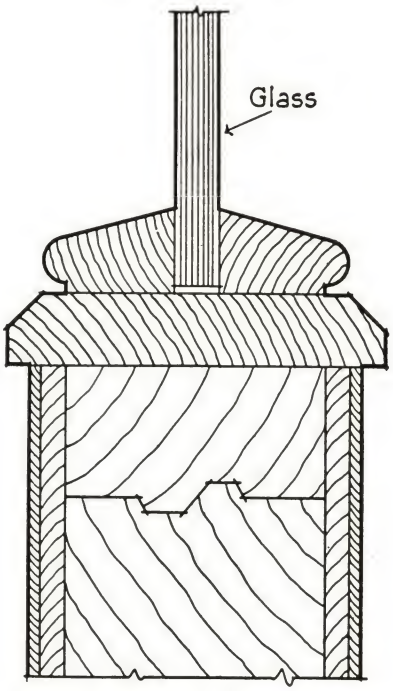




LEAD LINED FLUSH DOOR CONSTRUCTION



FLUSH DOOR CONSTRUCTION WITH GLASS OPENING



SUGGESTED DETAIL FOR EXTERIOR GLAZED FLUSH DOORS

FIRE-PROOF WOOD DOORS

Fulfill New York Building Code Requirements

The HARDWOOD PRODUCTS CORPORATION have a complete plant for fire-proofing wood and are manufacturing doors made of this fireproof wood which will meet the rigid requirements of the building code of the City of New York.

The lumber is treated with chemicals, whose functions are threefold: they give off, when heated, a non-inflammable, fire-extinguishing gas; they fuse over the wood in a protective coating; and they exclude the oxygen necessary to combustion by obstructing the pores of the wood.

Method of Treating Lumber

All lumber and core material to be treated for fire-resistant qualities is first kiln-dried and then placed in a steel cylinder. The cylinder is then closed and the air exhausted and the interior of the cylinder kept under a vacuum for several hours. The fire-proofing solution is then admitted to the cylinder and forced into the cells of the wood under pressure until the wood is thoroughly impregnated.

The material is then removed from the cylinder and subjected to air-drying for from two to three weeks and is then again placed in dry kilns. The kiln-drying process ordinarily takes from four to five weeks depending upon the thickness and texture of the lumber to be dried. Items of veneer up to ¼ in. thick can be fire-proofed, air-dried and kiln-dried in from two to three weeks.

After the doors are delivered, the Building Inspector in New York City takes a certain number of doors at random from the shipment and cuts them up into samples which are then taken to the laboratory at Columbia University at New York and tested in the presence of a representative from the New York Building Department. There are three different tests made from each sample of wood, known as the "timber test" the "crib test," and the "shaving test" as follows:

Fire-proof Tests

For the timber test, samples ¾ in. x 1½ in. wide are put over a crucible furnace at a temperature of 1700° Fahrenheit for two minutes. After they are removed from the flame, the flames must not persist longer than 15 seconds, nor the glow longer than 20 seconds. The unburned area should not be less than 55% for hardwoods and not less than 45% for softwoods.

For the crib test, the samples are ½ in. square and 6 in. long, and are built up crib fashion over a Bunsen burner and exposed for a period of one minute at a temperature of 1200° Fahrenheit. The flame must not persist for more than 20 seconds after the burner is removed and the glow for not more than 30 seconds.

For the shaving test, the shavings about 2 in. deep are placed in a wire mesh basket and packed down moderately to reduce the air space. A Bunsen yellow flame is placed beneath and in contact with the shavings and removed after 25 seconds. The flame should not show higher than 6 in. above shavings and shavings should not be consumed in less than 5 minutes.

All samples taken from doors as above described have to pass these three tests before doors are accepted.

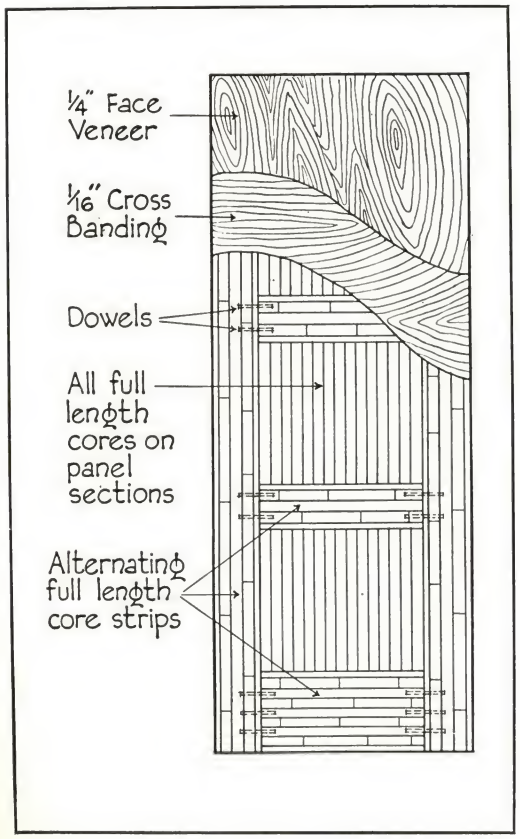
Recent Fire-proof Door Installations

Doors supplied by our company manufactured of fire-proofed wood under our process have been installed in a large number of buildings in recent years, including the following buildings of prominence in New York City:

Waldorf-Astoria Hotel	Piccadilly Hotel
Hotel Pierre	Madison Hospital
The New York Athletic Club	Down-Town Athletic Club
Victoria Hotel	New Weston Hotel

We can supply millwork manufacturers with lumber impregnated in our plant which will meet the requirements of the Building Code of the City of New York.

NEW YORK STATE SPECIFICATION DOORS



MADE EITHER FLUSH OR FRAMED-PANEL CONSTRUCTION SKETCH AT LEFT SHOWS FLUSH CONSTRUCTION

Wherever required, we are equipped to furnish doors according to NEW YORK STATE SPECIFICATIONS which provide for alternating full length core strips on the stiles and rails, and ¼-in. face veneers, to finish $\frac{3}{16}$ in. after sanding.

The accompanying elevation shows the accepted construction for flush doors.

The construction for the Framed-Panel door provides also for alternating full length core strips on stiles and rails with $\frac{3}{16}$-in. finished face veneers, while the panel construction is generally the same as stock doors.

Unless otherwise specified, dowel construction and machine sanding is furnished, although mortise and tenon and belt or hand sanding can be furnished if desired.

This type of door can be furnished in either fire-proofed or non-fire-proofed construction.

Our extensive activities in New York State, particularly in the Metropolitan area, have naturally necessitated our quoting on and manufacturing door jobs requiring New York State Specifications.

The commendatory comments which we have received on such jobs on which we have furnished doors to these specifications justifies our conviction that our manufacturing methods have met the severe requirements of the Building Department of the State of New York.

While the cost of constructing doors to these specifications is somewhat higher than the regular stock design, the construction, nevertheless, is very practical, and has been adopted on many other jobs that would not ordinarily come within the jurisdiction of the New York State Building Code.

We quote below several outstanding installations on which we have furnished doors during the past few years, according to New York State Specifications:

Utica State Hospital (Treatment Bldg. No. 1), Marcy, N. Y.
Hudson River State Hospital (Staff Apts. and 2 Nurses Homes), Poughkeepsie, N. Y.
State Normal School (Practice School), New Paltz, N. Y.
Centralslip State Hospital (1 Building), Centralslip, Long Island, N. Y.
Pilgrims State Hospital (1 Building), Brentwood, Long Island, N. Y.

Our usual guaranty applies to all doors which we make according to New York Specifications.

PRACTICAL SUGGESTIONS AND ECONOMIES

Detailing and Specifying Wood Doors

Doweled versus Mortised and Tenoned Construction

Advantages of Doweled Construction—A surprisingly large number of special doors are still detailed or specified with mortise and tenon joints, in spite of the fact that stock doors are no longer made that way.

The present doweled construction was developed to *conserve material, reduce warping, speed up production, and prevent the introduction of the considerable amount of moisture which the glue on large tenons carries into the stiles.* It also simplifies the construction of cores for rails as in the older superseded method it was necessary to make all the core blocks on the ends of the rails at least as long as the tenons are deep —a waste with no resultant benefit.

Conclusive Tests—There has naturally been considerable controversy on the relative merits of the doweled construction as compared with the mortised and tenoned construction in veneered doors. We recognized the uncertainty in the minds of some architects as to the relative merits of these two types of construction and accordingly conducted exhaustive tests through the College of Engineering, Cornell University, on twelve of the best obtainable mortised and tenoned construction stock doors and twelve of our own standard doweled construction doors picked at random from local warehouse stock. This test proved conclusively that the doweled construction is equal to or better than the mortised and tenoned construction. The tests not only covered those for comparative strength but for comparative reaction through varied humidity conditions. We have on file the complete results of these tests and will be glad to furnish a summary on request.

Mortised, Tenoned and Wedged Construction—However, we have complete equipment for mortising and tenoning doors and will furnish veneered doors with this construction, at an additional cost, provided the specifications definitely call for this type of construction. We can also manufacture doors with the mortised, tenoned and wedged construction, which is far superior to the ordinary mortised and tenoned construction. The wedged construction, in addition to the mortise and tenon, makes a very favorable comparison with the doweled construction and has been specified frequently, particularly on Government jobs. The wedged construction naturally costs a little more than the ordinary mortised and tenoned construction.

Selecting and Specifying Face Veneers

How Best to Define the Quality—One of the most important, and at the same time, most difficult items of fine millwork and cabinetwork specification is the defining of the figure and quality in veneers. Millmen cut all the defects out of exposed veneers as a matter of course, but do not always furnish the kind of figure the architect desires nor buy as expensive veneers as he expects.

To merely specify "well marked" or "highly figured" veneers is not explicit enough. If the architect is not sure of exactly what species, method of cutting, sapwood restrictions, and amount of figure he requires, it will be far simpler for him to secure samples than have the millman make changes after the work has been delivered to the job.

Veneer manufacturers are usually glad to submit samples of figured veneers of the various species, together with the prices charged for them. The price of quartered figured red gum veneers vary from 1½ to 6¢, walnut veneers from 2½ to 15¢ a square foot, and other high priced veneers in about the same proportion.

It is suggested that architects, when they have described the veneers, and have required that samples be submitted for their approval, shall also definitely specify the prices to be paid for the highly figured veneers. Then the different cabinetmakers who figure on the work can use the same veneer cost in making up their estimates and so compete on an equal basis.

There are three methods of making veneer: rotary cutting, by which the veneer is peeled from a log revolved on a lathe, slicing and sawing. The method used is determined by the character of the wood, the figure desired, and the value of the veneer. Over 90% of all veneer is produced by the rotary process.

Veneers used on hardwood doors are free from all defects. The term "selected," which to some architects means freedom from knots, checks and other defects, is used by the door manufacturer to indicate selection for color or figure.

Veneer Thickness—The specification of veneer thickness should state whether it is to be before or after sanding, preferably the former. Sanding takes off about $\frac{1}{32}$ in. The standard thickness of rotary-cut face veneer for stiles and rails of panel doors and for slab doors which are not crossbanded is ⅛ in. before sanding. Panel or flush door veneers may be $\frac{1}{16}$ in. The most expensive woods are cut thinner, particularly for panels, $\frac{1}{20}$ in. and even $\frac{1}{28}$ in. being not uncommon. The heavy veneers often used on the stiles and rails of outside doors are usually resawed from lumber, ¼ in. thickness before sanding being standard.

It is well to remember these standard thicknesses when stating the thickness to be required so that unnecessary expense and sanding may be avoided. A door on which veneer ⅛ in. after sanding had been specified would cost as much as one with veneer $\frac{7}{32}$ in. after sanding because both doors would be made with standard ¼ in. veneer, and sanded to the required finished thickness.

Unselected or Selected for Color—Nearly all the hardwoods used for face veneers have a ring of light colored sapwood several inches wide around the outside of the log. In some species this sapwood necessarily forms a large part of the veneer production, so the specification of all heartwood veneer increases the cost considerably. Whenever dark stains or enamel finishes are to be used it is economical, and just as satisfactory, to use veneer which has not been selected for color. A typical case of where such a saving could have been made was that of an architect who recently specified "selected red birch" doors and then, just before shipment, asked that they be primed for an enamel finish. In this case the insertion of the two words "selected red" cost the owner $600 on a $6000 door contract, and no benefit resulted.

Birch—Birch veneer used in doors is nearly all cut from trees known botanically as yellow birch. The smaller more defective red birch trees produce most of the curly birch veneer used in cabinetwork, but the species is little used in door manufacture. For this reason red birch means, to the door manufacturer, the heartwood of the yellow birch tree and refers to color rather than species. For doors to be given light natural finishes the specification "selected red for color" increases the cost over unselected birch by about 10%. Selection of all sapwood veneer is unusual as the figure, though much the same after staining, is not so pronounced as that of heartwood when light finishes are used, and of course there is no reason for using any but unselected veneer when dark finishes or enamel will give the surface a uniform color. Birch is rarely selected for figure as nearly all of it is well marked. Most of it is rotary-cut as other methods do not give the characteristic pleasing figure. Some veneers thicker than ⅛ in. are resawed from flat sawed boards because very thick rotary cut veneer is apt to split.

Gum—Gum, which is usually rotary-cut, comes from the red gum tree, but contains much sapwood that is almost white. Unselected gum may contain any percentage of sapwood, and usually has both heart and sap on the same door. Doors veneered with gum selected red for color cost about 25% more than unselected. Occasionally rotary-cut gum is selected for both red color and prominent figures, but the figure to be obtained by this selection should not be confused with the more expensive quartered figured red gum.

Quartered Figured Gum—Quartered figured gum is cut radially from occasional freak logs. Sliced veneer is used for panels and sawed veneer for stiles. Its price, like that of figured walnut, varies considerably, so the submission of samples or the specification of the price of veneer to be used will often avoid misunderstanding. Prices per square foot vary for quartered gum from 1½ to 6¢, so an indefinite specification allows a great deal of latitude. Veneer manufacturers will usually supply architects with free representative samples of the different priced veneers.

Red Oak—The oaks, because of the wide variety of their figure and coloring, cause more than their share of misunderstanding between architects and manufacturers. Red oak is rotary-cut or, for thick veneers, flat sawed as it has little figure when quartered. The bold flat sawed figure is characteristic of nearly all red oak veneers, and also of brown ash, a wood which is recently becoming popular for doors. Rules for grading veneers permit sap and minor discolorations, just as lumber grading rules do, so if the doors are not to be fumed or stained, it is desirable that veneers be selected for uniform color. This costs about 10% extra. The Northern oak commonly used on doors has but little sap, however, and careful staining will give a satisfactorily uniform color.

White Oak (Plain and Quartered)—White oak may be rotary-cut or quarter-sawed. Quartered veneers are always sawed rather than sliced because the medullary rays or "flakes" chip out in slicing. Quarter-sawed strips of veneer have up to 1½ in. of sapwood on one edge so the elimination of this sap means cutting off and throwing away a part of the veneer rather than merely selecting pieces of heartwood as is done in birch or gum. Sometimes this may cause the loss of fully a fourth of the material.

Rotary-cut white oak costs 5 to 10% more than red oak. Quarter sawing adds about a third, and selection for uniform color perhaps another 25% to the cost of rotary cut. Occasionally, selection is also made for prominent or medium flake in quarter sawed stock. Otherwise, any well marked quartered veneer will be used, though in any case all of a panel is usually made from the same flitch to avoid glaring contrasts.

Walnut—American walnut is rotary-cut or sliced, the latter method being used in the production of most highly figured veneers. Unselected walnut, like unselected veneers of several other species, may contain a large percentage of light colored sapwood. This light colored sapwood is difficult to detect from heartwood after skillful staining, but when the doors are shipped entirely unfinished, it not infrequently causes rejection by the architect, even though selection for the well known black walnut color has not been specified. For this reason some manufacturers make it a practice to stain the sap on all unselected walnut doors they make. The wide variety in the figure and cost (from 2½ to 15¢) of any but unselected walnut makes it desirable to submit samples or to specify the cost of the veneer when describing the veneer to be used.

Mahogany—Lumber and veneers of a number of species have been sold as mahogany. All the species of true mahogany are confined to Central America and adjacent portions of Mexico, South America and the West Indies. Khaya, or African mahogany, as it is commonly called, comes from the west coast of Africa and looks so much like true mahogany that it is difficult for anyone but an expert to tell them apart. The use of the name Philippine mahogany has been restrained by the Federal Trade Commission, so now the various species formerly sold under that name are known as Philippine hardwood.

Mahogany logs are usually sliced or sawed radially for veneer in order to secure the characteristic "ribbon" figure, so veneer, unless it is heavy veneer sawed from lumber, is usually more or less striped even when not ordered that way. Very highly figured veneers are available in mahogany, as in walnut, but they are not much used in door manufacture. There is considerable variation in color, but selection for uniform color is seldom required because of the stains used in finishing. Sapwood is mostly hewn off the logs before they are hauled from the forests so veneers are all heartwood. Doors made of Central American mahogany cost about 10% more than African mahogany doors. African mahogany is somewhat coarser textured than true mahogany, but the characteristic ribbon strip is just as pronounced.

Philippine Hardwood—The color of the Philippine hardwoods formerly sold as Philippine mahogany ranges from a deep reddish brown to straw color. Veneers are described as either red or light brown, doors veneered with the red stock costing 8 to 10% more than the light brown. The selection of Philippine hardwood veneer and its finishing are much like that of mahogany.

Economy in the Design of Special Paneled Doors

Introduction—Manufacturers of stock hardwood doors are continually studying their designs and methods of construction trying to build doors better and more economically. Since special doors are made in the same plants by the same machinery, and by much the same processes as are stock doors, the architect, in detailing his special doors, should not depart from standard construction more than is necessary to secure the effect he desires. One of the greatest advantages of wood doors is the ease with which the architect may carry out his own ideas of design at a reasonable cost. Often, details come to door factories which increase the cost considerably with no resulting improvement in the doors. Construction which looks all right to one not thoroughly familiar with the actual manufacture of doors may be impractical from a production standpoint. In this article will be pointed out some of the most common of these departures from standard practice, except those that relate to veneers and panel construction.

Spline or Fillet Not Necessary—In Figure 1 is shown the old method of detailing a panel door with a fillet to which the molding is nailed. On the right is the preferred detail in which the panel is carried into the stile, giving stronger, cheaper and more rigid construction. When molded doors were built with solid panels the fillet held the molding close to the stile when the panel became narrower due to shrinkage. This shrinkage need not be considered now, as in the modern plywood panels the shrinkage is negligble. Distortion, if any, is that of twisting, so it is desirable that the panel be firmly anchored to the stiles and rails. This removes all stresses from the mouldings and allows their use as decorations only. When it is necessary to use a wide solid panel the fillet may serve a useful purpose, but nearly all wide panels are now of plywood construction.

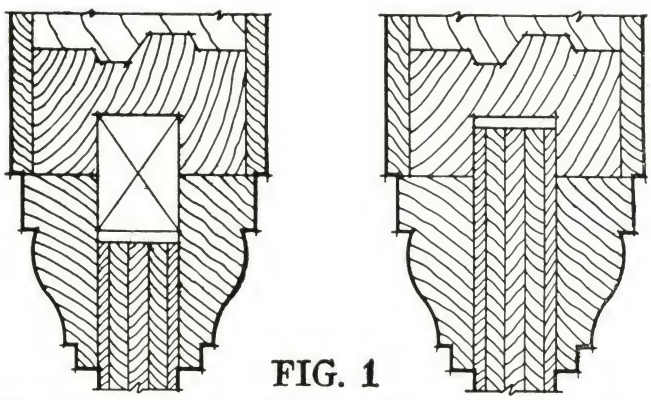


FIG. 1

The Construction Shown on the Right, without the Spline, Is Preferred

Economize by Specifying Solid Sticking Wherever Possible—A door which has the molded effect stuck on the stiles and rails costs 75¢ to $1.00 less to manufacture than does a moulded door, and does not have the nail holes or the possibility for imperfect joints in the moulding that are found in a molded door. For these reasons it is desirable to use sticking wherever possible. It is desirable to hold sticking down to $\frac{7}{16}$ in. in width, and to be sure that none of the profiles overlap, as the moulding is all cut with one knife on the sticker. In Figure 2 is shown an actual detail of a moulded door and, on the right, an altered design which could have been readily stuck on the stiles and rails. Where the effect to be secured requires that the profiles of the molding overlap, it is, of course, impossible to stick the design, but often the change necessary for sticking can be effected without greatly changing the design. Few door manufacturers venture to change an architect's molding details in the slightest, but the architect himself often can very easily.

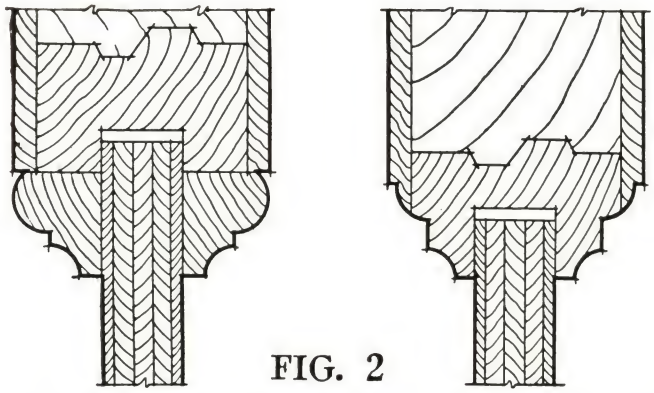


FIG. 2

Narrow Mouldings Can Often Be Stuck on the Stiles and Rails with but Minor Changes in Design. The Detail Shown on the Right Is $0.75 to $1.00 Cheaper per Door (One Panel Design) Than the Molded Detail on the Left

Specify Type of Moulding Around Glazed Lights—On paneled doors, with divided glazed lights above, specified with flush or raised molding, the millman should know whether the molding is to go around both lights and panel or the panel only. If such a molding is required around the divided opening, it necessitates the use of an inserted sash (see detail, page 8), since it is almost impossible to stick bars and muntins to match flush moldings. One dollar to $1.25 a door will be saved by designing bars and muntins which can be stuck. If they are designed for sticking, it is easy to stick the stiles and rails too with the same knives, and then rout out the stiles and rails around the panel to receive the molding.

How to Detail Stuck Mouldings—In detailing stickings for stiles and rails care should be taken to see that none of the molded surfaces coincide with the glue line of the face veneer as more or less chipping of glue and wood is bound to occur during sticking. Figure 3 shows a typical example of this sort. By carrying the cut down $\frac{1}{32}$ in. or so into the edging strip, any chance for chipping at the joint will be avoided.

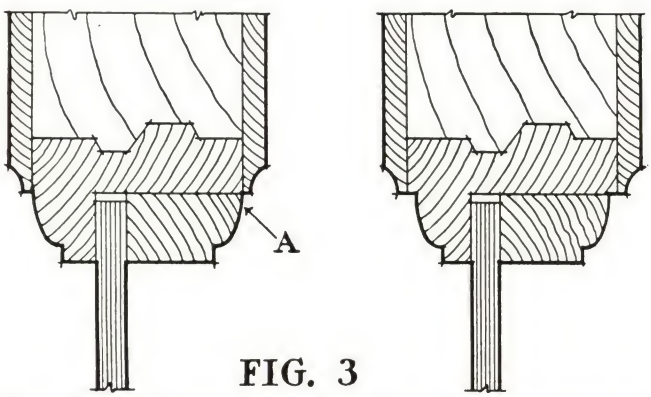


FIG. 3

When the Detail Requires a Cut Too Close to a Glue Line, as at A, Chipping Is Apt to Result. By Carrying the Cut Below the Glue Line (right) This Chipping Can Be Prevented

Avoid Feather Edge Sticking—Whenever the stuck surface meets the face of the stile at but slight angle, a feather edge must be tenoned on the end of the rail. This tenon is hard to machine and assemble, and the joint nearly always shows as an irregular line after sanding. When face veneer is $\frac{1}{8}$ in. or less in thickness it is a good idea to show, where the contour of the sticking will permit, a right angle cut from the face of the stile down through the veneer, and into the edging strip at least $\frac{1}{32}$ in. This conceals the glue line in the angle, and helps make a firm true joint between stiles and rails. See Figure 4.

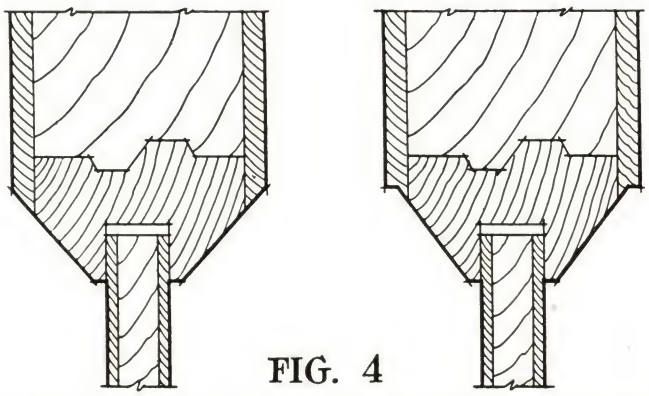


FIG. 4

A Bevel or a Shallow Curve Which Runs to the Surface of a Stile Makes a Difficult Joint to Machine and Usually Makes the Joint Show as an Irregular Line After Sanding. The Construction Shown at the Right Is Better

How to Specify Flush Mouldings—Flush mouldings should, where possible, be brought out almost even with the surface of the stiles and rails, or at least near enough to cover the joint between the core and the face veneer. If the moulding is so low that the glue line is exposed, edging strips on the inside of the stiles and rails are necessary just as though they were to be stuck instead of moulded. The addition of these hardwood edging strips is expensive, and increases slightly the tendency of the stiles to warp.

Doors with Two Kinds of Veneers

Avoid wherever possible doors of two kinds of wood on opposite sides (particularly those $1\frac{3}{8}$ in. thick), due to the tendency to warping and twisting. Where this cannot be avoided, refrain from specifying rabbeted jamb or plowed-in stops—planted stops may be adjusted to accommodate twist, etc.

Combined Flush and Paneled Doors

Do not design a door of flush or sanitary type on one side and paneled on the other on account of tendency to twist.

Exterior Doors

Exterior doors should not be less than $1\frac{3}{4}$ in. thick, and if paneled doors, with stile and rail veneers not less than $\frac{1}{4}$ in. thick before sanding. Panels should be five (5) ply. If flush doors are used, requiring joints in face veneer, use thinner veneer (see page 12). Use water-resisting glue only.

Muntins

Muntins for glazed doors should not be less than $\frac{1}{2}$ in. between glass.

Door Thickness

The following should be made not less than $1\frac{3}{4}$ in. thick: doors over 2 ft. 8 in. wide; doors with one long panel; flush or sanitary doors.

Mouldings

Solid stuck moulding should not be detailed over $\frac{3}{4}$ in. wide. For moulded doors, do not detail mouldings for $1\frac{3}{8}$ in. thick doors over 1 in. wide or for $1\frac{3}{4}$ in. thick doors over $1\frac{1}{8}$ in. wide.

Sanding

All doors, unless otherwise specified, are machine sanded. If a high grade finish is desired, belt sanding or hand sanding should be specified. Belt sanding costs less than hand sanding. All flush doors should be belt sanded.

MASTER SPECIFICATIONS

Hardwood Veneered Doors

Note: *Notes are explanatory or advisory only and are not to be included in the specification.*

Note: *Select and include only those clauses which apply to the particular work. Words or clauses within brackets in italics are selective.*

(1) Work Included

Note: *List and locate doors to be included under this specification, either in schedules on plans or under this heading. If in schedules on plans, refer here to Sheet No. .....*

(2) General

(2a) All *(veneered) (and) (solid)* wood doors shall be as manufactured by HARDWOOD PRODUCTS CORPORATION, Neenah, Wis., or equivalent, meeting fully this manufacturer's standards of materials and construction as set forth in their catalogue in in the current edition of SWEET'S ARCHITECTURAL CATALOGUES.

(2b) All wood shall be fireproofed to meet the prescribed tests of the Building Code of the City of New York.

(2c) Doors shall be of sizes indicated *(on plans) (in schedules on plans) and of design (detailed) (specified under types).*

Note: *For standard sizes, see page 1*

For condensed specifications see Page 2 for Paneled Doors and Page 10 for Flush Doors.

(3) Types

Note: *Select type. If more than one type is to be included, list and locate each under a separate heading.*

(3a) Doors shall be Standard (stock) design No. *(specify No.).*

Note: *See "Construction Standards," page 2.*

(3b) Doors shall be Semi-special design using standard stile and rail thicknesses and widths with panel arrangement and special mouldings in accordance with the detail drawings.

Note: *See page 1. Also "Economy in the Design of Special Paneled Doors," page 16.*

(3c) Doors shall be Special design in accordance with the detail drawings.

Note: *See heading "Practical Suggestions and Economies," page 15.*

(4) Materials and Construction

(4a) Glue—

(4a1) Glue shall be selected high grade vegetable glue.

(4a2) Glue for exterior doors shall be water-resisting.

(4a3) Glue for attaching cross-banding to lead sheet in X-Ray doors shall be special as used exclusively by HARDWOOD PRODUCTS CORPORATION.

(4b) Cores—

(4b1) Core blocks *(and full length core strips)* shall be of clear white pine with tongue and groove glue joint. Core finish on stile edges shall match the wood of face veneers.

(4b2) Cores shall be constructed in accordance with the New York State Building Code requiring alternate full length core strips.

(4b3) Cores for soundproof flush doors shall be tongued and grooved.

(4b4) Cores for X-Ray doors shall be of hardwood, not tongued and grooved.

(4c) Face Veneers—

Note: *See pages 2, 10 and 11 and especially "Selecting and Specifying Face Veneers," page 15.*

(4c1) Exterior paneled door stile and rail veneers shall be *(rotary-cut) (sliced or sawed) .... thick of (specify wood). (Allow ..¢ per sq. ft. for veneer to be selected by the architect.)*

(4c2) Flush door veneers shall be *(rotary-cut) (sliced or sawed) .... thick of (specify wood). (Allow ..¢ per sq. ft. for veneer to be selected by the architect.)*

(4c3) Interior paneled door stile and rail veneers shall be *(rotary-cut) (sliced or sawed) .... thick of (specify wood). (Allow ..¢ per sq. ft. for veneer to be selected by the architect.)*

(4c4) Panel veneers shall be *(rotary-cut) (sliced or sawed) .... thick of (specify wood). (Allow ..¢ per sq. ft. for veneer to be selected by the architect.)*

(4c5) Samples of all figured veneers shall be submitted for approval.

(4d) Flush Door Inlays—

(4d1) Flush door inlays shall be standard design No. .. of *(Holly) (and) (Ebonized wood) (specify wood).*

(4d2) Flush door inlays shall be of special design *(in accordance with detail)* of *(specify wood). (Describe any special features not covered by detail.)*

(4e) Panels—Panels shall be .... thick .... ply.

Note: *See "Construction Standards," page 10.*

(4f) Stile and Rail Joints—

Note: *See "Doweled versus Mortised and Tenoned Construction," page 15.*

(4f1) Doweled Construction—Stiles and rails shall be doweled together with oak or birch dowels not less than ½ in. in diameter and 5 in. long driven into close fitting dowel holes accurately spaced not to exceed 2¼ in. O. C. Dowels shall be grooved lengthwise (4 grooves to the dowel) to facilitate complete glue contact.

(4f2) Mortise and Tenon Construction—Stiles and rails shall be mortised and tenoned together.

(4f3) Mortise and Tenon and Wedge Construction—Stiles and rails shall be mortised and tenoned and wedged together.

(4g) Splines—Furnish *(pine) (hardwood)* panel moulding splines. All mouldings shall be secured to splines and stiles and rails only—panels shall be loose.

Note: *See "Economy in the Design of Special Paneled Doors," page 16.*

(4h) Kiln Drying and Seasoning—All core and veneer stock shall be thoroughly kiln dried before fabrication. In addition all stiles and rails and all panels shall be kiln dried and seasoned to remove the excess moisture contained in the glue before assembling.

Note: *See "Construction Standards," pages 2, 10 and 11.*

(4i) Sanding—

Note: *See "Construction Standards," pages 2, 10 and 11.*

(4i1) All doors shall be machine sanded.

(4i2) All doors shall be *(belt) (hand)* sanded.

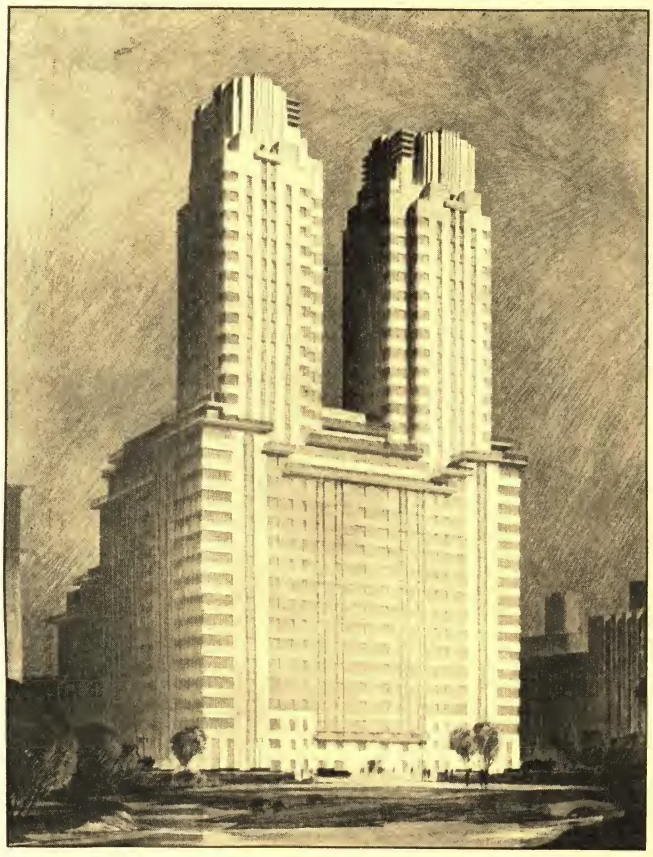
(5) Mill Fitting

Note: *Much expensive field labor can be saved if doors are machine trimmed to accurate net size. Swing or hands of doors must be furnished if lock side bevels are to be mill executed, together with templates of hardware. Give also the net clearance required from finished floor to bottom of door.*

(5a) The door manufacturer shall accurately mill fit to net dimensions all doors in accordance with the schedules to be furnished by *(the architect) (specify).*

(5b) This shall include accurate mortising for butts and locks to fit templates furnished by *(the architect) (specify).*

(5c) Protect all edges of mill fitted doors with wood strips tacked on to prevent damage in shipment, delivery and handling.



Century Apartment, New York—Chanin Construction Co., Builders—6000 Hardwood Products Corp. Doors
Majestic Apartment, New York (Same Builders), 4500 Doors

CARE OF VENEERED DOORS

Shipment and Inspection

A large percentage of our doors are shipped "In the White," without the first coat of filler or stain. The care which is taken in packing for shipment will protect them against damp atmospheric conditions. If doors are wet in transit through carelessness on the part of the railroad companies or as a result of leaky car roofs, the face veneers may blister and loosen. We, of course, cannot be held responsible for damage while in the hands of the transportation company, and for this reason it is important that all shipments from our factory be carefully inspected upon arrival at destination. If the doors have been damaged in transit by water or rough handling, the railway agent should be notified at once to inspect them, and to acknowledge damage with a notation on the expense bill, so that the claim may be collected from the railway company without undue delay. This should be done before the doors are removed from the car or station.

Storing and Finishing

When doors are received they should be stored in a dry building. Before the doors are taken to a newly constructed building, the plaster should be thoroughly dried out, using artificial heat if necessary, and the building entirely enclosed. We will not be responsible if our doors are stored or hung in a freshly plastered building. Unless the doors are to be stored in a dry warehouse, it is important that they be given a coat of filler, stain and shellac as soon as possible after unpacking. After they are finally fitted and hung they should, without fail, be given a coat of paint on the top and bottom edges. This will close the pores and prevent moisture entering. Much will depend upon the character of the work done by the painter as to whether or not doors will present an attractive appearance. No matter how beautiful the grain of the wood its appearance will be spoiled by poor finishing and we strongly advise against trying to economize by employing cheap labor and material in finishing your doors.

RECENT HARDWOOD PRODUCTS CORPORATION DOOR INSTALLATIONS

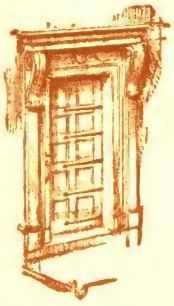
Buildings	Architects
Waldorf-Astoria Hotel, New York, N. Y.	Schultze & Weaver, New York, N. Y.
Pierre Hotel, New York, N. Y.	Schultze & Weaver, New York, N. Y.
Majestic Apartments, New York, N. Y.	Irwin S. Chanin, New York, N. Y.
Century Apartments, New York, N. Y.	Irwin S. Chanin, New York, N. Y.
Victoria Hotel and Addition, New York, N. Y.	Schwartz & Gross, New York, N. Y.
New Weston Hotel, New York, N. Y.	Robert T. Lyons, New York, N. Y.
No. 1 University Place, New York, N. Y.	Emery Roth, New York, N. Y.
Downtown Athletic Club, New York, N. Y.	Starrett & Van Vleck, New York, N. Y.
New York Athletic Club, New York, N. Y.	York & Sawyer, New York, N. Y.
Madison Hospital, New York, N. Y.	Arthur Loomis Harmon (Shreve-Lamb & Harmon), New York,
Apartment at 730 Park Avenue, New York, N. Y.	Lafayette A. Goldstone, New York, N. Y.
Salvation Army Territorial Headquarters, New York, N. Y.	Voorhees, Gmelin & Walker, New York, N. Y.
Syracuse Psychiatric Institute & Hospital, Syracuse, N. Y.	John Russell Pope & Dwight James Baum, New York, N. Y.
LaFollette Park Auditorium, Chicago, Ill.	Michaelsen & Rognstad, Chicago, Ill.
Passavant Hospital, Chicago, Ill.	Holabird & Root, Chicago, Ill.
Holy Name Cathedral Rectory, Chicago, Ill.	Jos. W. McCarthy, Chicago, Ill.
Austin Senior High School, Chicago, Ill.	John Christiansen, Chicago, Ill.
Von Steuben High School, Chicago, Ill.	Paul Gerhardt, Jr., Chicago, Ill.
Powhatan Building, Chicago, Ill.	Robt. S. DeGolyer, Chicago, Ill.
Jefferson Park Congregational Church, Chicago, Ill.	Michaelsen & Rognstad, Chicago, Ill.
Speedway Hospital (Edw. Hines Memorial), Chicago, Ill.	U. S. Veterans Bureau
Health Center Building, Lake Bluff, Ill.	Edw. Schiewe, Chicago, Ill.
Giannini Hall, Berkeley, Cal.	Wm. C. Hays, San Francisco, Cal.
Berkeley Infirmary, Berkeley, Cal.	Arthur Brown, Jr., San Francisco, Cal.
Wm. Taylor Hotel, San Francisco, Cal.	Louis P. Hobart, San Francisco, Cal.
Presbyterian Hospital, Denver, Colo.	W. E. & A. A. Fisher, Denver, Colo.
Civil Court Building, St. Louis, Mo.	Klipstein & Rathmann, St. Louis, Mo.
Park Royal Apartments, St. Louis, Mo.	David R. Harrison, St. Louis, Mo.
President Apartment, St. Louis, Mo.	David R. Harrison, St. Louis, Mo.
Boody Building, Toledo, Ohio	Mills, Rhines, Bellman & Nordhoff, Toledo, Ohio
First National Bank, East St. Louis, Ill.	Russell & Crowell, St. Louis, Mo.
Hawthorne Apartments, St. Louis, Mo.	Pleitsch & Price, Inc., St. Louis, Mo.
St. Anthony's Hospital Addition, St. Louis, Mo.	Klutho, Ranft & Klutho, St. Louis, Mo.
Montgomery Ward Memorial, Chicago, Ill.	James Gamble Rogers, New York, N. Y.
United Masonic Temple, Chicago, Ill.	C. W. & Geo. L. Rapp, Chicago, Ill.
St. Mary's Hospital, East St. Louis, Ill.	Frank Kratzer, St. Louis, Mo.

MANUAL OF VENEERED DOORS

















HARDWOOD PRODUCTS CORPORATION

NEENAH
WISCONSIN

HYDE-MURPHY COMPANY

Manufacturers of Architectural Woodwork

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Products

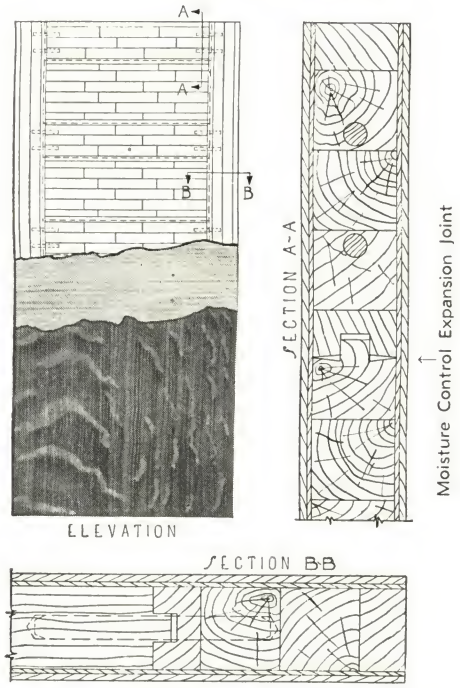
ARCHITECTURAL WOODWORK of all kinds.

For "Takapart" Portable Partitions (patented), see Manufacturers' Index.

Facilities

Largest woodworking plant in the East devoted exclusively to special woodwork and doors, centrally located for prompt delivery. Skilled estimators and experienced draftsmen. Union workmen.

"No-Warp" Flush Doors



Details of "No-Warp" Door Construction

Cores—White pine (or chestnut), built up. Stiles and rails, with grain reversed, glued and doweled together forming a flush surface core with "Moisture Control Expansion Joints" (patent pending) between cross rails to control effects of humidity changes. Uniformly surfaced before veneering.

Veneers—Standard, 1/8-in. faces, 1/16-in. cross bandings. Other thicknesses optional. (We do not recommend thinner than 1/8-in. face veneers.)

Glue—Best grade, water-resistant. Veneers applied under 2500 lbs. hydraulic pressure.

Drying—*Very important*—Core blocks kiln-dried before assembling. After being cross-banded, doors are *kiln-dried* (an exclusive feature) before face veneering, removing all excess moisture absorbed during gluing. After veneering, doors are again kiln-dried, reducing the moisture content to the proper degree for service.

Data Sheets—Write for detail and data sheet.

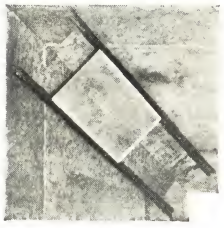
Architectural Woodwork

It is difficult to list our products: frames, sash, doors, mouldings, cabinet work, stairs, etc., to special details and differing on every building as the architect wishes. The products represent unlimited variety.

Rose windows as in foreign cathedrals, English panelwork, mantels and beamed ceilings, Colonial rooms and other odd work are often produced by us. This makes our position unique in the woodwork field; a plant equal to the largest or most difficult contracts, where each order is a unit, maintaining its individuality. If it is made of wood, used in building, we can furnish it.

Keystone "Lock-joint" Erected Trim

With patented "Keystone Lock-joint Clamp" obtainable only from this company but used without extra cost on all our erected trim.





The "Keystone Lock-joint Clamp"



A spring steel clip with slightly convex face and acute angle flanges, is fitted into corresponding convex grooves, the metal clip spanning the miter. Inside each corner is a tightly fitted hardwood spline which is glued in, holding the surfaces of the trim on the same plane.

Being held by steel, Keystone "Lock-joint" Erected Trim is unaffected by climate, humidity or temperature and will never open up at the joints

References

Langdell Hall, Harvard College, Cambridge, Mass., Coolidge, Shepley, Bullfinch & Abbott, Architects
Fordham Hospital, New York, N. Y., Starrett & Van Vleck, Architects
Geo. Vanderbilt Hotel, Asheville, N. C., W. L. Stoddart, Architect
H. H. Stambaugh Memorial Auditorium, Youngstown, Ohio, Helmle & Corbett, Architects
Army Medical School, Mess and Kitchen Bldgs., Ward Bldgs. 1 and 2, Connecting Corridors, etc., Walter Reed General Hospital, Washington, D. C.
Keystone Athletic Club, Pittsburgh, Pa., Janssen & Cocken, Architects
First Presbyterian Church, New Rochelle, N. Y., John Russell Pope, Architect
Investment Bldg., Washington, D. C., J. H. de Sibour, Architect
All Souls Church, Washington, D. C., Coolidge & Shattuck, Architects
Rockland State Hospital, Orangeburg, N. Y., Sullivan W. Jones, Architect
First National Bank Bldg., Miami, Fla., Mowbray & Uffinger, Architects
Masonic Temple and Scottish Rite Cathedral, Scranton, Pa., Raymond Hood, Godley & Fouilhoux, Architects
Elizabeth Manor Apt., Philadelphia, Pa., Clarence E. Wunder, Architect
United Bank Bldg., Cleveland, Ohio, Walker & Weeks, Architects
Boulevard Apt., Washington, D. C., Phillip M. Jullien, Architect
Fifteen High Schools and over fifty grade schools in New York City alone with many more in the other large cities

Larger list of references mailed on request.

ESTABLISHED 1836

THE R. McMILLEN COMPANY

INCORPORATED 1902

Manufacturers of Hardwood Doors, Pine Doors, Sash and Millwork

OSHKOSH, WISCONSIN

SALES OFFICES

BUFFALO, N. Y. BIRMINGHAM, ALA. CHICAGO, ILL. DALLAS, TEX. NEW YORK, N. Y. WASHINGTON, D. C.

Products

Special Doors of all kinds:
"Nu-Mold" Doors.
"Inner-Frame" Doors.
Flush Doors.
"Max-Royal" Stock Doors.
Pine Doors and Sash.
General Millwork.

We specialize on hardwood veneered doors. Our products are sold through independent jobbers, wholesale dealers and mills.

Resources and Facilities

A strictly modern plant with capacity in excess of 1200 doors per day. The best of heavy machinery designed to produce accurate workmanship. A crew of skilled mechanics and a minimum labor turnover. We welcome any investigation of our financial responsibility and integrity.

Guarantee

We unconditionally guarantee our product to be of first quality material carefully seasoned and well manufactured and will repair or replace any door or other product which within two years is shown to have been defective in either material or workmanship. We ask only the exercise of ordinary care in the storage and installation of our products.

Samples

On orders totalling 500 or more doors, if desired, a typical full size sample door will be furnished gratis for architects' approval before we manufacture the job. On smaller jobs such samples may be had at cost. Sample corners showing construction are always available.

Catalogues

Showing a full line of our products and details of construction may be had by writing our Oshkosh office.

Suggested Standard Specifications for Veneered Doors

Interior Doors shall be constructed of thoroughly seasoned materials redried by door manufacturer before assembly to a proper and uniform moisture content. All core material shall be of soft pine glued up of blocks not over 2 ins. wide on the face and joints in adjacent rows of core to be well staggered. Unless otherwise stated, exposed edges shall have a ¾-in. thick strip of the same wood as the face veneer. All veneers for stiles and rails shall be ⅛ in. thick before sanding unless otherwise noted. All glue used in the door construction must be a high grade vegetable or casein glue, equally distributed over the surface and applied under pressure before "chilling." Panels shall be three or five-ply as noted. All joints shall be assembled with *hardwood* spiral groove dowels not less than ⅝x5-in. joints 6 ins. or less in width to have two dowels with an additional dowel for each additional 3 ins. or fraction in width. All joints must be well fitted and all moulded edges smoothly machined. Unless otherwise noted, all doors shall be smoothly machine sanded with "0" sandpaper or finer.

The manufacturer's trade-mark or label shall appear on all doors. All doors shall be manufactured by approved manufacturers, such as ..... Co. ..... Co. or THE R. McMILLEN Co.

Exterior Doors shall be made to the same specifications, except that all veneers for stiles and rails shall be not less than ¼ in. thick before sanding and shall be applied with a high grade casein water-resistant glue.

Recent Installations of McMillen Doors

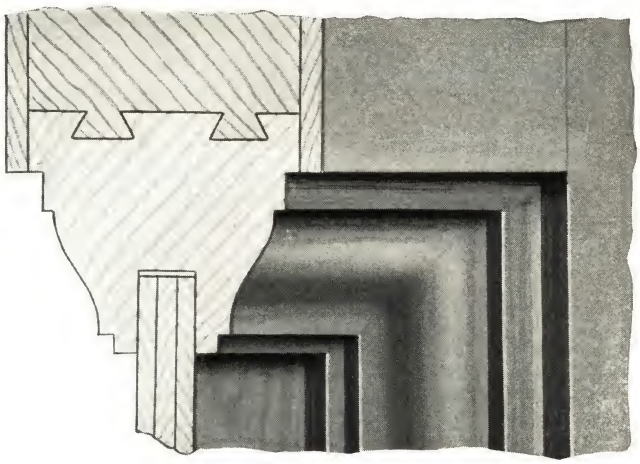
BUILDING	LOCATION	ARCHITECT
U. S. Postoffice Building	Baltimore, Md.	Treasury Department, Washington, D. C.
Pittsburgh City Home	Mayview, Pa.	Eric Fisher Wood, Pittsburgh, Pa.
St. Agnes Nurses' Home	Fond du Lac, Wis.	Schmidt, Garden & Erikson, Chicago, Ill.
Ritz-Carlton Hotel	Boston, Mass.	Strickland-Blodgett & Law, Boston, Mass.
Y. W. C. A. Building	New Haven, Conn.	Douglas Orr, New Haven, Conn.
Morris Park K. of C. Building	Brooklyn, N. Y.	Wm. J. Boegel, New York, N. Y.
Marshall Field, Garden Home Apartments	Chicago, Ill.	Andrew J. Thomas of New York, and Graham, Anderson, Probst & White, Chicago, Ill.
Criminal Courthouse	Chicago, Ill.	Eric E. Hall, Chicago, Ill.
Sterling Law School Dormitories	New Haven, Conn.	James Gamble Rogers, New York, N. Y.
St. Mary Gate of Heaven Church	Ozone Park, L. I., N. Y.	Emile G. Perrot, Philadelphia, Pa.
Ambassador East Hotel	Chicago, Ill.	Robt. F. DeGolyer, Chicago, Ill.
Park Place Hotel	Traverse City, Mich.	Benj. H. Marshall, Chicago, Ill.
Kings Park State Hospital	Kings Park, L. I., N. Y.	Sullivan W. Jones, New York, N. Y.
Michael Reese Hospital Addition	Chicago, Ill.	Schmidt, Garden & Erikson, Chicago, Ill.
Orthopedics Hospital	Chicago, Ill.	Charles Hodgdon & Son, Chicago, Ill.
University of Rochester	Rochester, N. Y.	Gordon & Kaelber, Rochester, N. Y.

McMillen's Nu-Mold Hardwood Stock Door





McMILLEN'S
NU-MOLD
DOOR
With all the beauty of
A
FLUSH MOLDED
DOOR
But
None Of Its Disadvantages



Full Size Detail of Nu-Mold Doors
Notice the heavy hand-molded effect—yet this costs no more than an ordinary door

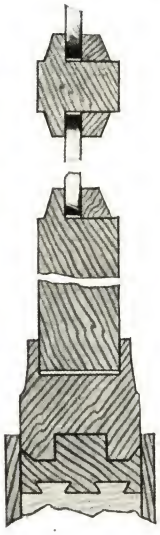
Here is something decidedly new in fine door construction. A first quality hardwood stock door, having all the beauty of a flush molded door but none of its disadvantages. "There are no nailholes to disfigure the surface." The molding is coped, not mitered. The *joints can not open.* In addition to the two designs illustrated, Nu-Mold doors are made in other designs. Catalogue and layout measurements showing the complete line will be furnished on request.

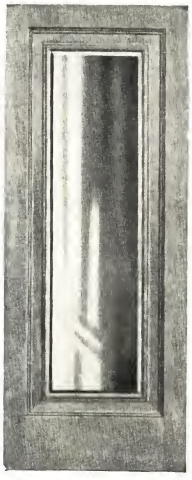
McMillen's Improved "Inner-Frame" Doors



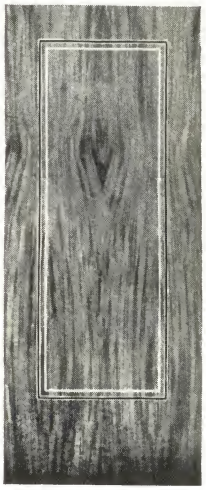












We show above a few of our Max-Royal designs of "Inner-Frame" Doors with details of their construction. Note that the moulding or "backband" is in *one solid piece.* There are *no nails or nailholes* on the face of the door.

Provision is made for shrinking or swelling so there can be no open joints. The mitre corners of the inner-frame are put together with *metal splines* which keep them permanently tight. Our catalogue gives a complete list of designs, layouts, etc.



McMillen's Slab Doors

These doors are constructed to give satisfaction.

They carry the same liberal guarantee as any other veneered door we manufacture.

Details of construction will be furnished on application.

McMillen's Distinctive Entrance Doors

Save you money and time. They are architecturally correct and distinctive in appearance. A wide choice of designs is available. Why detail a special door when these distinctive doors can be had at much lower cost?

ESTABLISHED 1889

THE WHEELER, OSGOOD COMPANY

MANUFACTURERS OF

Doors, Plywood and Millwork of Douglas Fir and Philippine Hardwood

TACOMA, WASHINGTON

BRANCH SALES OFFICES

NEW YORK, N. Y., 2712 Grand Central Terminal
CHICAGO, ILL., 35 East Wacker Drive
ATLANTA, GA., 310 Bona Allen Building
DALLAS, TEX., 6030 Mercedes Street
LOS ANGELES, CALIF., 1600 E. Washington Street
SAN FRANCISCO, CALIF., 3045 19th Street
SPOKANE, WASH., S. 2627 Grand Boulevard

DOUGLAS FIR

LAMINEX DOORS

Stock Products

DOUGLAS FIR: Laminex Interior and Entrance Doors; Laminex Plywood; WOCO (solid stiles and rails) Interior, Entrance and Garage Doors; Trim and Moulding; Lumber; Columns and Newels.

PHILIPPINE HARDWOOD (Light and Dark Red); Laminex Interior and Entrance Doors; Trim and Moulding; Plywood; Lumber.

Made to Detailed Specifications

Doors, Trim and Moulding of Douglas Fir and Philippine Hardwood for commercial or public buildings and homes.

Plywood—Flat or Vertical Grain of Douglas Fir. Ribbon Grain Philippine Hardwood.

Send plans and specifications for cost and time estimate to THE WHEELER, OSGOOD COMPANY, Tacoma, Washington.

The Troubleproof Door

Staunchly withstanding the severe tests to which they have been subjected, both in the laboratory and in actual use all over the world, Laminex doors have become famous as doors that will not shrink, swell, warp or come apart. Once properly hung, a Laminex door never needs to be refitted or planed down.

As the result of their performance in all weather and in all climates, Laminex dors have become standard equipment with thousands of architects for homes, apartments, hotels, hospitals, schools and commercial buildings.



The door that *stands* the famous WATER TEST!

Laminex Door Construction

The stiles and rails of a Laminex door are built up on a core of blocks dovetailed and jointed together with the grain so crossed that expansion and contraction are neutralized. Flawless face veneers are cemented *permanently* to the core with special formula Laminex cement which is waterproof and actually stronger than the wood itself. *Four* ⅝-in. dowels are used in each end of the bottom rails.

Stock Laminex doors are furnished in either flat or vertical grain stiles and rails.

Standard Specifications (Douglas Fir Laminex)

All doors, unless otherwise indicated, shall be Douglas Fir Laminex, manufactured by THE WHEELER, OSGOOD COMPANY, Tacoma, Washington. Stiles and Rails shall be built up. Face Veneers shall be [flat] [vertical] grain cemented to cores with Laminex waterproof cement. Door panels to be rotary cut Douglas Fir, 3-ply, made up with Laminex waterproof cement. The doors when delivered to the job, shall bear the regular Laminex guarantee label and trade-mark.



Left: Belle Porte Laminex. Either vertical or flat grain. Stiles and top rail 4 9/16 in.; bottom rail 9⅜ in.; insert frame vertical grain solid fir



Left: Laminex No. 82. Either vertical or flat grain. Stiles and top rail 4 9/16 in.; lock rail 8 in.; bottom rail 9⅜ in.; bead and cove sticking

Right: Laminex No. 22. Either vertical or flat grain. Stiles and top rail 5⅜ in.; bottom rail 11⅜ in.; bead and cove sticking

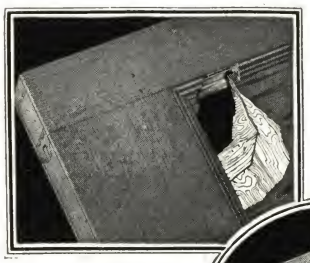


Right: Laminex No. 66. Either vertical or flat grain. Stiles and top rail 4 9/16 in.; cross rail 4½ in.; lock rail 8 in.; bottom rail 9⅜ in.; muntins 4½ in.; bead and cove sticking

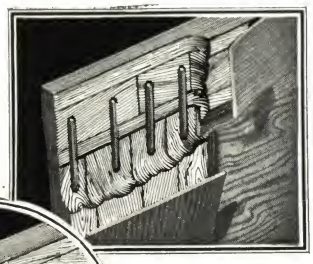




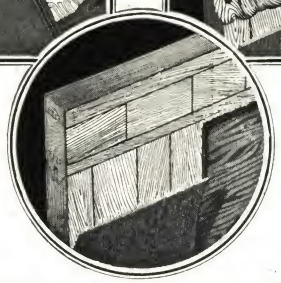
Laminex No. 829. Either vertical or flat grain. Stiles and top rail 4 9/16 in.; lock rail 4½ in.; bottom rail 9⅜ in.; bars ½ in. between glass; bead and cove sticking



Above: Clear 3-ply panels with grain crossed. They will not buckle or blister



Above: Oversize (⅝-in.) dowels—and one more than is used in the average door



Above: In the Laminex stile, separate blocks with grain crossed, counteract the tendency to warp



Laminex No. 1536. Either vertical or flat grain. Stiles and top rail 5⅜ in.; bottom rail 11⅜ in.; bars ½ in. between glass; glass beads tacked in; bead and cove sticking

PHILIPPINE LAMINEX DOORS

A Custom Built Door at Stock Door Prices

Architects and others interested in building fine homes and public buildings have demanded something new and attractive, yet practical, in doors and other millwork items. To meet these requirements, the Philippine Hardwood Laminex line of doors was developed, offering unlimited possibilities in designing attractive and modern interiors when planning new homes and other structures.

The slender, ribbon grain so characteristic of mahogany is present in Philippine Laminex doors, making them ideally suited for this class of work. Architects will be agreeably surprised at the exceedingly moderate cost of Philippine Laminex doors as they compare very favorably in price with domestic hardwood doors.

For Homes, Office Buildings, Hotels and Apartment Houses

Philippine Laminex doors are manufactured in scores of interesting and attractive stock patterns, all of which are architecturally correct.

One of the greatest advantages in using these doors is the fact that they may be finished in a variety of colors. All the shades from light walnut to deep dark red mahogany may be perfectly obtained with the proper stains. The secret of the beauty and the rich lustrous finish that these doors take lies in the super job of smoothing and the hard texture of the stock.

Doors and trim of Philippine Laminex are widely used for residences and buildings where cost is considered but not of prime importance, yet they are also quite within the reach of those building modest homes and where cost is a factor.



No. 507. A stock Philippine Laminex Entrance Door, one of a series of exceptional doors. These doors, with their close running, graceful ribbon grain add to the attractiveness of entrances.

Philippine Laminex Doors Manufactured to your Design and Specifications

A special department is ready to serve you and produce doors and trim of your detailed designs and specifications. Send plans and specifications to THE WHEELER, OSGOOD COMPANY, Tacoma, Washington, for estimate.

The Philippine Laminex Door Guarantee

In Philippine Laminex doors, you have unexcelled beauty and refinement combined with perfect performance. Laminex construction does away with the natural shrinking and swelling of wood, and eliminates the untold expense involved in rehanging and refitting warped or twisted doors. It puts an end to all door troubles and worries.

Every genuine Philippine Laminex door is guaranteed not to shrink, swell or warp, assuring you that you may safely specify these doors and be certain that they will give the service expected and to which you are entitled.

Standard Specifications (Philippine Hardwood Laminex)

All doors, unless otherwise specified, shall be Philippine Hardwood Laminex, manufactured by THE WHEELER, OSGOOD COMPANY, Tacoma, Washington. Stiles and rails shall be built up. Face veneers shall be ribbon grain cemented to cores with special Laminex waterproof cement. Door panels to be ribbon grain Philippine Laminex, 3-ply, made up with special Laminex waterproof cement. The doors when delivered to the job shall bear the Laminex guarantee label and trade-mark.

Right: No. 66. Stiles and top rail 4 9/16 in.; bottom rail 9 3/8 in.; muntins 4 1/2 in.; sunk ogee sticking; flush or raised moulding





Left: Belle Porte. Stiles and top rail 4 9/16 in.; bottom rail 9 3/8 in.; sunk ogee sticking



Right: No. 22. Stiles and top rail 5 3/8 in.; bottom rail 11 3/8 in.; sunk ogee sticking



Left: No. 1535. Stiles and top rail 4 9/16 in.; bottom rail 9 3/8 in.; sunk ogee sticking; bars 1/2 in. between glass



Right: No. 71. Stiles and top rail 5 3/8 in.; lock rail 5 3/8 in.; intermediate rail 4 1/2 in.; muntins 4 1/2 in.; bottom rail 11 3/8 in.; sunk ogee sticking; flush or raised moulding



Left: No. 70. Stiles 5 3/8 in.; lock rail 8 in.; bottom rail 11 3/8 in.; sunk ogee sticking; flush or raised moulding



Right: No. 74. Stiles and top rail 5 3/8 in.; bottom rail 11 3/8 in.; sunk ogee sticking; hinged sash



Left: No. 73. Stiles 5 3/8 in.; bottom rail 11 3/8 in.; raised moulding one side; sunk ogee sticking one side; hinged sash



Left: No. 106. Slab; 5-ply construction; solid framed lumber core; 1/8-in. crossbanding (not concealed); 1/8-in. face veneers; circle top hinged sash

Right: No. 107. Slab; 5-ply construction; solid framed lumber core; 1/8-in. crossbanding (not concealed); 1/8-in. face veneers; gothic type hinged sash



This guarantee label is affixed to one end of every genuine Laminex door, both Douglas Fir and Philippine Hardwood. It is your assurance of dependable door service



LAMINEX *Guarantee*

This Laminex door, built by our exclusive process, is guaranteed. In case of failure not due to neglect or misuse, we will replace it without charge.

THE WHEELER, OSGOOD COMPANY
Tacoma, Washington. U. S. A.

ESTABLISHED 1853

PAINE LUMBER COMPANY, LTD.

OSHKOSH, WIS.

BRANCH OFFICES AND DISPLAY ROOMS

CHICAGO, ILL., 2307 Tribune Tower
DETROIT, MICH., 11-217 General Motors Building
CLEVELAND, OHIO, Builders Exchange Building, Room C-1713
NEW YORK, N. Y., One Madison Avenue
KANSAS CITY, MO., 538 New York Life Building
MIAMI BEACH, FLA., P. O. Box 152
WASHINGTON, D. C., 4707 Connecticut Avenue, N. W.

Products

"KORELOCK," "MIRACLE," "KLIMAX" and "MAPLEWOOD" DOORS.

We are one of the largest producers of Veneered Doors, both in stock and special design.

Our organization is equipped to handle doors in any quantity, any wood, any design.

"Korelock" Doors

These doors represent a construction that is used in the core of Veneered Doors that has proven satisfactory in all types of buildings in the United States, Canada, and foreign countries for thirty-five years.

"Miracle" Doors

These are a substile door introduced in 1921 and are made in all woods. They are endorsed by the entire building industry. Over three million "Miracle" Doors are in use today.

No door has been more widely imitated.

"Klimax" Doors

"Klimax" Doors are softwood stile and rail doors with hardwood panels, made in any combination of woods or designs.

"Maplewood" Doors

Flush Moulded Veneered Maple doors in a variety of designs at an extremely moderate price. These doors show the greatest variety of grain and figure of any of our commercial woods.

Specifications for Veneered Doors

All doors both exterior and interior, except metal and metal covered doors, shall be ..... (state kind of wood) Veneered Doors as manufactured by the PAINE LUMBER COMPANY, LTD., Oshkosh, Wisconsin.

Interior doors shall be .... in. thick with standard 1/8-in. veneer and of designs shown or noted.

Exterior doors shall be .... in. thick with .... in. veneer (not less than $\frac{3}{16}$ in.) and of designs as shown or noted. All doors shall be painted with a good grade of oil paint, top and bottom, to prevent absorption of moisture.

Guarantee

All doors furnished hereunder shall be guaranteed by the manufacturer who shall replace f.o.b. user's railroad station, any door which proves defective in material or workmanship. The manufacturer's trademark *shall be stamped on edge of door.*

The PAINE Miracle Door

KORELOCK
TRADE-MARK

PAINE LUMBER CO. LTD. MAPLEWOOD DOORS PANELS TRADE MARK

KLIMAX
TRADE-MARK

RODDIS DOORS



Special Design Roddis Doors Installed in J. B. Robertson Residence, San Antonio, Tex.
WM. MCKNIGHT BOWMAN, Architect

FLUSH FRENCH
PANEL STOCK DOORS
CUSTOM BUILT
SPECIAL DESIGN
DOORS TO ORDER



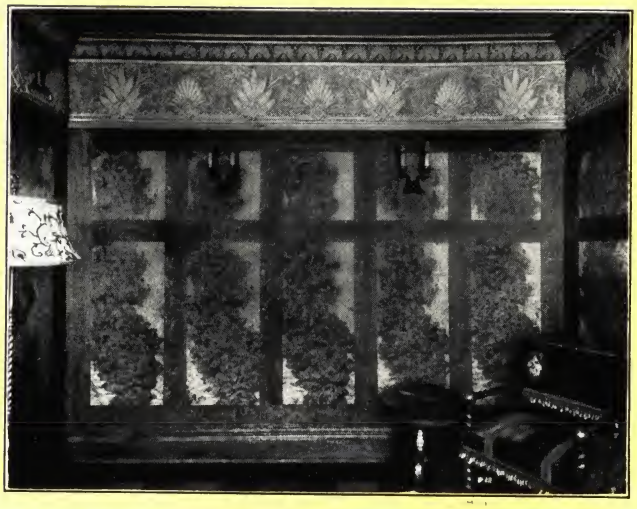
This Red, White, Blue Dowel Is On The Edge Of Every Roddis Flush Door. It Is The Roddis Mark Of Identity And Quality.



Special Design Roddis Doors in Dollar Savings & Trust Company Building, Pittsburgh, Pa.
PRESS C. DOWLER, Architect, Pittsburgh, Pa.



Roddiswood Panels in City Savings Bank, Mt. Clemens, Mich.
BONNAH & CHAFFEE, Architects, Detroit, Mich.



Roddis Paneling in Warner Bros. Theatre, Youngstown, Ohio
RAPP & RAPP, Architects, New York and Chicago

RODDIS WOOD

VENEERS • PANELS • WAINSCOTING

RODDIS LUMBER AND VENEER CO.

Manufacturers of Flush, French, Panel and Custom Built Doors
Complete Line of Quality Plywood Products:
Counterfronts Tops Veneers Wainscoting Panels

MARSHFIELD, WIS.

FACTORIES: MARSHFIELD AND PARKFALLS, WIS.
Nationwide Warehouses . . . See Page 10

PRODUCTS

RODDIS STERLING FLUSH DOORS
RODDIS CUSTOM BUILT DOORS

5-Ply, With or Without Inlay

Residence doors.
Mirror doors.
French doors.
X-ray doors.
Weaver ventilated doors.
Toilet doors.
Wardrobe doors.
Restaurant fly doors.

RODDIS PLYWOOD PRODUCTS

Roddis wainscoting in plain and fancy woods.
Roddiswood.
Roddis Panelyte.
Roddis Metalface Plywood.
Roddis Aerowood.
Stock panels.
Counterfronts.
Linoleum tops.

RODDIS LUMBER

Hemlock.
Pine.
Northern Hardwoods.
Band Sawn—Air or Kiln Dried.



This Red-White-Blue Dowel Trade-Mark is on the edge of the Roddis Flush Door. It is the Roddis mark of identity and quality.

THE COMPANY

Facilities and Resources

We own extensive timberlands, operate 25 miles of railroad, two sawmills and one of the largest plywood factories in the world, manufacturing our own timber into choice lumber and veneers for doors and plywood products.

Roddis Special Engineering Service

Roddis Engineering Staff will co-operate with architects and millmen on all blueprints, layouts, etc., so that special doors, wainscoting, paneling and Roddis Panelyte may be shipped to a job, each member of which will be numbered for its specific place in accordance with blueprints, making it possible to erect the highest type of millwork with a minimum of effort.

Roddis Finishing Service

Recognizing the importance of proper finishing, Roddis, more than 25 years ago, established a department for finishing and primer work. This department is equipped with modern machinery, handled by experts, and is designed to stain, fill and shellac doors and other interior woodwork. It is also equipped to apply primer coats of white lead and oil.

The work of varnishing should invariably be done at the job.

Too much emphasis cannot be placed upon the proper finishing of woodwork. The beauty of fine doors is often lost through the ignorance, carelessness or inability of the painter to apply the preliminary finishes properly. Often the painter is unable to correct conditions over which he has no control.

Doors which are properly cleaned and prepared at the factory are in prime condition for finishing. To expose the doors without any primer or protecting coats of finish to damp weather, dust and dirt, places a very difficult task on the painter at the job and is very expensive.

We especially recommend that inlaid doors which are to be stained should have this done before inlaying so as to insure against any creeping. This results in an inlay which is both clear and well defined.

Our charges for staining, filling and shellacing are very low and insure first class work. We estimate that 75% of our doors going into the Eastern territory of the United States are given the preliminary coats at our plant. The importance of doing this work before shipping has become generally recognized.

Consult our Finishing Department. Submit samples of any finish you wish and Roddis craftsmen will give you an ideal match. Write for the Roddis color chart.

Bulletins and Architectural Data

A complete series of bulletins will be mailed upon request, covering full data and dimensions of all standard and special purpose Roddis Flush Doors, Roddis Custom Built Panel Doors, Roddis Marine Plywood, Roddis Panelyte, and Roddis Aerowood. All bulletins are designed for use in A.I.A. standard binders. Current bulletins showing complete installations are published from time to time and will be sent to those architects and mills whose names are listed.

Complete detailed specifications for all Roddis products will be gladly furnished to architects, either from Marshfield or our local distributors.

Roddis Waterproof Glue

In the Roddis laboratories, among other things, has been developed a casein glue, for which we have yet to find an equal. The reason for this high quality glue is that Roddis being located in the heart of the dairy section of the United States has available the highest grade casein in the world. From these caseins has been developed a wet mixed glue that tests from 50% to 75% higher than any of the commercial casein glues on the market.

It is a known fact throughout the glue industry that a wet mixed glue is superior to dry mixed, but it is not practical to manufacture for sale such a glue, as it would set up before being ready to use. Therefore, regular manufacturers must use a dry mixed glue or expose their formula. It is very evident that Roddis has the advantage in this situation which is the cause of such exceptionally high standing waterproof glue materials. The bond is so good that when galvanized metal is glued to wood, the galvanizing will tear long before the glue will give.

Proper Thickness of Face Veneers

For all interior doors, we recommend face veneers approximately $\frac{1}{16}$ inch thick. This thickness prevents glue staining and gives a most satisfactory bond. The accompanying table of shear tests, prepared by Roddis engineers, clearly demonstrates the importance and strength of thin veneers, which allow for a more thorough penetration of glue.

For exterior doors, which are exposed to the weather and do not require a fine finish, heavy veneers have been found to be most practical and for this type of door we recommend a thickness of not less than ⅛-in. veneer. This applies only to the exterior doors which do not require the finishing that an interior door requires, and this point should be clearly understood as the thin veneer should always be used where fine finishing is required.

Roddis casein glue is insensible to heat or cold or humidifying influences. Thick veneers are not held as firmly and, in spite of the glue bond, move at the exposed surface with the result that doors made up with thick veneers invariably show open joints which eventually mar the appearance and otherwise unfavorably affect the usefulness of the door.

We are aware of the fact that it is a common belief that heavy face veneers are required in order to make a good, sound door and that the heavier the veneer, the better the door. This very common idea is disproven by the table below, which shows conclusively that if a fine finish is required, the practice of thin face veneers must be adhered to. The only limitation on the thinness of the veneer must be its practicability and the avoidance of glue stain; experience points to the durability and permanence of thin veneers which, held firmly by the glue, prevent reaction by the wood to atmospheric influences.

As will be noted, as the thickness increases, the strength of the test decreases. Also, where material is listed as 3 and 5 ply, 5 ply is the stronger. This is explained as follows: On ¼-in. 3-ply plywood the center stock was made $\frac{3}{32}$-in. thick whereas on ¼-in. 5-ply the center stock was thinner to permit the extra two plies. It would not be practical in the construction of veneered doors or tabletops to use a construction such as 1/24-in. 3-ply which means that each sheet of veneer must be .01 thick. However, the point is clearly shown that the $\frac{1}{16}$-in. veneer gives a much greater strength in bond than ¼-in veneer and at the same time is heavy enough to eliminate or prevent staining from glue penetration. The fact is that heavy veneers eventually destroy themselves in the door.

SHEAR TEST ON GLUE BOND

Thickness, in.	In pounds	Per square inches	
	Ply	Dry	Wet
$\frac{1}{24}$	3	480	283
$\frac{1}{16}$	3	423	250
$\frac{3}{32}$	3	420	253
$\frac{3}{16}$	3	336	224
¼	3	333	263
¼	5	392	209
$\frac{3}{8}$	5	321	204



No. 1831



No. 1029



No. 431

RODDIS STERLING FLUSH DOORS

Merits—Roddis Doors are sanitary, sound and fire-resistant. Heat, cold, dampness, water or steam has little effect on them. They are furnished with surface veneer of any desired wood and inlaid as specified. The unbroken surface of natural wood provides great beauty which is of important decorative value.

Materials—We control every step in the production of Roddis Flush Doors. Material for the cores come from our own timber tracts, through our sawmills, and its proper seasoning and drying is under our scientific direction. Only this specially prepared wood enters the cores; no waste or odd scrap material is used.

Veneers—Unless otherwise specified, $\frac{1}{16}$-in. veneer is used on all doors. Long experience proves the correctness of this specification. Please note paragraphs in regard to the proper thickness of face veneers on page 2.

Waterproof Glue—All Roddis Doors are glued with casein waterproof glue of our own manufacture. Please note paragraph in regard to Roddis glue on page 2.

Guarantee—Every Roddis Sterling Flush Door is guaranteed for two years as to workmanship and material.

Endorsement—Roddis Flush Doors are in service in thousands of prominent buildings in all sections of the country. Highly endorsed by leading architects for hotels, hospitals, schools, clubs, apartments, public and office buildings, and better class homes. To any architect unfamiliar with Roddis Doors, a comprehensive list of such endorsements will gladly be submitted.

SPECIFICATIONS

All doors shall be laminated 5-ply flush veneered doors without panel—as manufactured by Roddis Lumber and Veneer Co., Marshfield, Wisconsin.

These doors shall be of thickness specified by the architect and constructed as follows: cores built up of self-reinforcing, varying length narrow strips of fully seasoned, dried softwood, glued together; core to be double veneered with two $\frac{1}{16}$-in. hardwood veneers on each side, glued on and thoroughly dried; the first veneer to have grain running crosswise and the second, or surface veneer, with grain running lengthwise. The first (or crossbanding) veneer shall run full to the four edges of the door. Top and bottom of door, as well as the two side edges, shall be banded with a hardwood edgestrip $\frac{3}{4}$-in. thick and glued to the core.

All glue used on these doors shall be Roddis waterproof glue.

Each door delivered shall be fully guaranteed by the manufacturer as to construction according to this specification and against defect in material or workmanship.

All inlaid doors shall be stained before inlaying with approved color to prevent staining of inlay. Doors are to be given one coat of shellac after inlaying and before shipping, to protect same. All doors to be carefully crated or packed in car, and delivered subject to the approval of the architect.

(We recommend that the paragraph relating to staining and shellacking be changed so as to include all doors, whether inlaid or not.)

Note: Standard Sizes of Roddis Flush Doors are carried in stock at Marshfield and by all Roddis warehouses—See list on page 10.

REFERENCE TO ILLUSTRATIONS

No. 1831—Flush Door. White Oak. Clover Leaf Opening. Round Top. V-Grooved and Studs.

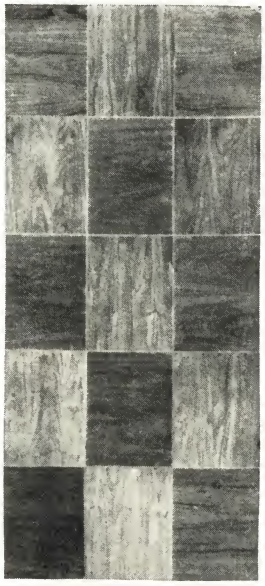
No. 1029—Flush Door in Sawn White Oak.

No. 431—Flush Door. Plain Maple. Stiles and Rails. Type B Inlay. Curly Maple Center Panel. 2-Tone Effect.

No. 1028—Flush Door with $\frac{1}{8}$-Inch Black Walnut Face Veneer Laid in Squares as Shown and V-Grooved on All Joints.

No. 1131—African Mahogany. Type B Inlay. Center Panel for 2-Tone Effect.

No. 2731—Maple, with Black or Ebonized Birch Inlay.



No. 1028



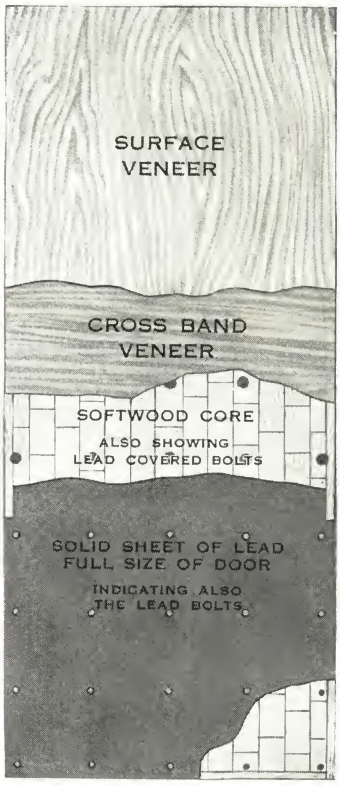
No. 1131



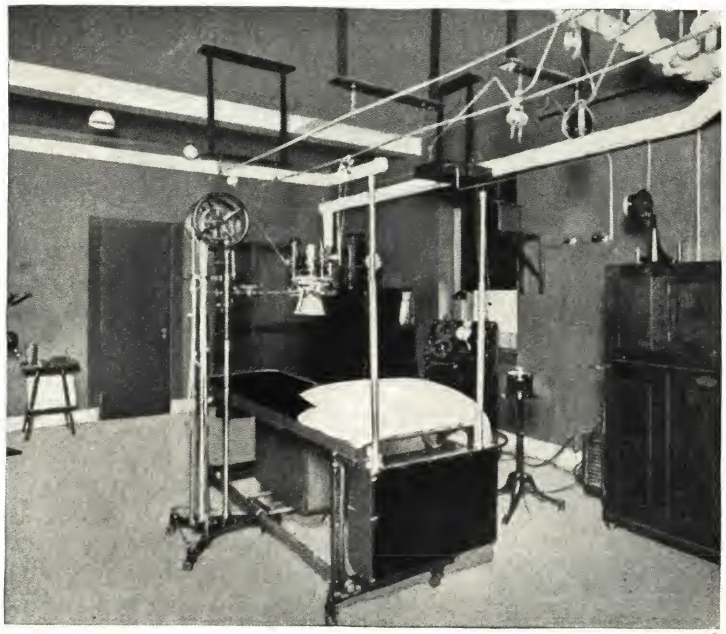
No. 2731

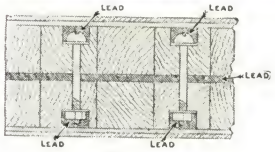
RODDIS SPECIAL PURPOSE DOORS

In Stock and Made to Order According to Specific Details and Any Individual Requirement



- Mirror Doors.
- French Doors.
- Dor Vent.
- Weaver Ventilated Doors.
- Special V-groove Entrance Doors.
- Doors With Special Lights—One to Eight Lights, Etc.





Type "R-302" Door
Unselected Birch. With observation opening. Designed for use in all instances where window in door is desired. The opening can be of any size or shape required for any given purpose. It can be finished and inlaid as desired.

THE RODDIS X-RAY DOOR

The Roddis X-Ray Door was designed for this company by a prominent architect specializing in hospital buildings. This door functions the same as other X-Ray doors—but is not as heavy, awkward or unsightly as are other doors of its type. The Roddis X-Ray door is equipped with a thick continuous sheet of lead down the center of the door, which is bolted and securely held in position with lead-covered bolts, as shown in the upper left hand drawing on this page.

In every other respect this door follows the fundamental Roddis design and construction, having the same inner core, the usual cross band veneer and surface veneer and the protecting hardwood edge-strips all around. The surface veneer is furnished and finished as specified—for veneer, color, grain, etc., and provides every beauty of appearance for the X-Ray room and in full conformity with the hospital's interior architecture. The Roddis X-Ray Door is used quite generally in hospitals throughout the United States, and is highly recommended as the most desirable and satisfactory door for the X-Ray Room.



The Weaver Dor-Vent Door
See Detail Page 8



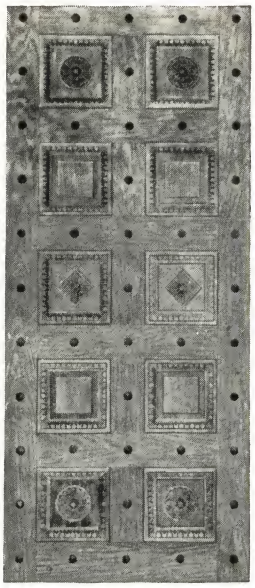
Roddis Flush Door
With observation opening.



Roddis Flush Doors
Plain and with window light as installed in St. Anthony School, Syracuse, N. Y.



Special Roddis Flush Door
American walnut, with Masonic emblem inlaid with burl walnut and white holly.



No. 1431



No. 3002



No. 3003

RODDIS FINE RESIDENCE DOORS

Roddis Fine Residence Doors are custom made, special to order, yet with stock door delivery. They are of Roddis Flush Door construction, and are adaptable to any architecture or design of interior because of the artistic effects possible by special inlays of rare woods attractively matched. Roddis has an international reputation for leadership in artistry of woods and ingenuity of craftsmanship as accomplished in residence doors, and probably is the only company completely equipped to supply doors of such quality and service. There are many possibilities of design available, with inlays entirely within the taste and judgment of the buyer, allowing for specific requirements and originality without limit.

ECONOMICAL IN COST

Although Roddis fine residence doors are used in many of the finest homes in the country (names on request), these doors of beautiful rare woods and exclusive design are obtainable at exceptionally low prices so that the most modest dwelling is likewise able to have the exquisite individuality and beauty of this Roddis quality.

NO-TRIM ECONOMY

Another economy is possible in that no special trim is necessary. Good results are obtained by eliminating the trim about the door jamb, allowing the plastered wall to form a background for the rare woods. This accords with American thought and design, and forms a most pleasing contrast with the beautiful figured woods.

For example: If Walnut, Mahogany or Birch is used for the door a sound wood trim such as Pine, Basswood, Gum, etc., is used enameled an eggshell gloss white, or painted any other desired shade. With Maple doors a simple trim of inexpensive design in plain Maple is recommended.

The effects accomplished by the artistic arrangement of rare woods and inlays, from beautiful plain to the ultra futuristic designs, are obtaining an ever increasing demand for Roddis fine residence doors in all parts of America. More details sent on request, including special residence door brochure.

REFERENCE TO ILLUSTRATIONS

No. 1431—Special Sawn White Oak door with hand carved mouldings and ornaments. Raised panels.

No. 3002—Flush door with Walnut border—Ash center—inlay our 3-ply Type B.

No. 3003—Curly Maple flush door with Burl Walnut triangle design—inlay single line of black.

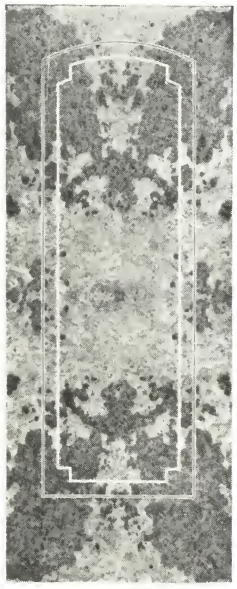
No. 3006—Walnut veneered door with special inlay.

No. 3642—Flush door veneered with Carpathian Elm, Type C inlay. (See catalogue design R-642.)

No. 3008—Special veneered flush door. Center panels of matched Myrtle with mitred figured Walnut border.



No. 3006



No. 3642



No. 3008



Brandeis Stores Beauty Parlors, Omaha, Neb.



Warner Bros. Theatre, Youngstown, Ohio



City Savings Bank, Mt. Clemens, Mich.



Syracuse Trust Co., Syracuse, N. Y.



Ira Wilson & Sons Dairy Co., Detroit, Mich.

RODDIS WAINSCOTING

With Special Features of Engineering Service

Roddis has better than 400,000 sq. ft. of floor surface, 300 skilled mechanics, the most expensive glue presses in the country, and prompt delivery is available for the most difficult work.

Our Engineering Service permits you to receive all the wainscoting marked and numbered in the same manner as structural steel, reducing to a minimum the time required for installation and eliminating the necessity for skilled mechanics to erect the wainscoting. No sizes of panels are too difficult to manufacture, we having manufactured panels as long as 25 feet and some 22 feet one-piece veneer. Bent work is equally as efficiently handled.

Most unusual opportunities are now given the architect and engineer in the use of the beautiful veneers and woods. More than 75 rare woods are available and the effects obtained are almost without number. Avail yourself of this service offered by Roddis. Consult our engineers on your next installation.

Roddis paneling, combining the best of construction with a leading selection of rare woods, makes a wainscoting unsurpassed in its beauty and appeal.



Dave Gilbert, Inc., Fort Worth, Tex.



C. B. 100

RODDIS CUSTOM BUILT DOORS

It has always been the aim of the Roddis Lumber and Veneer Co. to assist and serve the architect in every way possible. This feature of Roddis policy has helped establish for Roddis the splendid reputation it now enjoys with recognized leaders in the architectural field.

Every Roddis manufacturing and designing facility is at the command of the architect to help him better serve and please his client. He is cordially invited to use these resources to his advantage.

The Custom-Built Door gives the architect exactly the door he wants at a reasonable price, delivered on short notice. Roddis has solved the problem of combining *individual* design with *standard production* and offers the Custom-Built Door as an outstanding achievement in door manufacture. The Custom-Built Door by Roddis is truly made to order. The architect has utmost freedom in design, faithfully executed by Roddis in a plant famed the world over for fine doors.



C. B. 103

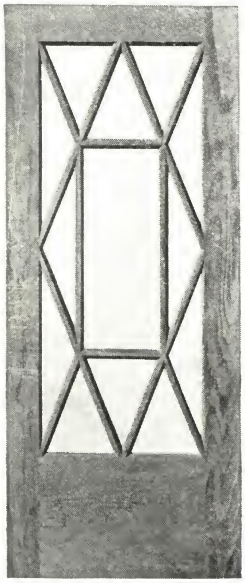


C. B. 101

GENERAL DESIGN

No limitations are imposed by Roddis in the design of the Custom-Built Door. It may be made in any size and finished in any veneers or combinations. One panel doors, one panel and one light, two panels and one light or one long light, are among the variations that may be employed. Like all doors built by Roddis, the Custom-Built employs those principles of construction that assure permanence. The Roddis guarantee is based on perfect materials and workmanship and complete satisfaction.

See Page 5
Roddis Fine Residence Doors



C. B. 104



C. B. 102

REFERENCE TO ILLUSTRATIONS

C. B. 100—Circle top, 10-panel type, flush construction with panels inserted in cut-outs and moulded. R. C. Unselected Birch.

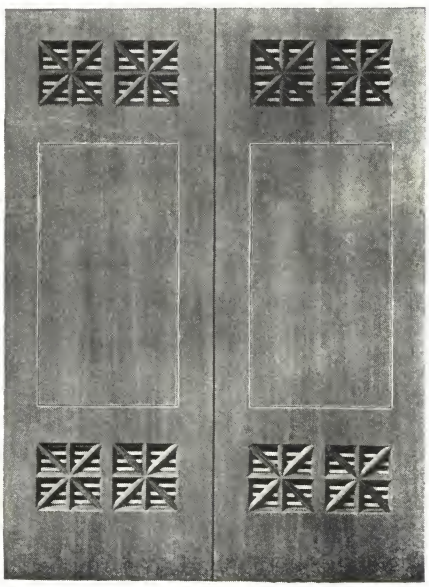
C. B. 101—Diamond shaped raised panels, flush moulded in openings cut in flush door. R. C. White Pine.

C. B. 102—Octagon light with special arrangement of divided lights. R. C. White Pine flush door.

C. B. 103—Brown ash. 4 V-grooved panels, two lights divided nine lights each light. Tudor head. Stile and rail construction.

C. B. 104—White Pine veneered front door. 13 special lights (12 diamonds, 1 square). Stile and Rail construction.

C. B. 105—African Mahogany flush. Wood louvres with wood grilles type B inlay. Pair doors shown.



C. B. 105

WEAVER DOR-VENT DOOR DETAIL

DOR-VENT DOORS

Furnished by Roddis Completely Equipped

(See Open Vent View Page 4.)

The Dor-Vent door is standard and can be had in any type Roddis door shown in the Roddis catalog, sent on request. The Dor-Vent equipment includes hinges, lock, closer and screws, which are fitted completely to Roddis doors in the Roddis factory before delivery.

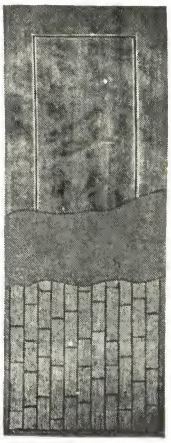
Add Beauty—because they are of a most artistic proportion, follow correct architectural lines and have no attachments foreign to the appearance of a regular door. The top tilting panel or sash operates on two collapsible metal hinges. This panel does not strike the wall when the door is opened, but automatically and quietly closes into place in the door; when the door is closed again the vent panel lowers and opens gradually, smoothly and noiselessly.

Give Greater Utility—The principle of ventilation is correct because the Dor-Vent unit is near the ceiling where foul air can pass out or fresh air in. The ventilating area is unobstructed by slats, which affords much more efficient ventilation than a larger obstructed area. The Dor-Vent hinges open or close the tilting panel by finger-tip effort which is a decided improvement over squeaking, jamming transom lifts.

Save Money—over the cost of a door and a transom because the top panel of the door is used in place of the transom. The Dor-Vent hinges cost less than the transom hardware, the casings, jambs and labor required to install the same. The space saved by the elimination of a transom represents a 12½% saving in cost usually required for wall materials for the space.

Ventilation is of first importance in many parts of the United States and is important everywhere. For appearance, utility and economy, we recommend the Dor-Vent. Write for our Dor-Vent folder describing this new and valuable invention.





RODDIS FLUSH DOOR DETAIL CONSTRUCTION

Core of Softwood Blocks

Uneven in lengths to equalize and absorb any tendency to shrink or swell; and cemented together into one integral unit by a special Roddis-compounded waterproof glue and thoroughly dried; providing a core of unchangeable shape and size, solid and strong yet not of heavy weight

¾-in. Hardwood Edge Strips Completely Around the Core—Top, Bottom and Both Side Edges

Securely seal and protect the core from moisture. The only door made with hardwood edge strip on all four edges as standard construction, which is a noteworthy Roddis Flush Door distinction

1/16-in. Cross-band Veneer

On both faces of door, glued to the core and thoroughly dried—complete hardwood closure for the softwood core. The grain of this veneer runs crosswise, to prevent lateral warpage and further reinforce the door's stability

1/16-in. Hardwood Surface Veneer on Both Faces of Door, Over Crossband Veneer

Cemented with Roddis process waterproof glue and thoroughly dried. Surface veneer grain runs the long way, opposite to crossband grain, and reinforces tensile strength and rigidity of the door

RODDIS PANELYTE

Same Purpose as Marble, Wood Paneling, Structural Glass, Enameled Metal

New Development

The combined resources of two leading manufacturers of America—Panelyte Corporation of New York City and Roddis Lumber & Veneer Company of Marshfield, Wisconsin—now offer to the public a new product, a superior plywood with an everlasting surface, Roddis Panelyte.

Panelyte is a face of resinous substance, approximately $\frac{1}{16}$-inch thick, cemented to Roddiswood, metal, asbestos or composition board, and known as Roddis Panelyte. The resinous surface is very hard and dense, practically inert chemically, and is not injured by gasoline, benzol, alcohol or ordinary acids and alkali, resisting high and low temperatures.

Roddis Panelyte may be used for the same purposes as marble, wood paneling, structural glass and enameled metal.

Roddis Panelyte's Many Uses

Roddis Panelyte can be employed for:

(1) Soda fountain bars and tables.
(2) Restaurant table tops.
(3) Tops for club, office and hotel furniture.
(4) Refrigerators.
(5) Kitchen cabinets and sinks.
(6) Store fronts and show case baseboards.
(7) Deal plates, kick and push plates.
(8) Wall Paneling and wainscoting.
(9) Card table tops.
(10) Steamship interiors.
(11) Bank interiors.
(12) Mop boards.
(13) Interior trim.
(14) Restaurant and soda fountain booths.
(15) Outdoor furniture.
(16) Laboratory equipment.
(17) Elevator cabs.

Qualities, Sizes, Characteristics and Designs

The characteristics which make Roddis Panelyte so superior are:

(1) Heat does not affect the surface up to 350° F.
(2) Erection can be done by carpenters.
(3) Does not stain.
(4) Does not chip or crack.
(5) Easily cleaned.
(6) Ordinary acids and alkali have no effect upon it.
(7) Waterproof.
(8) Delivery can be made in a short time.

Roddis Panelyte may be obtained in many designs, such as Burl Walnut, Verde Antique Marble, Black and Gold Marble, and flat colors and decorative designs.

Roddis Panelyte is available in the following sizes:

36x36 in.	48x60 in.
36x48 in.	72x48 in.
36x72 in.	48x120 in.

The thickness of the finished product is dependent upon its intended use and may vary from ⅛ inch to 2 inches or thicker, if desired.

Our Engineering Service is at your command. Simply put your problem up to your nearest distributor or write direct to our main office at Marshfield, Wis.

RODDIS METALFACE PLYWOOD

With the ever increasing demand for metal covered plywood, our Research Department, after extensive development work, has produced a metal clad plywood which, we believe, is superior to any on the market at the present time. This opinion is substantiated by the following comparative tests with the product of several of the leading competing metal clad plywood manufacturers. Samples Nos. 3 and 4 are the product of the same manufacturer. Otherwise, each sample represents the product of a well-known, advertised brand of metal-covered plywood.

SHEAR TEST IN POUNDS PER SQ. IN.

Description	Dry	Wet
Sample No. 1.....	50	Too small to record
Sample No. 2.....	211	64
Sample No. 3.....	200	80
Sample No. 4.....	290	93
Roddis Metalface....	429	168

The shear test is made in accordance with the Government airplane specifications and shows the strength of the glue bond between the metal and the wood. The dry test is made after the stock is completely ready for shipping, and the wet test is made from samples submerged in water 48 hours and tested wet.

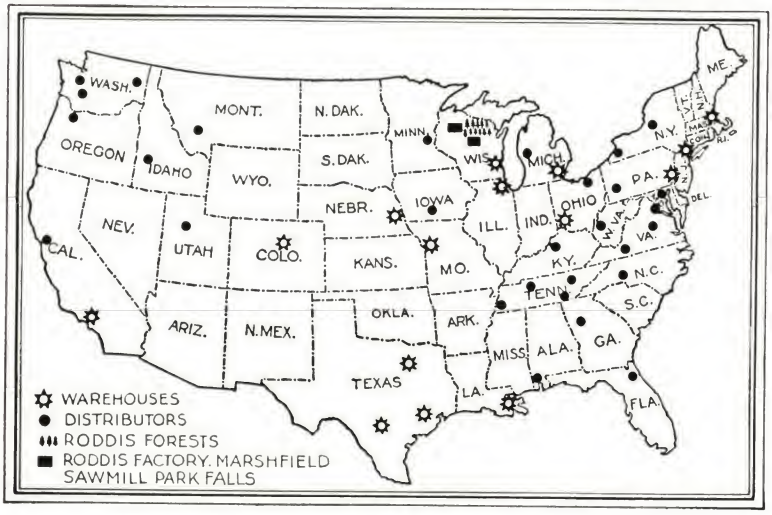
In other words, Roddis Metalface is from 50% to 60% higher in shear test than any of the competitive samples tested. Also, it tests better than the general requirement of the Government airplane plywood stock, which is 300 lbs. dry and 160 lbs. wet.

Another feature of Roddis Metalface is the fact that it will stand heat up to better than 250 degrees F. The metal used is a special figured galvanized steel which will take any sort of finish, lacquer, etc., without any additional work.

The reason for such a far superior metal clad plywood is that we have fortunately discovered a secret process which gives us a bond actually superior to the bond between the galvanizing and the steel.

Samples and prices furnished upon request.

RODDIS WAREHOUSES AND DIVISION OF DISTRIBUTION NATIONWIDE » » » »



EAST

NEW YORK, N. Y.
Roddis Plywood Co.
628 W. 28th St.

PHILADELPHIA, PA.
Estate of Daniel Buck
5th and Jefferson Sts.

CAMBRIDGE, MASS.
Sargent Plywood Co.
262 Richdale Ave.

DETROIT, MICH.
Roddis Lumber & Veneer Co.
7840 Dix Ave.

SOUTH

DALLAS, TEXAS
Roddis Lumber & Veneer Co.
2403 So. Harwood St.

HOUSTON, TEXAS
Roddis Lumber & Veneer Co.
3203 McKinney Ave.

SAN ANTONIO, TEXAS
Roddis Lumber & Veneer Co.
727 No. Cherry St.

NEW ORLEANS, LA.
Tulane Hardwood Lumber Co.
4200 Tulane Ave.

CENTRAL WEST

CHICAGO, ILLINOIS
Roddis Company
1435 W. 37th St.

CINCINNATI, OHIO
Central Panel & Supply Co.
110 W. Commerce St.

MARSHFIELD, WISCONSIN
Roddis Lumber & Veneer Co.

MILWAUKEE, WISCONSIN
Roddis Lumber & Veneer Co.
4601 W. State St.

KANSAS CITY, MO.
Roddis Lumber & Veneer Co.
2729 Southwest Blvd.

OMAHA, NEBRASKA
Omaha Hardwood Lumber Co.
1144 N. 11th St.

WEST

LOS ANGELES, CALIFORNIA
E. J. Stanton & Son
P. O. Box 773, Vernon Sta.

DENVER, COLORADO
Hardwood Lumber Co.
W. 14th Ave. and Umatilla St.

Distributors in all Principal Cities

RODDIS

DOORS - COUNTERFRONTS - TOPS - VENEERS - WAINSCOTING PANELS

RODDIS DOORS



Special Design Roddis Doors Installed in J. B. Robertson Residence, San Antonio, Tex.
WM. MCKNIGHT BOWMAN, Architect

FLUSH FRENCH
PANEL STOCK DOORS
CUSTOM BUILT
SPECIAL DESIGN
DOORS TO ORDER



This Red, White, Blue Dowel Is On The Edge Of Every Roddis Flush Door. It Is The Roddis Mark Of Identity And Quality.



Special Design Roddis Doors in Dollar Savings & Trust Company Building, Pittsburgh, Pa.
PRESS C. DOWLER, Architect, Pittsburgh, Pa.



Roddiswood Panels in City Savings Bank, Mt. Clemens, Mich.
BONNAH & CHAFFEE, Architects, Detroit, Mich.



Roddis Paneling in Warner Bros. Theatre, Youngstown, Ohio
RAPP & RAPP, Architects, New York and Chicago

RODDIS WOOD

VENEERS • PANELS • WAINSCOTING

KLISE MANUFACTURING COMPANY

Manufacturers of Wood Carvings and Carved Wood Mouldings, Twist Work, Rosettes and Ornaments

MAIN OFFICE AND FACTORY
GRAND RAPIDS, MICH.

BRANCH OFFICES AND SALESROOMS

LOS ANGELES, CALIF., 800 North Spring Street
Telephone, Madison 1101
SAN FRANCISCO, CALIF., 401 Fourth Street
Telephone, Kearny 1711
JAMESTOWN, N. Y., Jamestown Hotel Building
Telephone 3832
HIGH POINT, N. C., 302 Commercial National Bank Building
Telephone 4996
NEW YORK, N. Y., 192-96 Lexington Avenue
Telephone, CAledonia 5-9244
CHICAGO, ILL., 310 So. Michigan Avenue
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Carved Wood Mouldings, Ropes and Beads

For wall paneling, cornices, shelf edging, interior and exterior trim. Ropes cut rights and lefts and beads furnished full round, half round, quarter round, three-quarter round and flat side, and in various diameters. Patterns clean-cut in kiln-dried wood. Mouldings made in various sizes and widths. Many stock patterns for immediate shipment. Hundreds of other patterns can be made promptly.

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For drops, balusters, finials, etc. Made to your specifications or furnished from patterns already made. A complete line of rosettes and ornaments—stock designs—from which to make selection.

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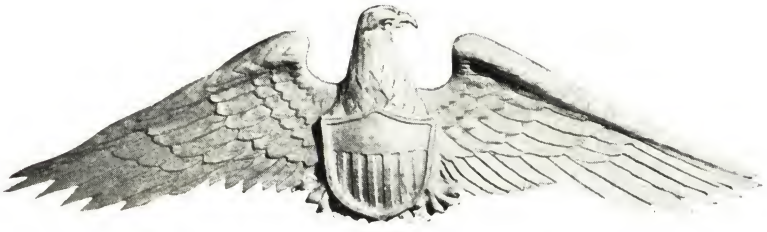
We maintain a complete service for wood carvings of every type—carvings produced by hand, spindle or multiple machine as required by the specifications of the job.

Samples, Illustrations and Prices

Samples of mouldings, ropes, beads, rosettes and ornaments can be furnished promptly on request. Illustrations of larger work in designs already made will be sent and prices given on special work or on any quantity of stock patterns.

Correspondence Invited

The Klise plant is capable of handling any size job. It is staffed by high class craftsmen and always gives good service to meet building demands and dates. Correspondence is invited—specifications will be given immediate attention.



C800



No. 3 Cornice—Machine Carved—DM2073 Pattern—3x4 Inches



C811



B25, 26 and 27

PENROD, JURDEN & CLARK CO.

Manufacturers of American Walnut Lumber and Veneers, and Importers of Foreign Cabinet Woods

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KANSAS CITY, MO.

MILLS: KANSAS CITY, MO., DES MOINES, IOWA, AND CINCINNATI, OHIO

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KANSAS CITY, MO., Sheffield Station—American Walnut Lumber and Veneer

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EQUIPPED TO SUPPLY EVERY NEED OF THE ARCHITECT

American Walnut Timber

Carefully selected from first quality stock, obtained from the region of the best stands of Walnut Timber. Modern equipment and facilities in our plant for conversion, a skillful corps of workmen, and more than fifty years' experience of our supervising staff, is the guarantee for the high quality of our complete and diversified stock of Walnut lumber.

With a well-organized Service Department, our business is operated for the purpose of supplying every need of the market at competitive prices. The heart of our entire organization is in our work, and being recognized as the largest manufacturers of American Walnut, we are in a position to satisfy any of your requirements of lumber for interior trim, flooring and other sorts of woodwork.

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We carry a complete stock of rotary, half-round, back cut, sliced, quartered, bastard and flat cut, stumps, butt, crotch and burl veneer of beautiful figure effects and of various colors and shades, carefully manufactured from the very choicest material. In our stocks you will



Paneled Wall in the Library of the Residence of Mr. Ralph L. Jurden, Chairman, Kansas City, Mo.

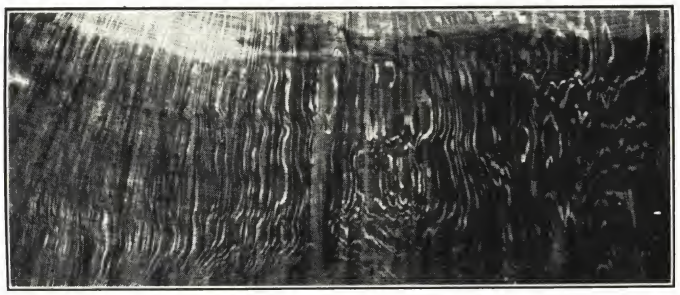
Panels are American Walnut Crotch, Framed in Carved American Walnut
BRYANT FLEMING, New York, N. Y., Architect
Interior Woodwork by AMERICAN SASH AND DOOR CO.

find many trees, whose grain and markings will suggest new conceptions of design that will inspire the best of creative effort.

Advantages of American Walnut

American Walnut is the king of decorative woods because of its unsurpassed natural beauty, for its valuable properties of holding its place, resistance to decay and abuse, its excellent blending and finishing qualities, its exceptional variety of figure effects and dignified color. When made up into panels and trim it adds more value to the room than its original cost. It is inexpensive in maintenance and retains its mellow, beautiful effects for ages. It combines economy with beauty, giving lasting satisfaction to the architect as well as the owner.

Our stock of veneer is cut from selected logs and runs, therefore, unusually clear. The texture is firm and the wood takes a splendid finish.



Typical Quartered English Brown Oak Veneer
Used for Interior Woodwork and Manufactured by
PENROD, JURDEN & CLARK COMPANY

For fifty years this company, which is one of the largest producers of American Walnut, has specialized in this wood and carries a continuous stock of millions of feet; consequently there is no better qualified organization in this country today to dispense its products in lumber, dimension and veneer.

A COMPLETE STOCK OF IMPORTED AND FANCY VENEERS

We extend a cordial invitation to you to visit our conveniently arranged sample rooms and inspect our stock, or if preferable, we shall be pleased to submit samples for your selection according to your specifications. Sales offices are located in the principal cities of the United States and Canada. In addition to our stock of American Walnut, we carry a complete line of the following imported and fancy veneers:

Ash
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Graywood
Harewood
Kambala
Koa
Laurel, Indian
Lovea
Maple
Mahogany, African
Mahogany, Mexican
Movingui
Oak, American
Oak, English Brown
Oak, Russian
Oak, Australian Silky
Oriental Wood
Pearwood
Padauk, African
Padauk, Andaman
Padauk, Burma
Palo Blanco
Prima Vera
Rosewood, Brazilian
Rosewood, East Indian
Rosewood, Madagascar
Sapelie
Satinwood, East Indian
Sycamore
Tamo
Teak
Tulipwood
Walnut, Circassian
Walnut, English
Walnut, French
Walnut, Italian
Zebrano



Lounge in Netherland Plaza Hotel, Carew Tower, Cincinnati, Ohio
Brazilian Rosewood—WALTER AHLSCHLAGER, Chicago, Architect
Interior Woodwork by THE ROBERT MITCHELL MFG. CO., Cincinnati, Ohio

Burls

Ash
Elm, French
Madrona
Maidhu
Maple
Myrtle
Poplar
Redwood
Soleye
Thuya
Walnut, Circassian
Walnut, French

Crotches

Faux Satine
Mahogany
Oak
Rosewood, Brazilian
Walnut, Circassian

Butts

Ash
Maple
Walnut, French

Swirls

Ash
Oak

AMERICAN PLYWOOD CORPORATION

Manufacturers of Plywood

NEW LONDON, WISCONSIN

Responsibility

We refer you to Dun's and Bradstreet's.

Facilities

We operate one of the largest plants devoted to the manufacture of high grade plywood. Our veneers are cut at our own veneer cutting plants at New London, Wisconsin, and Montgomery, Alabama. Since we started operating over ten years ago we have continually improved our plant and it is today equipped with the most modern machinery and laid out in a systematic manner. During the past 10 years we have manufactured over fifty million feet of high grade plywood for wainscoting, furniture, cabinets, yachts, ships, automobiles, airplanes, and other special purposes.

Ply-Rite

PLY-RITE, THE "PLYWOOD OF RECOGNIZED QUALITY"

Standard (Stock) Sizes

Available in 3-ply ¼-in., 5-ply ⅜-in., 5-ply ½-in., and 5-ply $\frac{13}{16}$ in., 24, 30, and 36 ins. wide, 48, 60, 72, 84, and 96 ins. long, and also in 5-ply $\frac{13}{16}$-in., 144 and 120 ins. wide, 42, 36, and 28 ins. long.

Custom Sizes

Manufactured to your order in practically any size, such as 120x192 ins. and even up to 22 ft. long in any number of plies and thicknesses from 3-ply $\frac{1}{16}$-in. up.

Wainscoting

Should be custom built to get the utmost in perfection. We have the facilities, experience and ability and are constantly putting them to use in the manufacture of plywood wainscoting for fine buildings. Architect's details are carefully followed. Panels are matched consecutively from the log flitches and each panel numbered so that it can be installed in the proper sequence.

Woods

We manufacture from the log all of the domestic veneers going into our plywood. In some woods where long logs can be obtained we are able to produce veneer as long as 22 ft. in one piece for length. This is especially desirable for certain effects in high-ceiling rooms.

We have produced plywood in over one hundred different foreign and domestic woods and can give complete information as to the thickness of veneers and sizes available.

When Specifying

Advise your bidders that satisfactory plywood can be obtained from the AMERICAN PLYWOOD CORPORATION. We will be pleased to have architects consult us or ask that some one in our organization call on them. We will be especially pleased to have architects visit our plants.



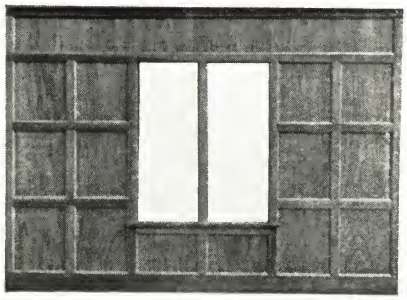
The Four Walls of a Dining Room, Emphasizing the Artistry Which Can Be Developed in Rooms of Moderate Size

Note particularly the perfect balance between solid, paneled walls and open door and windows



Note the pleasing effect of the flat surfaced door and the paneled walls. The plain frieze is attractive in this type of paneling





Balance is essential in room paneling. Compare the three-windowed and two-windowed walls

DOUGLAS FIR PLYWOOD MANUFACTURERS

Sixth Floor, Skinner Building
SEATTLE, WASHINGTON

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THE ASSOCIATION

A non-profit organization of all United States manufacturers of Douglas Fir Plywood, founded to sponsor a continuing program of research, to promote the use of this material in construction and industry, and to help users employ it to the best advantage.

Inquiries as to the characteristics or uses of Douglas Fir Plywood will receive the prompt attention of our Research Bureau. Address DOUGLAS FIR PLYWOOD MANUFACTURERS, *Skinner Building, Seattle, Wash., or any of the above mills.*

The Product

(Test data on pages 10 to 12, inclusive.)

Douglas Fir Plywood consists of three or more rotary-cut and individually dried sheets of Douglas Fir, glued together cross-grain under hydraulic pressure. The water-resistant glue used forms a bond of high shear test, stronger than the wood fibers themselves, and the cross-grain lamination approximately equalizes the strength of the resulting panel in both directions.

Douglas Fir is the name commonly applied to the tree species Pseudotsuga Taxifolia. This tree grows on the Pacific slope, where the climatic conditions produce a wood of soft texture combined with great strength. For this reason, and because of its unusually light weight, Douglas Fir lumber is widely specified by engineers for heavy structural timbers.

In the manufacture of Douglas Fir Plywood, only the choicest Douglas Fir logs are used. These are the so-called "peeler" logs, which are less than 1% of the total production of Douglas Fir logs.



DOUGLAS FIR PLYWOOD

REAL LUMBER
Engineered for greater size and strength

Combines Lumber and Wallboard Advantages

Therefore Douglas Fir Plywood possesses all the advantages of the very finest Douglas Fir lumber—because it *is* lumber—yet it is available in convenient "wallboard" sizes and has far greater structural strength than either lumber or wallboard.

It comes in a wide variety of standard widths and lengths—up to 4x8 feet—and in standard thicknesses from $\frac{3}{16}$-inch 3-ply to $1\frac{3}{16}$-inch 7-ply. Thus waste can be minimized by selection of just the right size for the particular need.

Douglas Fir Plywood is economical because it is most inexpensive of all plywoods, actually costing less *per surface foot* than ordinary lumber. Moreover, its light weight and wide range of large sizes make possible savings of 10% to 60% in handling and labor costs.

Available Throughout the United States

The great majority of building material dealers stock Douglas Fir Plywood, in an assortment of sizes and grades.

Price

Although the price of Douglas Fir Plywood varies somewhat in different localities—because of varying freight rates, quantities ordered, etc.—it should retail at little if any more than the price of fiber substitutes.

Physical Characteristics

Comprehensive tests are in progress to determine in the fullest detail both the physical properties of Douglas Fir Plywood and its performance in specific uses. Data resulting from the first series of these tests are shown on pages 10 to 12, inclusive.

The light weight of Douglas Fir Plywood is demonstrated by the fact that a cubic foot of ⅜-inch 3-ply, for example, weighs only 34 pounds. The specific gravity is .55.

Because of this, and because of its laminated, cross-grain construction, Douglas Fir Plywood is very much stronger than steel, pound for pound.

Strength Approximately Equalized in Both Directions

Whereas the tensile strength of ordinary lumber may be twenty times as high parallel to the grain as across it, and the modulus of elasticity from fifteen to twenty times as high, in plywood they are nearly equal in both dimensions. Similarly, the shear strength of plywood is almost the same parallel to as across the grain.

Because of this nearly equalized strength, there is no plane of cleavage. Hence plywood cannot be split except by extraordinary force. It is virtually impossible to split even a small piece with a hatchet or axe.

Its approximately equalized shear strength allows nails and screws to be placed close to the edge without danger of splitting.

Highly Resistant to Warping, Shrinking and Expanding

As each ply is dried before the gluing process, and as any tendency of the individual plies to shrink or expand is prevented by the cross-grain construction, plywood is extraordinarily resistant to shrinkage and expansion. Once in place, it will never warp.

Because even a thin plywood panel possesses such great strength, it can be used as a facing in positions that would not allow the extra projection of solid wood.

Plywood is available already sanded to a satin-smooth finish, thus reducing labor costs at the point of construction.

Finishing Properties

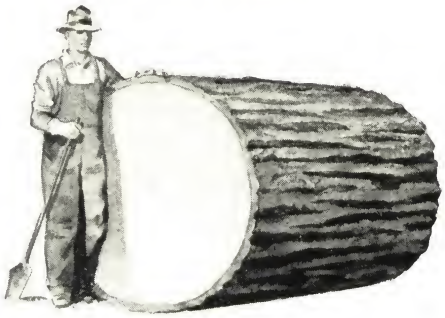
Douglas Fir Plywood will take any wood finish and lends itself admirably to a multiplicity of decorative treatments. It can be stained, waxed, painted, enameled, or lacquered, and it serves as a base for plastic paint.

For fine lacquering and enamel work, it is well to treat the plywood first with one part of commercial shellac combined with six to eight parts of wood alcohol. This thin shellac penetrates the wood without leaving a heavy crust such as sometimes causes enamel and lacquer finishes to check and flake. The surface should be well sanded with No. 00 sandpaper between the coats of lacquer or enamel.

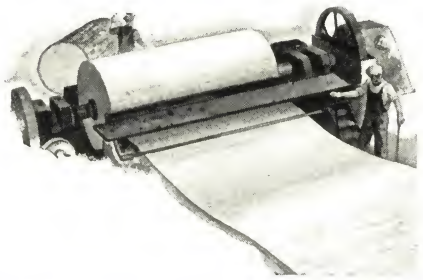
If the edges are to be exposed, they should be sanded smooth, and then covered thinly with putty or some similar plastic material.

If the plywood is to be exposed to weather, three good coats of a high grade paint or spar varnish should be applied. An undercoat of aluminum paint is an excellent protection.

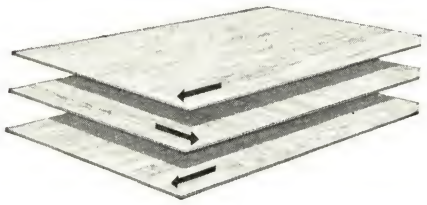
HOW DOUGLAS FIR PLYWOOD IS MADE



1 **Selected Douglas fir logs are cut to length and barked.**



2 **Then turned on a giant lathe and peeled off into endless lengths of thin wood sheets.**



3 **These sheets of wood are cut to size, laid cross-grain, and glued together flat with water-resistant glue under hydraulic pressure.** ***(Arrows show direction of grain.)***



4 **The result is a new and better lumber having all the good qualities of natural wood plus the size and convenience of wallboard—but with advantages of strength, stiffness, and freedom-from-splitting which neither lumber nor wallboard has.**

Standard Sizes

Standard Widths: Beginning at 12 inches, increasing by 2-inch units to 48 inches.

Standard Lengths: 48, 60, 72, 84 and 96 inches.

Standard Thicknesses: Beginning at $\frac{3}{16}$-inch 3-ply, increasing by $\frac{1}{16}$-inch units to $1\frac{3}{16}$-inch 7-ply or thicker on special order.

Standard Grades

Good 2 Sides—Suitable for the very finest construction in which both sides are to be exposed. This grade will take either natural or stained finishes beautifully.

Good 1 Side—Ideal for all purposes requiring exposure of only one side. The side to be exposed is fully equal to the standard of the Good 2 Sides grade. The other surface is perfectly sound, but may be made up of two or more pieces of veneer neatly jointed and taped.*

Sound 2 Sides—This grade presents a sound surface on both sides, but may show some natural discoloration. One face may be taped,* but any defects on either side are neatly repaired and both surfaces are suitable for painting.

Unselected—This grade is intended for utility use, such as cut-up work, for which strength but not an absolutely sound surface is required. One face may be neatly taped.*

Wallboard—While either face may be taped* the exposed face is perfectly sound.

**Note:* *By "taping" is meant the mechanical joining together of unglued veneer sheets to hold them in place during the gluing process. No trace of this operation remains on the finished panel. Even the most expensive hardwood panels always have taped surfaces.*

Representative Uses

A product offering so many advantages naturally is being put to hundreds of uses, both in construction and in industry. Space does not permit mention of more than a few of these, but the construction uses listed here are representative of the extent to which Douglas Fir Plywood's economies, and its remarkable strength, light weight, resistance to warping and splitting, ready workability, and nail-and-screw-holding properties, have commanded acceptance.

Kitchen Cabinets
Display Racks
Dustproof Drawers and Drawer Bottoms
Window Seats
Window Displays
Concrete Forms
Bins
Booth Paneling
Mirror Backs
Bulletin Boards
Modern Furniture
Crackproof Ceilings and Walls
Window Valances
Breakfast Nooks
Bookcases
Store Fixtures
Desks
Insulation
Office and other Partitions
Clothes Chutes
Window Ventilators
Squeakless Flooring
Cupboards
Portable Houses
Shelving
Wardrobes
Benches
Medicine Cabinets
Subflooring
Linings for Ventilator and Elevator Shafts
Machinery Shelters
Amusement Park Devices
Screens
Closets
Cabinets
Sheathing
Lockers
Chests
Garages and Lining
Wainscoting
Work Benches
Porch Sun Rooms

Subflooring

Douglas Fir Plywood is attracting wide attention among architects and builders for this use. Its large sizes save as much as 60% in the cost of labor, and it practically eliminates air leakage.

Insulation is greater, not only because Douglas Fir Plywood has a considerably lower heat conductivity than ordinary lumber, but also because the total lineal footage of joints is greatly reduced. These joints, unlike those left by ordinary subflooring, are tight. And they *remain* tight because Douglas Fir Plywood will not shrink or expand.

A further important advantage of Douglas Fir Plywood for this use is that it minimizes squeaks. It does not yield to the weight of a person walking, as do ordinary floors.

The ¾-in. 5-ply thickness is most commonly used for this purpose, although the exact thickness depends on the particular need.

For floors that are to be entirely covered by carpet or linoleum, 5-ply Douglas Fir Plywood can be used as the flooring itself. Such floors can be soundproofed, as well as made resilient, by placing upon the subfloor a layer of deadening material, upon which rest sleepers.

Sheathing

For virtually these same reasons, Douglas Fir Plywood is ideal for sheathing. It contributes great structural strength to the building, and the big panels enable carpenters to cover large areas quickly, requiring very little nailing as compared with ordinary lumber. For sheathing, as for subflooring, Douglas Fir Plywood saves approximately 60% in labor costs.

The ¾-in. 5-ply thickness is most used for sheathing, largely because it permits the use of standard-width door and window jambs.

For this use, too, Douglas Fir Plywood offers a minimum of joints, and such joints as there are, are permanently tight. This, coupled with the low heat conductivity of the material, assure a high degree of insulation.



Douglas Fir Plywood Used As Sheathing

Note the few joints as compared with shiplap or boards. These few joints are on bearing studs.



Used for Walls and Ceilings

Douglas Fir Plywood nailed directly on the studding and joists. The finish is a lead and oil paint. Note the soft, pleasing effect. This wall and ceiling will last as long as the house—without a crack.

Below:

As Used for Paneled Walls

As shown below, Douglas Fir Plywood lends itself to period treatments. This paneling was treated with a chestnut brown stain, then shellacked and waxed. By this method the color contrasts between winter and summer grain are softened.



Walls and Ceilings

To the original cost of lath and plaster walls must be added the cost of repairing the cracks that will develop sooner or later.

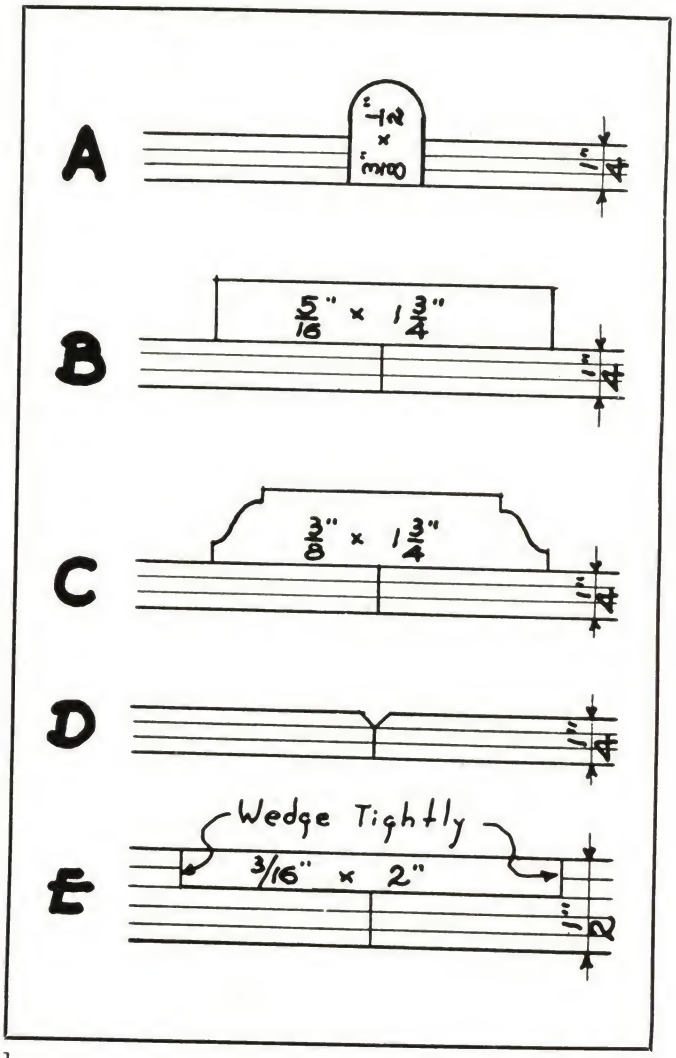
As buildings settle, considerable damage frequently results.

Douglas Fir Plywood makes possible smooth, beautifully paneled, permanently crackproof walls and ceilings at little more than the cost of lath and plaster.

It costs little if any more per surface foot than composition wallboards.

Moreover, as plywood is real lumber, not a composition board, it cannot bulge or sag. Accidental impacts will not fracture it—a characteristic of especial value in steeply sloping ceilings.

A further advantage is that Douglas Fir Plywood walls and ceilings can be finished as soon as they are put up, whereas plaster may not dry for days if the weather is damp. Also, there is no plaster to clean up, and hence no risk of damage to the floors. The plywood panels can be nailed directly to the studding and joists. No space need be allowed between the panels, because Douglas Fir Plywood neither expands nor contracts.



At Right Are Five Typical Treatments of Joints

The usual method is to cover the joints with battens, either with the plain flat type (B) or with battens having moulded edges (C).

Other methods, however, are also finding favor today. In A is shown the European vogue, in which a small bead is set between successive panels. The V-joint shown in D is used extensively. In this, after fitting the panel but before it is fastened to the wall, the carpenter chamfers the edges slightly with a plane.

When an absolutely flush wall is desired, we recommend Douglas Fir Plywood not less than ½-in. thick. The edges of the panels or sections are rabbeted and a thin strip one or two inches wide is glued into place as shown in E.

Joints and Finishing

Usually some form of batten is used to cover the joints, and this method lends itself to innumerable attractive variations.

However, the fact that plywood will not shrink or swell makes it possible to use a V-joint or a bead-type joint. Depending necessarily on the finish to be applied, joints may be filled with plastic wood or plastic paint, giving an uninterrupted surface. If plastic paint is used in this way, it should be worked into the joint thoroughly. Another method is to cover the joints with a filler strip one or two inches wide set in flush.

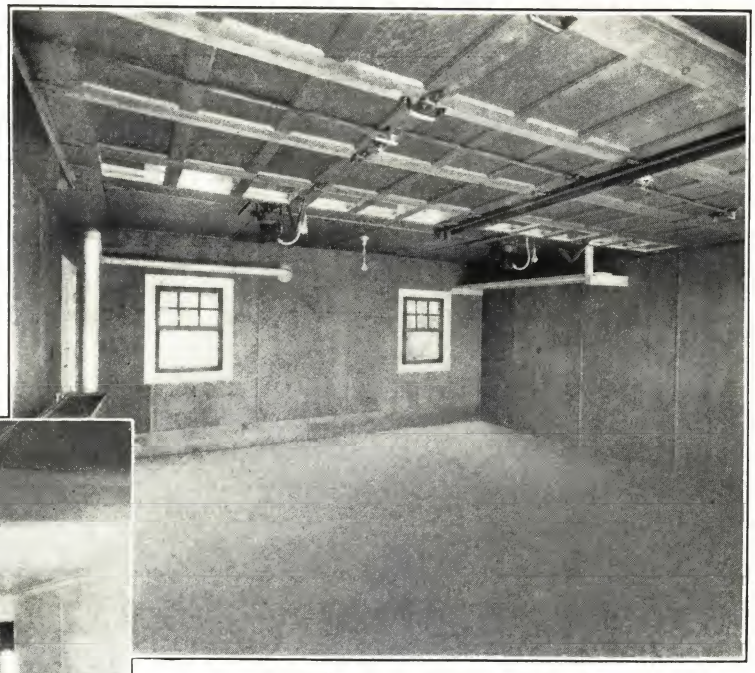
Douglas Fir Plywood walls and ceilings can be finished beautifully in any way desired. They can be stained, or stained and waxed, thus softening and enriching the slash-grain in a natural wood finish. Plastic paints can be used to achieve a variety of beautifully modern effects. Or the plywood may be finished with a priming coat, a tinting coat, and a finishing coat of glazing color.

Special Treatments

Douglas Fir Plywood lends itself perfectly to sand-blasted and wire-brushed effects.

Wainscoting

Douglas Fir Plywood is widely used as wainscoting because of its low surface-foot cost, the labor-saving sizes in which it is available, and the variety of beautiful effects in which it can be finished.



Used As Garage Lining in 2-Car Garage

Douglas Fir Plywood minimizes labor. Also, it furnishes a high degree of insulation—because its thermal conductivity is lower than that of lumber, because the lineal footage of joints is less, and because these joints stay tight. Note that the overhead doors are also of Douglas Fir Plywood.



Office Interior

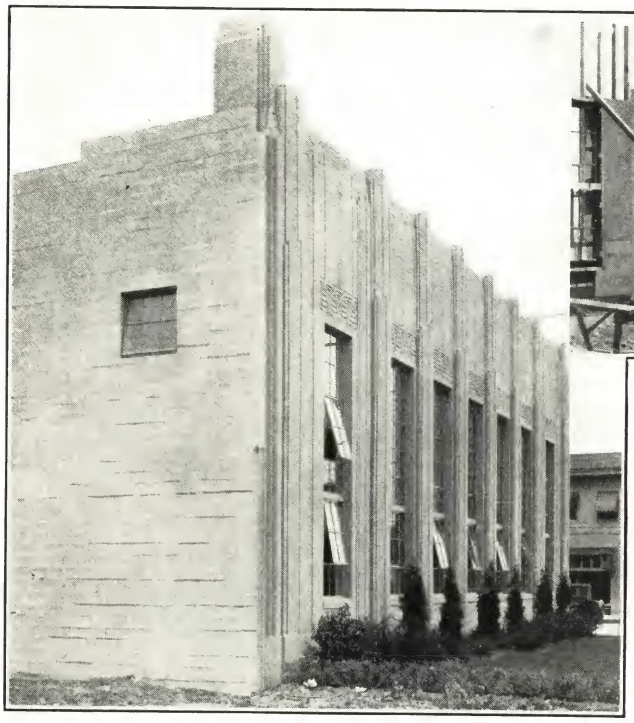
A typical inexpensive handling of Douglas Fir Plywood for office interiors, including partitions. The big panels can be put up quickly, and can be finished in any way desired.

Below:

Private Office of a Chicago Architect

Note how attractively the sand-blast treatment differentiates the winter and summer grain. This particular decorative handling again suggests the almost limitless possibilities of Douglas Fir Plywood for interiors. The narrow, moulded battens here illustrated, although a relatively new development in paneled walls, are achieving a considerable vogue.







Erection of Douglas Fir Plywood Forms for the Hill Military Academy, Portland, Oregon

Note the simplicity of the large-unit construction. After the pouring and setting, these panels may be dismantled quickly and reused—the rugged plywood construction minimizing damage in the dismantling process. The same plywood can be used again and again.

Bank Building, Portland, Oregon

Note the difference between the sidewall of this bank building—for which shiplap forms were used—and the smooth front wall obtained by the use of Douglas Fir Plywood. No smoothing or plastering was necessary on the latter.

Concrete Forms

The rapidly increasing use of exposed concrete as an architectural medium requires stronger and more accurate form construction, and therefore has widened appreciation of the advantages of Douglas Fir Plywood as a form material.

Douglas Fir Plywood is available in large, satin-smooth panels for use either as form lining or—in the thicker panels from ½ to ¾ inch—*as form lumber and lining combined.*

If properly handled, the plywood can be used from four to eight times, as its great strength minimizes damage when forms are dismantled. In fact, in some instances Douglas Fir Plywood forms actually have been reused as many as fifteen times. When no longer usable in forms, this material can serve as wall and sub-floor sheathing in frame buildings.

Smooth Non-bulging, Non-leaking—By making rubbing unnecessary, Douglas Fir Plywood forms save from 3c to 4½c per square foot of surface. If a stucco surface is required, the saving is even greater because the smooth surface given by the plywood requires only a very thin coat of stucco. If the surface is to be painted, much less paint will be required—and much less labor. The great saving thus made possible is not as yet widely realized by contractors and builders.

Leakage of moisture and formation of "fins" are minimized, because Douglas Fir Plywood will not shrink or expand, thus assuring tight joints, and because the large panels greatly reduce the lineal footage of joints.

Thin panels of Douglas Fir Plywood—¼ and $\frac{3}{16}$-inch—can easily be bent for use in curved forms. For example, the ¼-inch can be bent to a radius as small as 18 inches.

If the ¼-inch Douglas Fir Plywood is used simply as a liner, it is unnecessary to build up forms solidly with lumber. Spacing between boards can be from 2 to 4 inches.

Ideal for Reverse-Moulds—The reverse-moulds required by the vogue of ornamentation in monolithic construction can be nailed or screwed on the large Douglas Fir Plywood panels at a substantial saving in labor. Both nails and screws can be driven close to the edge without splitting the plywood.

A further economy offered by Douglas Fir Plywood is that 1,000 square feet will cover 1,000 square feet of surface, whereas the same surface would require approximately 1200 feet of shiplap.

In using Douglas Fir Plywood, do not space studs farther apart than you would with ordinary lumber, if pouring is faster than 18 inches an hour.

Douglas Fir Plywood Forms can be built at a 10 to 50 per cent saving over ordinary lumber-and-lining forms. Moreover, the plywood adapts itself perfectly to circle and pilaster work at no increase in cost.

Treatment of Forms—To prevent surface scaling when the forms are removed, the plywood should be treated with a form oil. Cup grease cut with kerosene and linseed oil is sometimes used. If the plywood is to be reused a number of times, varnish both sides with a cheap gloss oil varnish. For each reuse, another coating of form oil should be applied. Generally speaking, mineral oils will be found more effective than vegetable oils.



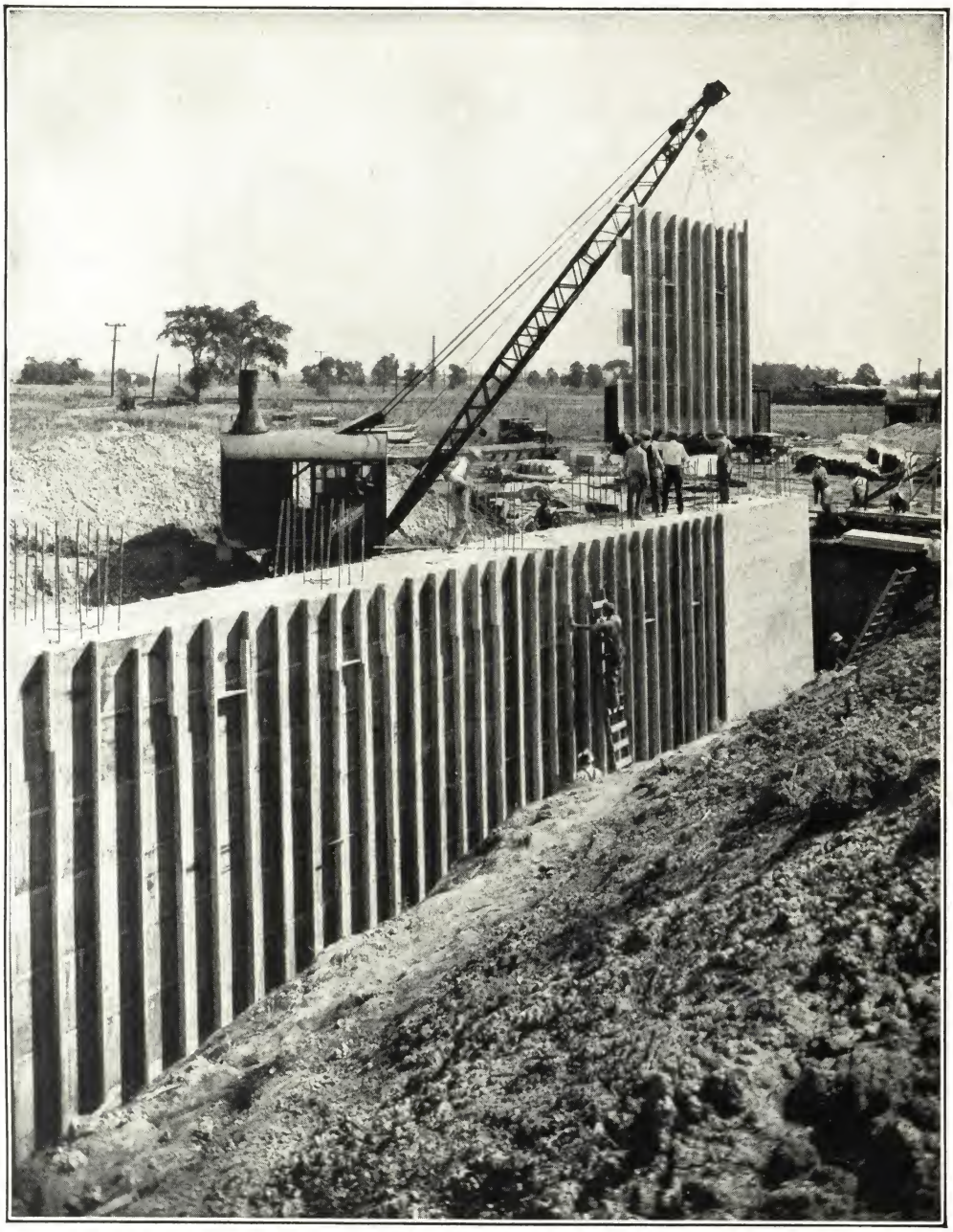
Cleveland Stadium Under Construction

Approximately 300,000 square feet of ¼-inch Douglas Fir Plywood was used for the concrete form liners of this magnificent new stadium in Cleveland, Ohio.

Care should be taken to remove thoroughly the small particles of concrete that have adhered to the forms. After the second or third use, forms will be found smooth and clean with practically no adhesion of concrete.

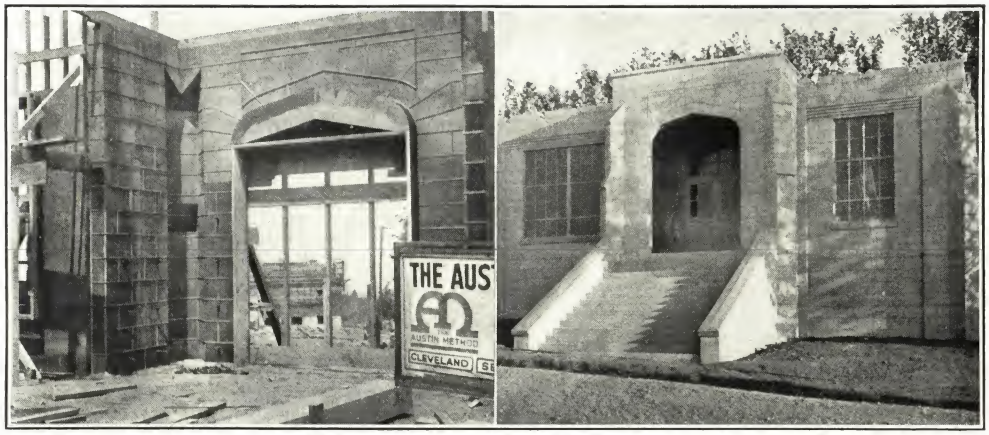
Tables on page 12 show the strength and nail-and-screw-holding properties of Douglas Fir Plywood in various thicknesses, thus enabling contractors to determine the right thickness for a particular job.

Finally, it is important to remember that the best possible form lining will not give satisfactory results if the size and placing of cleats, ties, studding and other bracing are inadequate.



Combines Strength with Light Weight

Whole sections of forms can be hoisted into place. If a number of identical foundations or walls are to be built, the same form can be used again and again.



Forms in Place — Reverse-moulds Removed

An Ornamental Entrance

A perfect backing for reverse-moulds. Because it holds nails and screws without splitting, Douglas Fir Plywood can be used for all kinds of pattern and reverse-mould work. Note the perfect, smooth surface. No rubbing was necessary.



Christian Science Building, Minneapolis

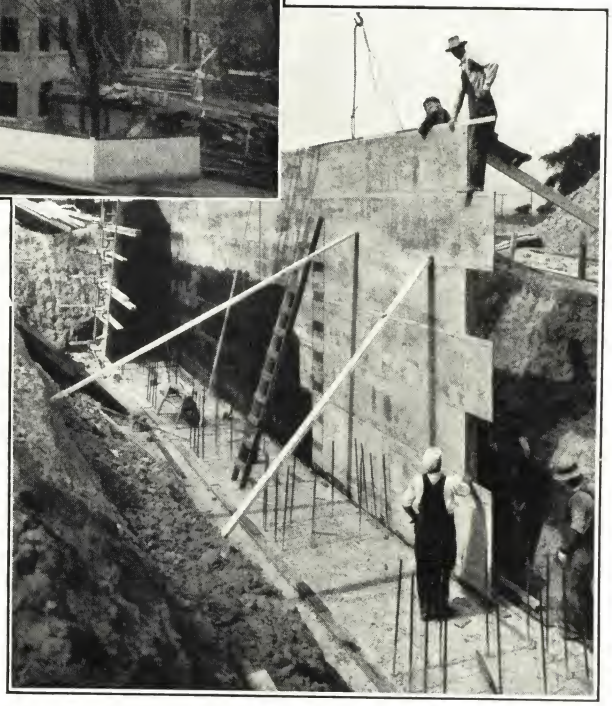
Douglas Fir Plywood concrete forms help speed construction because there are fewer pieces to handle, with less nailing, and the larger sizes are form lumber and lining *combined.*

Closets, Cupboards and Cabinets

For closets, cupboards and cabinets—in fact for every kind of built-in—Douglas Fir Plywood is preferred because its large sizes save labor and because it will not split and, once in place, will not warp. Thus drawers cannot stick and are dustproof. Doors can be of the flush type. Nails and screws can be placed close to the edge without danger of splitting the wood.

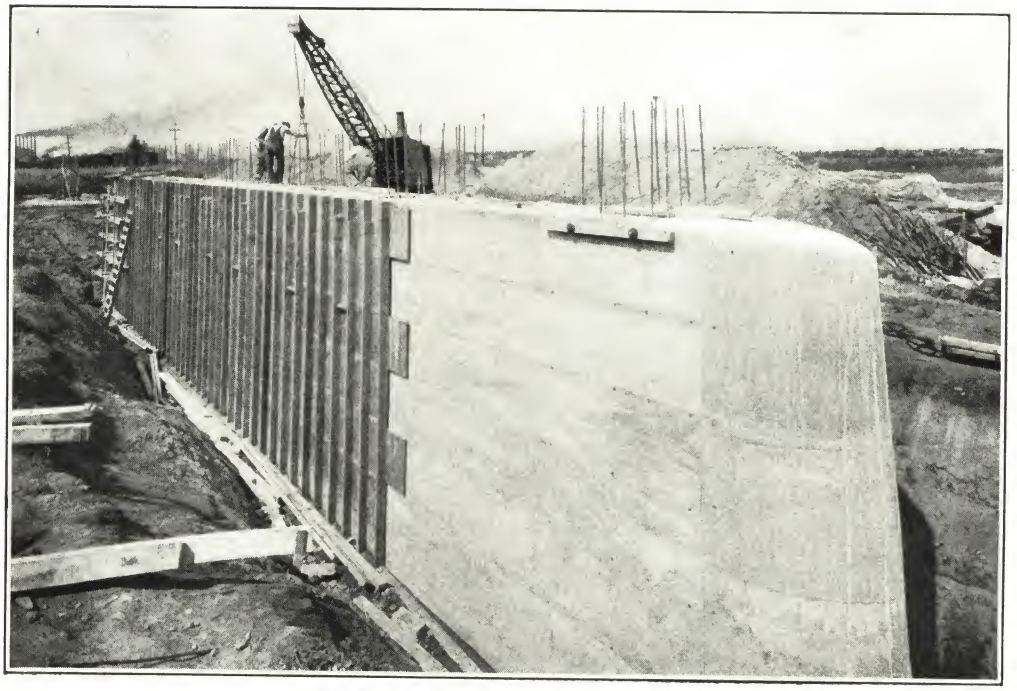
Partitions

In partitions Douglas Fir Plywood offers advantages of lightness, toughness, and resistance to tensile stresses as well as to shrinkage and expansion. It is hard to damage by blows. Unlike the studded partition of composition board or plaster, the strength of which depends primarily on the framework, a Douglas Fir Plywood partition is a homogeneous structure of substantial strength. Moreover, if there is studding it can be thinner and more widely spaced.



Construction of a Viaduct

Forms made of these big single-piece Douglas Fir Plywood panels, require a great deal less time and labor. They are light, and easy to place and transport.



Completed Section of Viaduct

Note the smoothness of the concrete when Douglas Fir Plywood is used for form lumber. The surfaces need not be plastered or painted. If painted, they require much less paint and labor than concrete surfaces resulting from ordinary forms.



For Built-in Equipment

The neatness of Douglas Fir Plywood—as well as size and freedom from splitting—makes it particularly useful for all kinds of built-ins and kitchen conveniences.



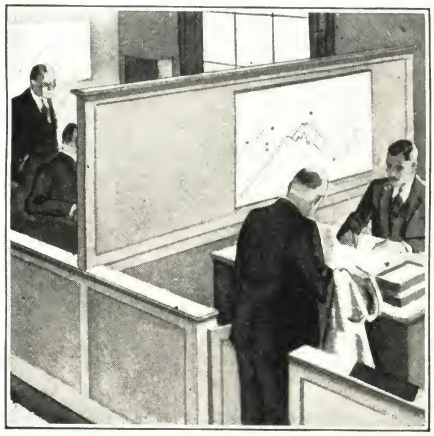
For Restaurant Booths

Douglas Fir Plywood is steadily increasing in popularity for jobs like these—because of strength, ready workability, and low cost.



Screens

An excellent use for Douglas Fir Plywood—easy to make to any design, light in weight, rigid and unbreakable, and suited to any finish.



For Partitions

Douglas Fir Plywood has no equal for office and residential partitions—real wood panels, quick and easy to put in place, strong, neat looking, and readily finished.



The Breakfast Nook

Douglas Fir Plywood is particularly suitable for built-ins like these—because of its strength, ready workability, and low cost.



Display Racks

Wherever large surface area, light weight, and stiffness are wanted, Douglas Fir Plywood can be used with greater economy than any other material.



Shelving and Bookcases

Nothing equals plywood for compactness, strength, and ease of assembly. The economy of Douglas Fir makes it an ideal plywood for shelving, bookcases and similar articles.



For Dustproof Coal Bins

Douglas Fir Plywood bins keep coal dust out of upstairs. The joints stay tight, and even in a damp basement the panels will not warp.



For Warpproof Drawers and Bins

The neatness of Douglas Fir Plywood, its convenient size, and warp-resisting qualities, make it indispensable for this class of work.

Shelving and Bookcases

Warpproof, splitproof shelving and bookcases can be made from Douglas Fir Plywood for even less per surface foot than the cost if built of ordinary lumber. Moreover, Plywood shelving can be much thinner than ordinary shelving, without sacrifice of strength.

Warpproof Doors, Drawers and Bins

Whenever permanently tight joints are necessary, no material is as satisfactory and economical as Douglas Fir Plywood. It will not shrink or swell and, once in place, is forever proof against warping. Dust cannot invade Douglas Fir Plywood drawers and bins, and even the thinnest panels cannot crack. This material makes the construction of attractive flush doors for cabinets a simple carpentry job.

Restaurant Booths

Decorative yet sturdy and inexpensive restaurant booths, and similar construction, can be built quickly with Douglas Fir Plywood. Its big-unit sizes save labor, and even the thinnest panels will not split. Neither will they warp in place, and they can be finished attractively in any way the decorative scheme of the interior calls for. Portable screens, strong and remarkably light in weight, can be built of Douglas Fir Plywood.

Dustless Coal Bins

Because Douglas Fir Plywood panels fit tightly and never shrink or swell, dustproof coal bins can be built at low cost. Quick construction is made possible by the large size and light weight of the panels. And tumbling lumps of coal cannot split them. Moreover, as Douglas Fir Plywood, once in place, will not warp, basement dampness cannot affect a coal bin—or anything else—made of this material.

Breakfast Nooks and Window Seats

Douglas Fir Plywood makes possible inexpensive built-ins that will not warp, that will not split under heavy impacts, and that will take the modern finishes beautifully. Such built-ins are inexpensive, not only because Douglas Fir Plywood comes in big sizes that make piecing and glue-up work unnecessary, but also because it costs less per surface foot than even ordinary lumber.

TEST DATA ON DOUGLAS FIR PLYWOOD

The following data are the result of the first tests in a comprehensive series now in progress. This series will include not only tests of the physical characteristics of Douglas Fir Plywood, but also tests as to its performance in specific uses.

Because the test results below would be incomplete without some basis of comparison, five materials typical of those sometimes used instead of Douglas Fir Plywood were subjected to exactly the same tests—under exactly similar conditions.

In fairness, letters instead of trade names have been used to designate these five materials below. A and B are fiber insulating boards; C is a plaster board; D is a hard-compressed fiber board; and E is one of the old-style fiber wallboards.

A number of samples of each of these materials—and of Douglas Fir Plywood—were submitted to each of the following tests, to establish an average strength value that would be eminently fair.

All these tests were made by the Northwest Testing Laboratory, which in the Northwest represents the nationally known Pittsburgh Testing Laboratory.

A complete log of any of these tests will be sent upon request.

COMPRESSION TESTS ON DOUGLAS FIR PLYWOOD

Material	Dimension of Test Specimen			Area, sq. in.	Maximum load, lbs.	Load, lbs. sq. in.
	Thickness, in.	Width, in.	Length, in.			
Load Applied with the Grain of Outside Plies						
5-ply	3/4	6	6	4.50	18538	4186
5-ply	5/8	6	6	3.75	10644	2893
5-ply	1/2	6	6	3.00	10492	3497
3-ply	3/8	6	6	2.25	6630	2860
3-ply	1/4	6	6	1.50	4198	2855
3-ply	3/16	6	6	1.125	2014	1917
Load Applied Across Grain of Outside Plies						
5-ply	3/4	6	6	4.50	15262	3436
5-ply	5/8	6	6	3.75	9096	2472
5-ply	1/2	6	6	3.00	6462	2162
3-ply	3/8	6	6	2.25	5206	2180
3-ply	1/4	6	6	1.50	908	609
3-ply	3/16	6	6	1.125	380	360
Compression Tests on Other Materials						
A	.500	6	6	3.0	690	230
B	.4375	6	6	2.625	448	170
C	.25	6	6	1.50	826	550
D	.1875	6	6	1.125	846	751
E	.1875	6	6	1.125	390	346

Key: Materials A and B are fiber insulating boards. C is a plaster board. D is a hard-compressed fiber board. E is an old-style fiber wallboard.

Compression Tests

Two series of tests were made on the Douglas Fir Plywood. In the first series the load was applied *with* the grain of the outside plies. In the second series the load was applied *across* the grain of the outside plies. Only one series of tests was necessary on the other materials, because their grain or fiber did not run in different directions.

All compression test pieces were cut exactly 6x6 inches and bearing was obtained by placing the pieces in the testing machine and applying the load on the opposite edge.

Tensile Tests

Test specimens in this test were cut 3 inches wide and 18 inches long, and the distance allowed between the jaws of the testing machine was 8 inches.

As in the compression test, two series of tests were made on the Douglas Fir Plywood, on one the load being applied *with* the grain of the outside plies, and on the other, *across* the grain of the outside plies.

TENSILE TEST ON DOUGLAS FIR PLYWOOD

Material	Dimension of Test Specimen			Area, sq. in.	Maximum load, lbs.	Load, lbs. sq. in.
	Thickness, in.	Width, in.	Length, in.			
Load Applied with the Grain of Outside Plies						
5-ply	3/4	3	18	2.250	8912	4074
5-ply	5/8	3	18	1.875	8132	4350
5-ply	1/2	3	18	1.500	8024	5135
3-ply	3/8	3	18	1.125	5644	4750
3-ply	1/4	3	18	0.750	5250	6484
3-ply	3/16	3	18	0.562	4176	7901
Load Applied Across the Grain of Outside Plies						
5-ply	3/4	3	18	2.250	8796	3932
5-ply	5/8	3	18	1.875	8326	4491
5-ply	1/2	3	18	1.500	7664	5108
3-ply	3/8	3	18	1.125	4684	4141
3-ply	1/4	3	18	0.750	2552	3291
3-ply	3/16	3	18	0.562	1622	3016
Tensile Tests on Other Materials						
A	.500	3	18	1.50	370	248
B	.4375	3	18	1.20	152	126
C	.250	3	18	.75	264	352
D	.195	3	18	.585	1276	2180
E	.190	3	18	.570	1248	2189

Key: Materials A and B are fiber insulating boards. C is a plaster board. D is a hard-compressed fiber board. E is an old-style fiber wallboard.

TRANSVERSE TESTS ON DOUGLAS FIR PLYWOOD

Material	Dimension of Test Specimen			Maximum load, lbs.	Deflection at Maximum load, in.	Modulus of Rupture, lbs., sq. in.
	Thickness, in.	Width, in.	Length, in.			
Load Applied with the Grain of Outside Plies						
5-ply	3/4	6	18	1112	.57	5930
5-ply	5/8	6	18	758	.53	5830
5-ply	1/2	6	18	388	.92	4656
3-ply	3/8	6	18	147	1.36	3150
3-ply	1/4	6	18	50	1.84	2400
Load Applied Across the Grain of Outside Plies						
5-ply	3/4	6	18	1336	.43	7125
5-ply	5/8	6	18	696	.42	5353
5-ply	1/2	6	18	702	.53	8424
3-ply	3/8	6	18	434	.51	9300
3-ply	1/4	6	18	220	.76	10560
3-ply	3/16	6	18	214	1.10	18300
Transverse Tests on Other Materials						
A	1/2	6	18	27	.66	324
B	7/16	6	18	15	..	236
C	1/4	6	18	42	.61	2016
D	3/16	6	18	51	.92	4346
E	3/16	6	18	31	.95	2642

Key: Materials A and B are fiber insulating boards. C is a plaster board. D is a hard-compressed fiber board. E is an old-style fiber wallboard.

Transverse Tests

Here again two series of tests were made on the Douglas Fir Plywood, one in which the load was applied *with* the grain of the outside plies and another with the load applied *across* the grain of the outside plies.

All test pieces were 6 inches wide and 18 inches long. They were placed on supports 12 inches on centers, and the load was applied at midspan.

WATER ABSORPTION TEST
(Figures show percent absorption at different periods)

Thickness, in.	4 Hours	8 Hours	24 Hours	48 Hours
Douglas Fir Plywood				
¾	10.3	12.9	18.2	27.3
⅝	9.7	13.6	19.7	29.6
½	9.0	12.6	18.4	27.5
⅜	9.2	13.6	17.9	27.5
¼	16.9	24.9	29.7	47.4
Material A	23.5	43.3	49.9	67.8
Material B	22.5	32.8	44.8	51.5
Material C	52.3	62.9	66.6	71.2
Material D	7.1	11.5	16.0	23.3
Material E	83.0	98.0	115.9	128.5

Key: Materials A and B are fiber insulating boards. C is a plaster board. D is a hard-compressed fiber board. E is an old-style fiber wallboard.

Water Absorption Test

All test pieces were cut 6x6 inches. The edges of all pieces were sealed with paraffin, after which they were submerged in water to a depth of 1½ inches.

Weight readings were taken at four, eight, twenty-four and forty-eight hours. The percent of water absorption at the different periods is given in the following table.

Test to Determine the Nail-Holding Power of Douglas Fir Plywood and Other Materials

In this test all test specimens were cut 10x10 inches. The specimens were nailed on two pieces of sawn and planed Douglas Fir 1¾x1¾x13½ inches. The nails were spaced 3 inches on centers and driven through the test specimens into the supporting member. Supports were spaced 7½ inches on centers. The nailed-up sections were placed in the testing machine in such a manner as to exert a direct pull on the nails.

Douglas Fir Plywood specimens were given a most severe test in the use of cement-coated box nails. In spite of this severe test, eighty-five of the ninety nails used were pulled out of the supporting members.

In the other test specimens, every one of the nails remained in the supporting member, the heads of all nails pulling through test specimens. Douglas Fir Plywood, because of its laminated construction, will hold nails exceedingly well even though the nails are driven very close to the edges of the plywood.

Test to Determine the Nail-holding Power of Douglas Fir Plywood

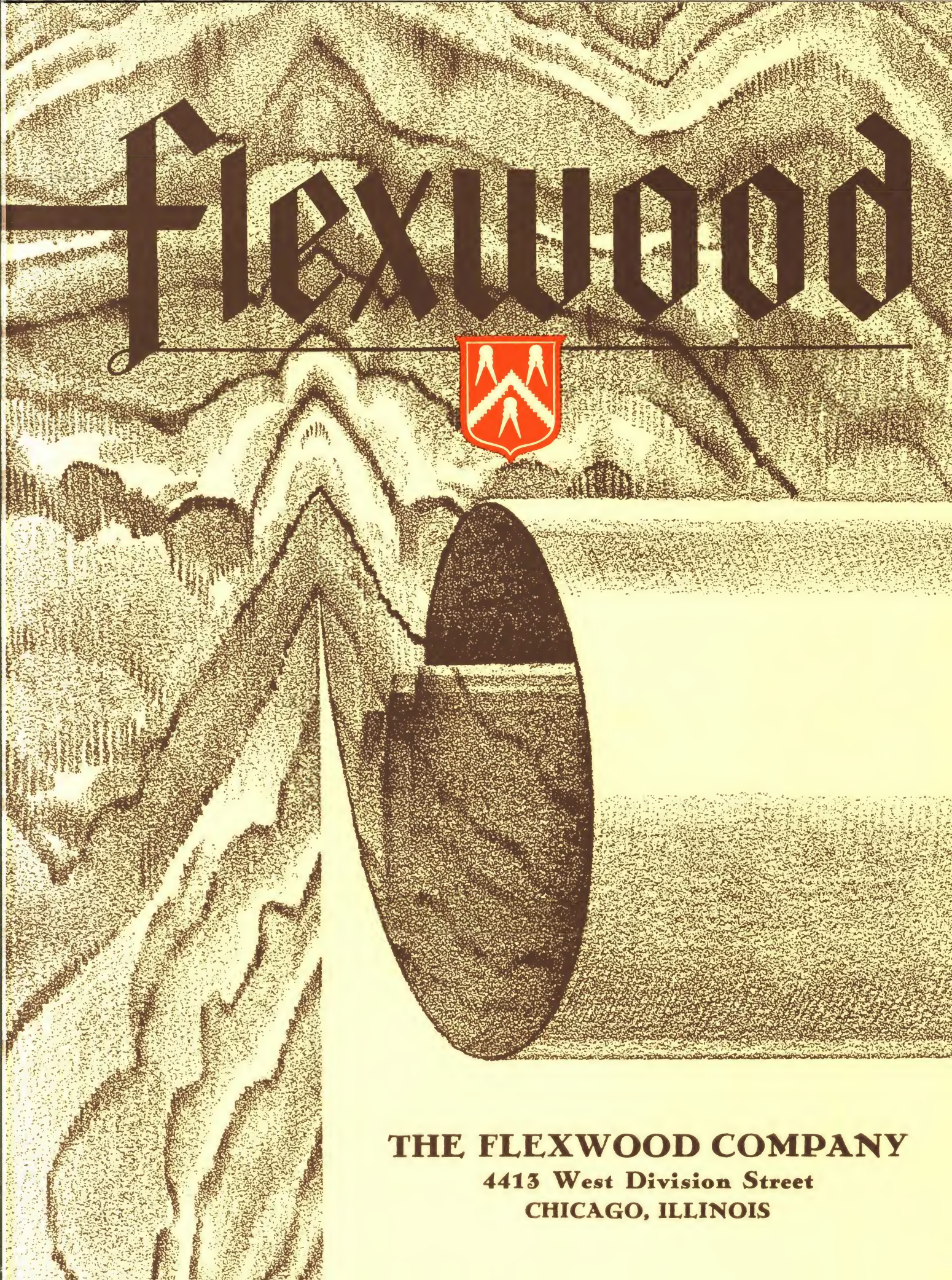
Test No.	Size of test specimen, in.	Number of nails in specimen	Type of nails	Spacing of nails, in.	Maximum load, lbs.	Load per nail, lbs.
1	5-ply 10x10x¾	6	8d box	3	1670	278
2					1410	235
3					1650	275
				Average per nail		262
4	5-ply 10x10x⅝	6	6d box	3	1540	256
5					1400	233
6					1430	238
				Average per nail		242
7	5-ply 10x10x½	6	6d box	3	1460	263
8					1270	211
9					1230	205
				Average per nail		226
10	3-ply 10x10x⅜	6	6d box	3	1410	235
11					1370	228
12					1170	195
				Average per nail		219
13	3-ply 10x10x¼	6	4d box	3	790	131
14					830	138
15					790	131
				Average per nail		133

Tests to Determine the Nail-holding Power of Materials A, B, C, D, and E

Test No.	Size of test specimen, in.	Number of nails in specimen	Type of nails	Spacing of nails, in.	Maximum load, lbs.	Load per nail, lbs.
Material A						
1	10x10x½	6	1½ galv. roofing	3	250	41.6
2					290	46.6
3					290	46.6
				Average per nail		44.9
Material B						
4	10x10x$\frac{7}{16}$	6	1½ galv. roofing	3	370	61.6
5					320	53.3
6					370	61.6
				Average per nail		58.8
Material C						
7	10x10x¼	6	4d box	3	260	43.3
8					210	35.0
9					230	38.3
				Average per nail		38.8
Material D						
10	10x10x$\frac{3}{16}$	6	4d box	3	550	91.6
11					590	98.3
12					610	101.1
				Average per nail		97.0
Material E						
13	10x10x$\frac{3}{16}$	6	1½ galv. roofing	3	320	53.3
14					370	61.6
15					330	55.0
				Average per nail		56.6

Key: Materials A and B are fiber insulating boards. C is a plaster board. D is a hard-compressed fiber board. E is an old-style fiber wallboard.

Flexwood

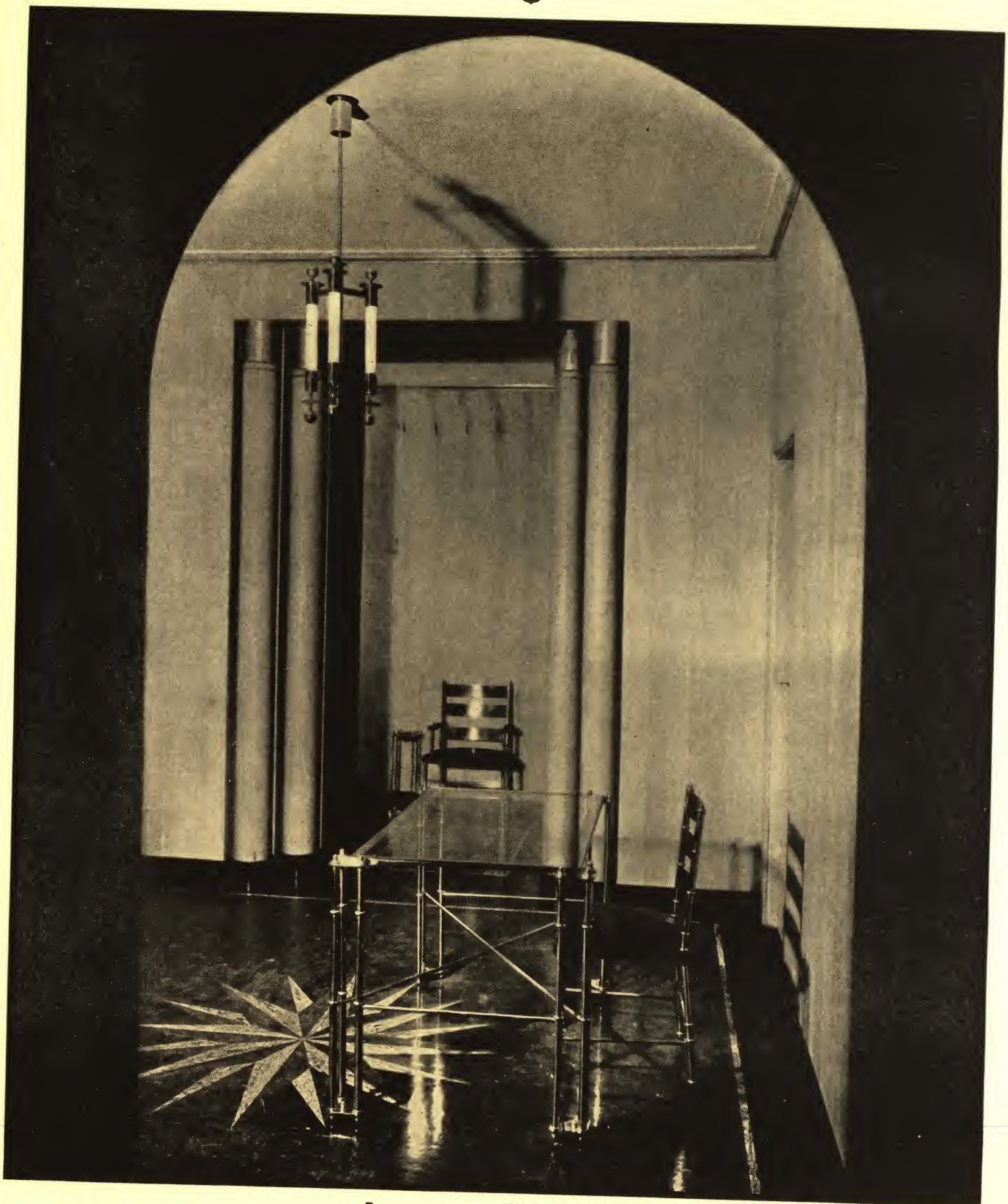


THE FLEXWOOD COMPANY

4413 West Division Street

CHICAGO, ILLINOIS

Flexwood



Entrance Brokers' Office, Chicago
Modern treatment. Quartered Oak. Flush Walls.
Samuel A. Marx, Architect

Photo by Hedrick-Blessing

THE FLEXWOOD COMPANY

4413 West Division Street, CHICAGO, ILL.

BRANCH OFFICE, Chrysler Building, NEW YORK

Trade-Mark Flexwood Reg. U.S. Pat. Off.

Description—Physical Properties

Flexwood is genuine selected cabinet wood, cut thin and so mounted on fabric that it acts as a unit—the two are inseparable. The wood, through a special patented process, is rendered extremely flexible so that it can easily be bent around corners without cracking—the grain of the wood being parallel to the edge about which it is bent.

The same process that renders the wood flexible removes its power to warp or check. It may be applied to any smooth, flat wall surface.

Application

Flexwood is as pliable as canvas and is applied to the wall surface with a special Flexwood paste. It is applied by any competent paperhanger who will follow Flexwood specifications.

General Characteristics—Appearance

Walls finished in Flexwood obviously have all the characteristics and appearance of wood. The material offers the opportunity to use genuine wood for interior decoration without the limitations of size, structural difficulties or excessive costs associated with conventional cabinet wood paneling.

Used in conjunction with wood accessory mouldings of base, wainscot caps, panel mouldings, cornices, etc., practically any architectural period effect may be obtained. The material lends itself with unusual success to modern design treatment.

Flexwood has been used by many nationally known architects in outstanding installations throughout the country. Its architectural appeal and acceptance as a material of marked practicability and exceptional design qualities have been most gratifying.

Woods and Sizes

Flexwood is supplied from stock in lengths 8, 9 and 10 feet, in the following standard cabinet woods:

American Walnut (Matched or Unmatched)—
Half round (bold matched pattern) widths 8 to 15 in.
Sliced (more vertical pattern) widths 6 to 14 in.
Rotary (occasionally used where sheets 18 to 30 in. wide are required).

Mahogany (Matched or Unmatched)—
Ribbon (quartered vertical stripes) widths 8 to 14 in.
Flat cut (bold matched pattern) widths 10 to 18 in.

White Oak (Matched or Random)—
Quartered (shows flake figure) widths 6 to 10 in.
Plain (flake very faint or lacking) widths 8 to 13 in.

Prima Vera (Matched or Unmatched)—
Flat cut (figure from plain to ribbon) widths 8 to 15 in.

Lacewood (Matched)—
Quartered (flake figure) widths 8 to 13 in.

Knotty Pine (Random Boards)—
Stock limited widths 5 to 12 in.

Note: Never specify a minimum width of matched stock as a run of sheets all one width cannot be supplied.

Other Woods—While Flexwood stocks are not always complete in the following woods, they may frequently be obtained: Birch, Maple, Oriental Wood, Aspen, Maca wood, Ayua and other woods. Always consult THE FLEXWOOD COMPANY before specifying other than standard woods.



Sheets of Walnut and Mahogany Flexwood Showing Typical Stock and Finished Samples on Metal and Wall Boards

Finishing

The finishing should be done by a competent wood-finisher.

The natural beauty of the wood is best revealed by transparent varnishes and lacquers, which preserve, without hiding, the pattern of the grain.

A dull or flat finish is preferred, though any finish used on wood may be used on Flexwood.

Samples

Since Flexwood is a natural product dependent upon the particular log or cutting obtainable, there are the same variations as would apply to cabinet wood veneers. Samples show only general appearance and color.

METHOD OF APPLYING FLEXWOOD



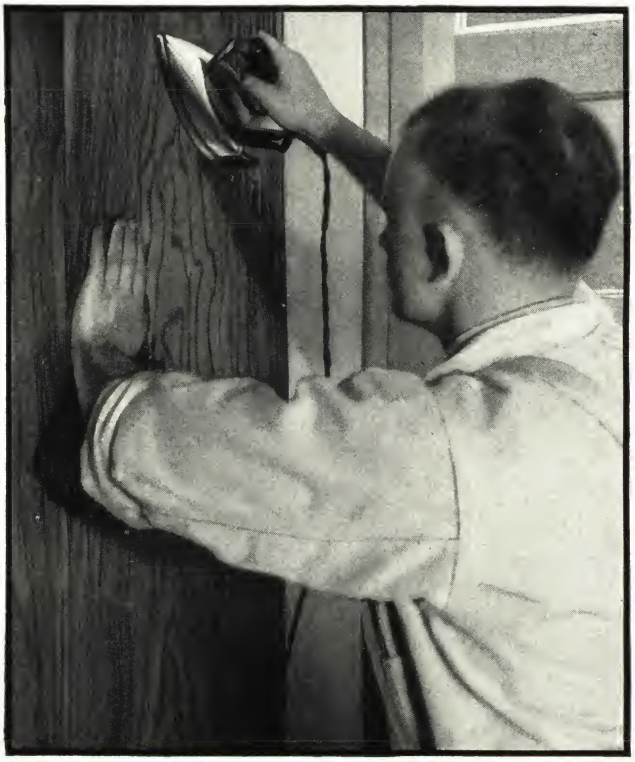
Application of Wall Liner
to Plaster Walls
Cloth is hung dry



Application of Paste to Back
of Flexwood Sheets
Sufficient paste on edges very important



In Hanging Flexwood,
Edges Are Butted Together Lightly
and the Joint Made the Full Length of the Sheet



Using a Hot Pressing Iron
Heat softens paste spots that become too dry before
application, thus making firm bond

FLEXWOOD—MASTER SPECIFICATIONS

Include as a Separate Division of the Painting and Decorating Specifications

Note: Notes in italics are explanatory or advisory only and should not be included in the specifications.

Note: This form is a Master Specification and includes clauses covering all conditions ordinarily encountered. Select and include only those clauses which apply to the particular work.

(1) Work Included

The work required under this specification includes all labor, materials, equipment and services necessary for and reasonably incidental to the providing of all Flexwood on the following areas:

Note: Here list and locate all rooms to be furnished with Flexwood, designating the particular wood used or refer to the detail drawing containing the information by sheet and number.

Note: If solid wood cornices, picture moulds, chair-rails, wainscot caps, baseboards, panel mouldings, applied over Flexwood are to be furnished and erected by this contractor, list and locate here. If furnished and erected by the Carpentry Contractor, so mention here and specify under the Carpentry Division.

(2) Shop Drawings

Drawings not furnished by the architect shall be furnished in triplicate by this contractor, if required.

(3) Samples

Ordinarily samples of Flexwood are not required in the standard woods. Finished samples shall be prepared from the actual flitch to be used. These samples to be approved by the Architect.

(4) Storage and Protection

All Flexwood, upon receipt at the building, shall be stored in the original package (preferably under lock and key) in a dry room maintained at a uniform temperature until applied. Adequately protect the edges and surfaces of Flexwood at all times.

(5) Workmanship

All labor shall be performed in the best manner by skilled workmen.

(6) Preparation of Walls

(6a) General—

(6a1) The surfaces to receive Flexwood shall be thoroughly dry and smooth.

Note: Moisture will impair permanent adhesion. Irregularities and imperfections in the surface will obviously appear through the Flexwood applied to it.

(6a2) Lead and oil paint in good condition need not be removed. If paint is glossy, rub down with steel wool. Flat paint must be removed.

(6b) Plaster Walls—

(6b1) Remove all grit from walls with sandpaper and point up defects with Swedish Putty or plaster of paris mixed with glue size.

(6b2) Completely remove all hard or gloss oil on old or calcimined walls by brushing Flexwood paste on wall and allowing this to dry, thereby peeling the size off wall.

(6b3) Prime the complete surface of the wall with Flexwood Primer. Allow the primer to dry at least 24 hours.

(6c) Wall Board Walls—

(6c1) Gypsum Wall Boards—All joints and nail holes shall be rendered smooth and permanently tight by pointing up with Swedish Putty or water putty.

Prime all surfaces with Flexwood Primer. Allow the primer to dry at least 24 hours.

(6c2) Wood, Plywood and Presdwood—Remove the glossy surface of hard fiber board with sandpaper. Render all nail holes and joints smooth and tight by pointing up with Swedish or water putty. Prime all surfaces with Flexwood Primer. Allow Primer to dry at least 24 hours.

Wood surfaces that have been painted with lead and oil are satisfactory as a base for Flexwood, but flat paint, shellac, lacquer and varnish must be removed.

Note: All joints on wood surfaces must be battened with wood battens to avoid joints in the finished work due to expansion and contraction of wood.

(6d) Metal Walls—Clean the metal surface to remove all traces of oil, by the use of Oakite or Wyandotte. Use a solution of six ounces to a gallon of hot water, washing the metal with the solution as recommended by the manufacturers, and subsequently rinsing with clean water. Apply Flexwood Primer to the metal in a uniform coat well brushed out and allow this to dry at least 24 hours.

(6e) Marble, Concrete, Glass, Cement Asbestos Board, Glazed Tile Walls, Etc.—

Note: For specifications covering application to these and other surfaces, write to THE FLEXWOOD COMPANY, *4413 West Division Street, Chicago, Illinois.*

(7) Materials

(7a) Flexwood—Flexwood, listed and located in paragraph (1), shall be as manufactured by THE FLEXWOOD COMPANY, 4413 West Division Street, Chicago, Illinois.

(7b) Paste—Paste shall be special paste as furnished by THE FLEXWOOD COMPANY, mixed in accordance with the manufacturer's directions printed on the container.

(7c) Wall Liner—Wall liner shall be the Flexwood Wall Liner as furnished by THE FLEXWOOD COMPANY.

(7d) Primer—Flexwood Primer shall be the Flexwood Primer as furnished by THE FLEXWOOD COMPANY.

Note: Flexwood Primer eliminates painting or other sizing. The primer largely overcomes alkalinity in plaster and eliminates "hotspots" and suction in plaster walls.

(8) Wall Lining

Line the wall with Flexwood Liner. Apply the Flexwood Paste, as specified on the paste container, to the wall and hang the liner dry vertically, lapping the joints ¾ in. to 1 in. Roll the lapped joints flat with the aid of a 2-in. seam roller, kept wet.

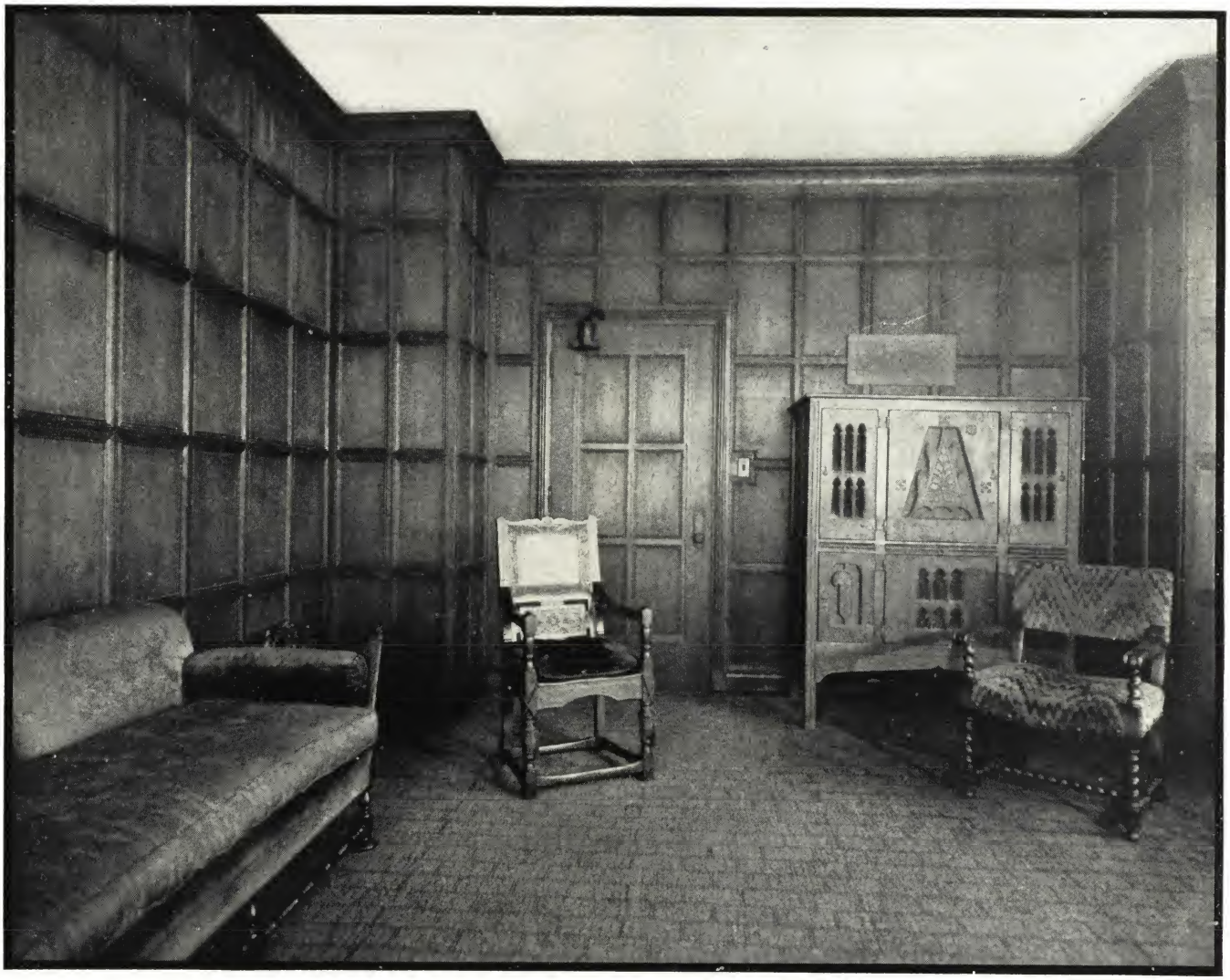
Note: Wall Lining is not required over wood, plywood, Presdwood or metal walls.



Display and Sales Room,
Specialty Luggage Shop, Cincinnati
Walls of Prima Vera
Inlaid design in Lacewood



Alfred E. Smith's Board Room, Empire State Corp.,
Empire State Building, New York
Shreve, Lamb & Harmon, Architects
Prima Vera and Mahogany



Private Office, Palmolive Building, Chicago
Flexwood in English block paneling with wood
stiles and rails. Plain Oak

(9) Hanging the Flexwood

Note: *All wall surfaces, including those covered with Flexwood Liner, must be dry before application of Flexwood.*

(9a) Trimming—Knife trimming shall only be done on a table before the Flexwood is hung.

Note: *Trimming on the wall should be minimized to the greatest extent, since it is a serious matter to cut into the wall lining.*
The edges of Flexwood are factory trimmed straight and parallel.

If the edges of the Flexwood lap after hanging, and must be trimmed, insert a zinc strip under the seam to trim on.

(9b) Pasting—Mix paste, as specified on container, and apply uniformly to the back of the Flexwood with a 4½ in. short bristle paint brush. Make sure there are no dry spots.

Use special care to insure a full continuous coat of paste at the edges. Allow the paste to set until tacky.

(9c) Wall Sizing—After pasting back of Flexwood, apply thin coat of paste to wall, allowing same to become tacky before hanging Flexwood.

Note: *The tackiness of the paste may be tested by touching the surface with the palm of the hand. If the sheet is raised off the table, the desired degree of tackiness has been reached.*

(9d) Hanging—Hang the Flexwood by starting from a true, plumb line at the center of each wall. Place the sheets in the designated numerical order, matching the figure of the wood of adjacent sheets at the abutting edges.

Note: *Each sheet of matched stock is numbered at the factory so that the figure of the wood in adjacent sheets will match when applied in the correct sequence.*

Butt edges together lightly and first secure the top edge at joint before securing the remainder of the sheet to the wall. *Do not lap joints.*

Use a 3-in. scraper or broad knife for application, scraping the surface with heavy pressure in the direction of the grain only, eliminating all paste and air pockets.

A paper hanger's roller is not satisfactory.

Sheets shall be bent and thoroughly secured at reentrant angles and corners.

Do not moisten the face of Flexwood, except as may be necessary to wipe off the paste. This must be done carefully, using a moist sponge—*not wet.*

(10) Solid Wood Trim

Note: *See also note following par. (1).*

(10a) After the Flexwood is thoroughly dry and before finish is applied, *(this contractor) (the Carpentry Contractor)* shall apply all solid wood trim over the Flexwood in accordance with detail drawings.

(10b) Trim consisting of *(cornices) (picture moulds) (wainscot caps) (baseboards) (panel moulds) (specify)* shall be accurately and substantially applied. All joints shall match perfectly and all nails shall be neatly set.

Sand smooth and putty all nail holes.

(11) Finishing

(11a) Inspection and Preliminary Preparation—Inspect the wall critically before finishing to insure against air pockets not thoroughly and permanently secured to the wall.

Spots not properly secured may be detected by the hollow sound when the finger tips are passed lightly over the surface.

All spots not properly pasted tight shall be pasted tight by the aid of a warm pressing iron, placing a piece of scrap Flexwood, wood to wood, against wall under the iron.

(11b) Filling Knots in Flexwood—Where the wood knots have fallen out, they shall be replaced with Swedish Putty, using the following formula:

Whiting—2 parts by volume
Plaster of Paris—1 part by volume

Mix these powders thoroughly and then add glue size (one half to one pound of ground glue to a gallon of hot water).

Stir the powder and the glue size together until a very stiff consistency is obtained (almost too thick to stir) then thin to a working consistency with varnish. This may be colored to match wood with standard dry colors.

The Swedish Putty shall be applied over the knot hole with a putty knife and allowed to dry. It is then sanded and shellaced. The knot is then painted in by hand, using an artist's brush.

(11c) Sanding—Thoroughly sand the Flexwood surface to a uniformly smooth high polish, using fine sandpaper. Sand only in the direction of the grain.

Note: *The quality of the final finish, as on any wood surface, is dependent upon its smoothness prior to finishing.*

(11d) Finish—Be sure all paste spots have been removed and Flexwood has been drying at least 48 hours before applying finish.

Note: *Here specify the particular finish selected.*

Note: *A wide variety of finishes may be applied to the Flexwood surface. Most progressive decorators, as well as* The Flexwood Company, *advocate the use of the wood in its natural color, without stains or filler.*

Both stains and wood fillers may be used as on any wood surface, but open pore (unfilled) work is recommended, since it shows the texture and quality of the wood to the best advantage.

Excellent results are obtained with two coats of flat lacquer or a coat of gloss varnish followed by a coat of flat varnish and for either finish one coat of thin shellac may first be applied to Flexwood.

Due to unavoidable irregularities, inherent in wall surfaces, gloss finishes are not recommended.

FLEXWOOD — SHORT FORM SPECIFICATIONS

Flexwood, as manufactured by The Flexwood Company, 4413 West Division Street, Chicago, Illinois, shall be applied in strict accordance with the manufacturer's most recent specifications, to the areas specified below, or as indicated in blueprint (see note). This contractor shall also submit samples of the finished Flexwood to the architect, if required, for approval before proceeding with the work. This sample shall be picked from wood which will be used on this job.

Note: *Specify the areas to be covered, giving a list of the wood to be used as well, or refer to the blueprint by sheet and number.*



Living Room—Model Room, Department Store, Detroit
Early American living room in knotty pine



Bedroom—North Shore, Chicago
Flush walls in matched mahogany. Natural finish

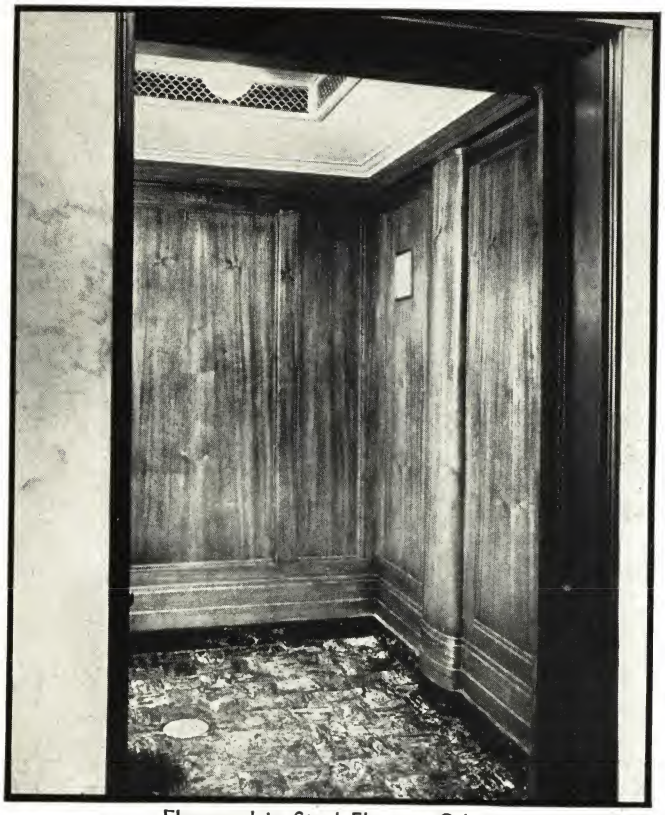


Living Room—Delineator Studios, New York
Matched walnut, flush walls
with special hand carved type mouldings



Board Room—Administration Building, World's Fair, Chicago
Burnham, Bennett & Holabird, Architects
Wall treatment in lacewood
Mural in Flexwood overlays. Designed by David A. Leavitt

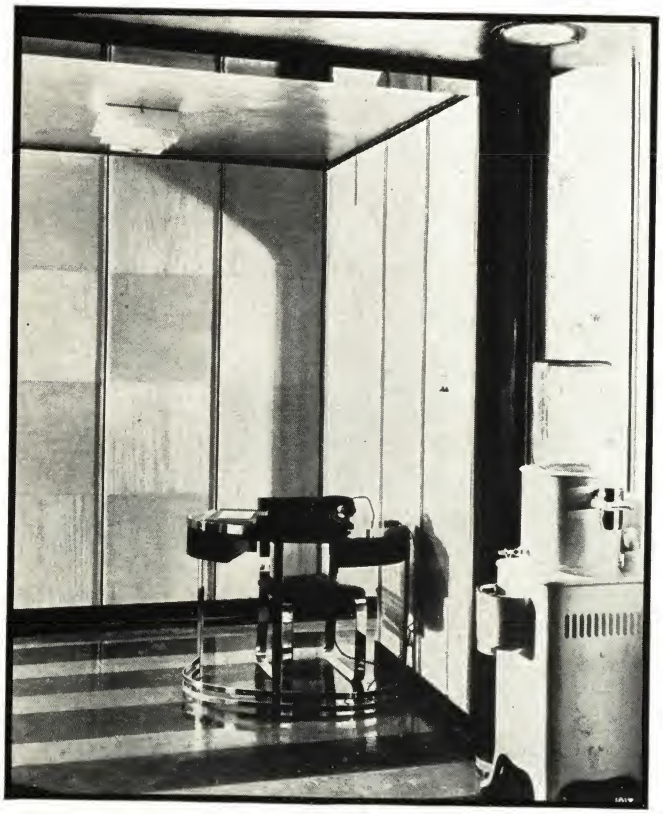
Photo by Hedrich-Blessing



Flexwood in Steel Elevator Cabs,
Office Building,
Chicago



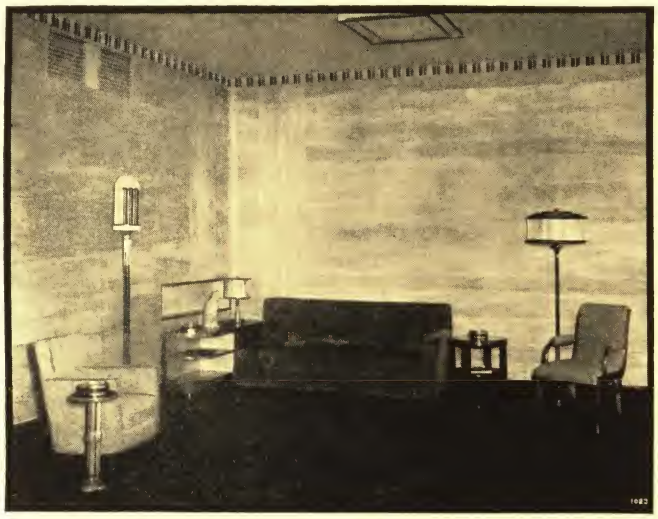
Broker's Private Office, Chicago
Quartered oak applied to corrugated transite
Holabird & Root, Architects



Suite of Offices—General Electric Representatives, Chicago
Rebori & Wentworth, Architects
Modern treatment. Prima Vera in reverse squares



Doctor's Reception Room, Chicago
James Hudson, Architect
Matched walnut paneled design



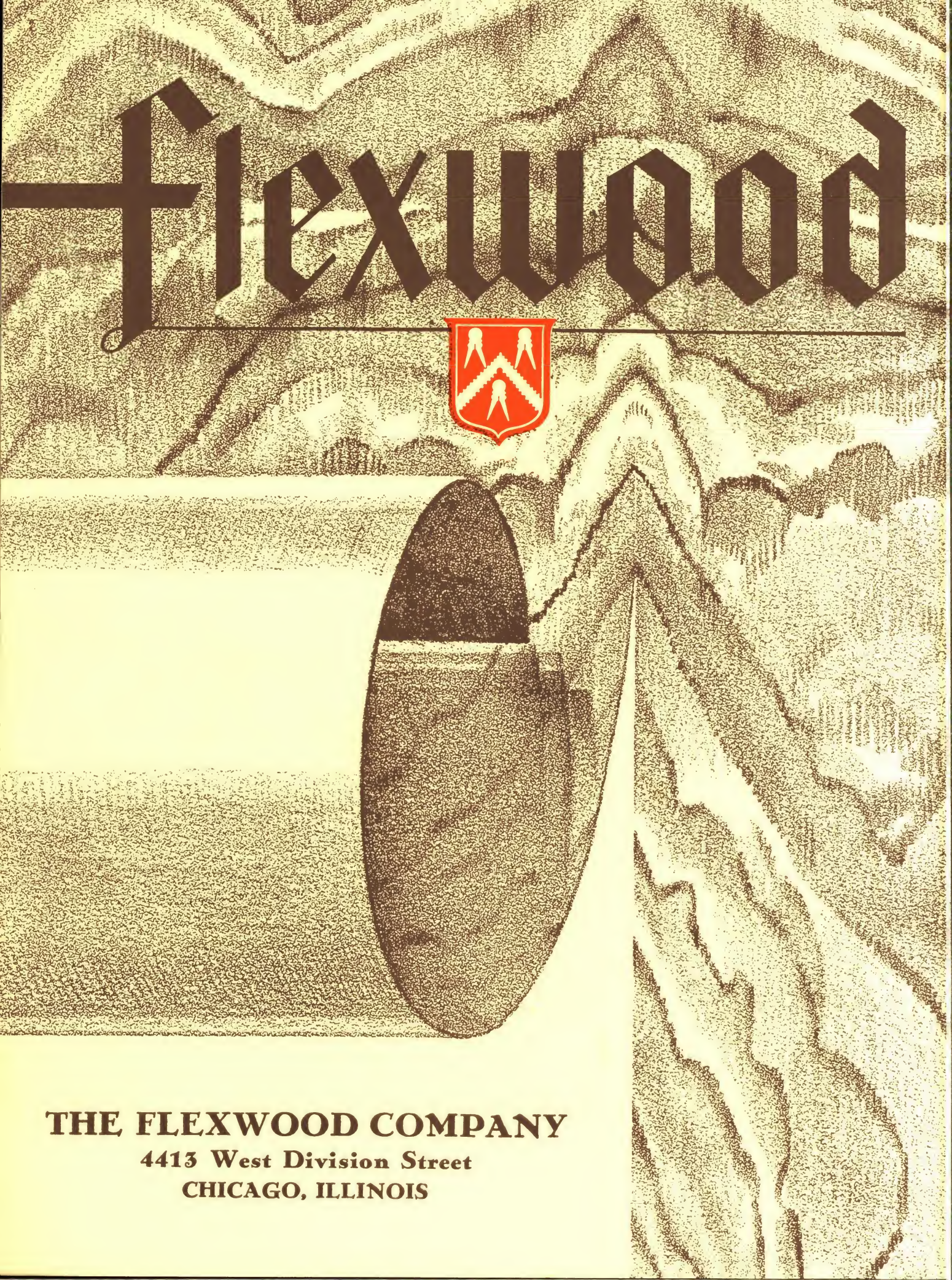
Empire State Club, Empire State Building, New York
Shreve, Lamb & Harmon, Architects
Modern treatment in Prima Vera



Decorators Reception Room, New York
Plain Wall treatment
Matched Prima Vera



Sangamo Club, Springfield, Illinois
Helme & Helme, Architects
Quartered oak in 22-in. squares



THE FLEXWOOD COMPANY
4413 West Division Street
CHICAGO, ILLINOIS

THE E. M. LONG CORPORATION

"Improved" O. G. Fir Gutters

Home Office and LCL Warehouse
CADIZ, OHIO

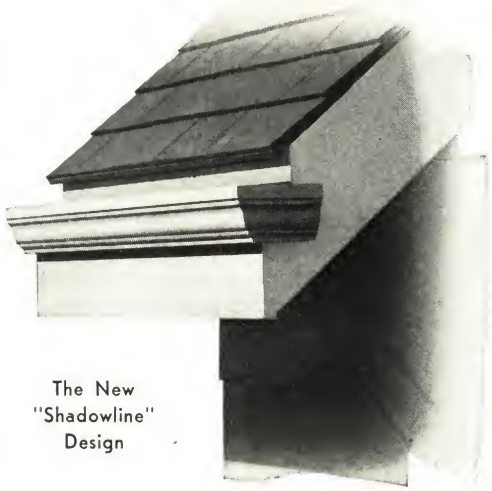
Direct Mill Shipments
EVERETT, WASH.

Fir Gutters for Beauty, Permanence and Economy

In the early days of American building, gutters of wood were commonly used for all types of structures. The passing of years brought gutters of other materials but time proves all products and today finds the wooden gutter more popular than ever before.

Beauty—"Improved" Fir Gutters possess that outstanding beauty which can only come through the use of the right materials to meet definite requirements. "Improved" gutters, with their excellent proportions and refined lines lend distinction to any cornice detail. There is nothing artificial about a wooden gutter; it harmonizes with any type of architecture, wall material or roofing. There are no hard angles or awkward curves to destroy a carefully designed effect. Moulded wood is always appropriate.

Permanence—The second feature of "Improved" gutters is their permanence. They are made of clear, carefully selected durable Douglas Fir. They cannot corrode or disintegrate when exposed to the natural elements, smoke, fumes or acids. They cannot possibly contract or expand under varying weather conditions. Ice, snow or winds fail to tear them loose from the building. Leaning ladders cannot damage them. A carpenter can walk on an "Improved" Fir Gutter without doing the least damage. Strength and rigidity are special features.



The New "Shadowline" Design

Economy—The third feature of these gutters is their economy. Their first cost is no more than that of an ordinary gutter. In most cases, it is less. When they are used no roof mould is necessary. The gutters need only be painted when the house is painted with any good lead and linseed oil paint. But, the biggest economy lies in their durability. With "Improved" Fir Gutters on the house it will never be necessary for the home owner to buy gutters again. These replacement savings are certainly worth-while economy.

Leakproof Fittings for Ends, Joints and Miters

As the result of long experience THE E. M. LONG CORPORATION has developed a complete set of fittings to prevent leaking at the joints, miters and ends of "Improved" gutters.

The end fittings are of cast aluminum, right or left and are furnished complete with brass screws. The miter joint fittings for either in or out miter consist of two brass angles of the proper size with brass screws and four divergent corrugated coated fasteners. Brass screws and divergent corrugated fasteners are recommended and supplied for securing straight spliced joints.

Manufacture and Shipping

In the manufacture of "Improved" O.G. Fir Gutters great care is taken by the mill to see that each piece is perfectly machined. Skilled workmen equipped with modern machinery turn out thousands of feet of gutter each day. So exact is their workmanship that every piece of gutter is like every other piece even in the minutest detail.

A stock of approximately one-half million feet is maintained at our Cadiz, Ohio, warehouse in assorted sizes and lengths to assure prompt shipments at all times. Customers in western and northwestern states desiring less than carload shipments will be supplied direct from our mill in Washington at a considerable saving in freight.

The stock sizes of the gutters are 3x5, 4x5, 4x6, 5x7 and 6x8 in. in the rough. Larger or smaller sizes can be furnished on special order, in mixed cars with West Coast lumber and millwork. Finished sizes are shown in the drawing below.

The Gutter Used By Many Railroads

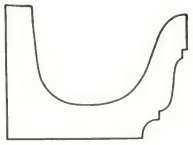
Railroad structures provide a severe test for any gutter due to the effect of smoke and gases. Probably there can be no stronger proof of the lasting qualities of Fir Gutters than the fact that more than 25 railroad lines are using them today for stations, freight depots and all types of railway buildings.

Below are listed some of the present railroad users:

Pennsylvania
Central of Georgia
New York Central Lines
The Delaware and Hudson
Florida East Coast
Rock Island
Big Four Lines
Chicago and Northwestern Line
Pere Marquette
Nickel Plate Road
Atlantic Coast Line
Toronto, Hamilton and Buffalo
Maryland and Pennsylvania
Mobile and Ohio
Atlantic and West Point
Wheeling and Lake Erie
East Carolina
The Virginian
The Western Railway of Alabama
Nashville, Chattanooga and St. Louis

STOCK SIZES—"SHADOWLINE" DESIGN

For Immediate Shipment from Cadiz, Ohio

Cross sections of "Shadowline" Fir Gutters shown ⅛ full size					
Trade size, in.	3x5	4x5	4x6	5x7	6x8
Finished size, in.	2⅝ x 4⅝	3⅝ x 4⅝	3⅝ x 5⅝	4⅝ x 6⅝	5⅝ x 7⅝

Front of all gutters worked lower than back

Gutter run to any pattern in straight or mixed cars

MOUNT & ROBERTSON, INC.

Manufacturers of Fine Interior Woodwork and Cabinet Work Since 1892

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62 Broad Street
NEW YORK, N. Y.

FINE INTERIOR WOODWORK

A master architect knows he must employ the services of master craftsmen if the finished product is to be a compliment to his efforts. Our business is built on our ability to carry out specifications to the smallest detail, and our application of high quality workmanship and materials to every job we touch, large or small.

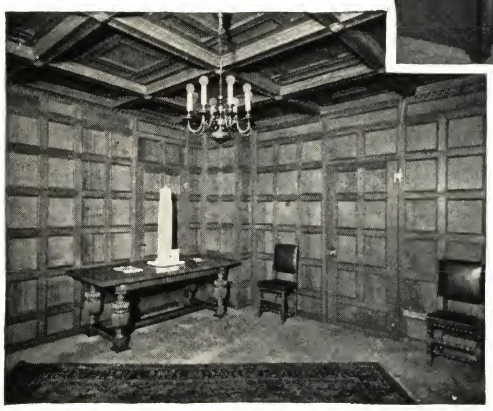
While our installations have been confined chiefly to supplying commercial and financial houses with their paneled directors' rooms, executive offices, and other fine cabinet work requirements, our long experience and ample factory space make us thoroughly equipped to supply the fine paneling and architectural woodwork to the quality homes that are in a position to demand the best in interior decoration.

Your attention is called to the durability and permanent value of wood interiors in comparison with all other materials. Today, as throughout the centuries, the richness of fine cabinet woods remains unchallenged in the achievement of dignity and distinction in interior decoration.

Some of our finest installations have been in Old English Oak, African Mahogany, Knotty Pine, and Walnut.



Mahogany Panels
Add Dignity and Warmth
to This Private Office



Oak Paneling Made from a Tree Grown on William Penn's Estate in England



Georgian Paneling with Wood Radiator Enclosures and Casement Windows

Banks

Our long association with the needs of banks enables us to render maximum service in the installation of their cabinet work requirements. We are ably equipped to handle the entire installation of branch banks, including the work of the allied trades.



One of Our Complete Branch Bank Installations

References

Bank of America
Bank of Manhattan Co.
Harriman National Bank
Fordham Savings Bank
Manufacturers Trust Co.
J. Henry Schroeder Banking Corp.
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One of Our Complete Brokers' Installations



Typical Installation, "Mount-Lockt" Office Partition

Brokers' Stock Boards

Stock boards and the complete installation and decorating from floors to ceiling of brokers' offices, in fast time, have been among our specialties for forty years. Our boards are built to give maximum service, for we know what brokers need.

Among our Stock Broker customers are:

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C. D. Halsey & Co.
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Sparks & Co.
Thomson & McKinnon
Butler, Herrick & Marshall
Winthrop, Mitchell & Co.
Eastman, Dillon & Co.
Post & Flagg

*"Made by the Mile—Sold by the Foot"**

Adjustable Office Partitions

Pioneers in the development of sectional office partitions.

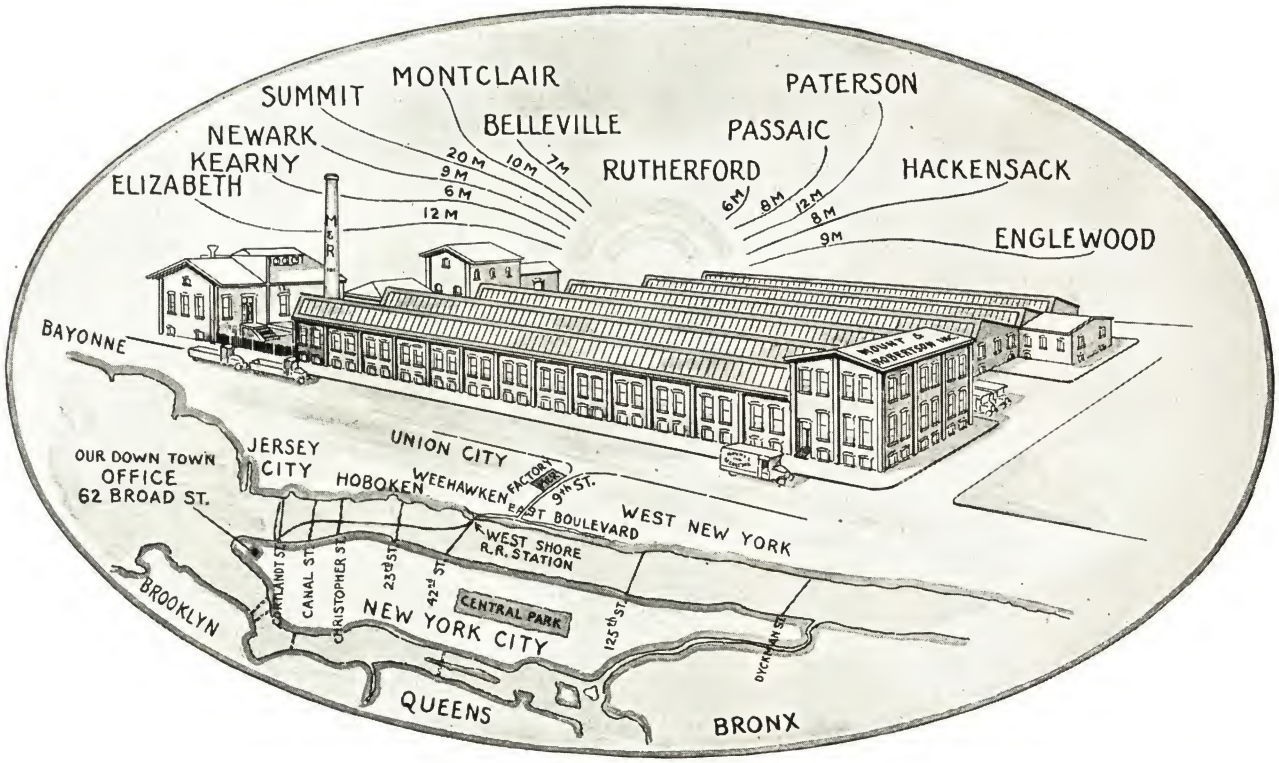
Quick installations from our large stock.

Complete facilities for the manufacture of partition and railing to your specifications.

Detailed specifications furnished upon request.

The natural warmth and beauty of real wood grain and color effects are appreciated in today's busy offices.

*Registered U. S. Patent Office.



Our Modern 80,000 Square Foot Factory

Located on the New Jersey side of the Hudson River, opposite 42nd Street, New York. Inside storage insures the quality of our lumber and materials. Production entirely on one floor

"NEVER GIVE" LOCK JOINT WOOD COLUMNS

MANUFACTURED BY SOMERSET DOOR AND COLUMN CO., SOMERSET, PA.

AMERICAN WOOD COLUMN CO.

905 Grand Street, BROOKLYN, N. Y.

Products

"Never Give" Patented Lock Joint Wood Stave Columns for exterior and interior use.

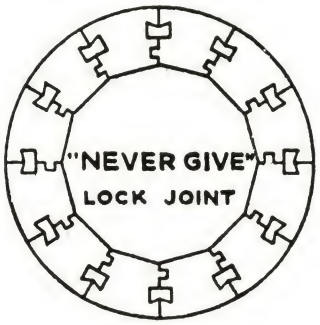
Cast Iron Plinths for columns.

Also, Pilasters and Balusters to match "Never Give" Columns.

Architectural Service

Somerset specializes in building wood columns to the architect's details and can supply any size or design wanted, or, if no specific design is indicated, will prepare one in accordance with the best architectural practice and for any period, and submit full sized detail for approval.

Selected stock designs conform to the standards of Vignola and include lock joint turned columns, plain or fluted, and square columns, plain, fluted, or paneled. Somerset is particularly well equipped to supply fluted columns.



TRADE-MARK

"Never Give" Patented Lock Joint Columns

Construction—"Never Give" Patented Lock Joint Column staves are held tightly together by a counter-beveled spline of hardwood machine-driven through the length of the column, using a sufficient quantity of waterproof glue to secure it completely. No metal bands are required to hold the staves together with such construction, and an unconditional guarantee is given that "Never Give" Columns will not fail by opening at the joints.

Proportions—"Never Give" Columns are architecturally correct, having proper entasis, stopped flutes and other characteristics of the columns of ancient classical orders.

Unless otherwise specified, the staves are worked to the correct entasis (convex curve) in the rough before being placed in the columns (one-third straight and upper two-thirds swell tapered). This method not only gives proper entasis when columns are turned and finished, but also insures maximum thickness of stock throughout the entire length.

Materials—"Never Give" Columns are regularly made of poplar, cypress and white pine, only best grade material being used, but columns will be made of any wood desired. All lumber is kiln dried and tested for moisture content before use in manufacture. The wood should be specified from which columns are to be made.

Samples—A sample of the "Never Give" Patented Lock Joint may be had on application.

Information Required for Estimates

In asking for estimates, indicate the number of columns and design wanted, the kind of wood, the largest and smallest diameters of round columns or widths of square columns, the over-all lengths, whether the shafts are to be plain, fluted, or paneled, and whether the columns are for exterior or interior use. State the nature of the surface on which the column is to rest, whether priming of the wood before shipment is required, and whether the cove of the columns is to be a part of the shaft or may be planted on. Also give the thickness of shaft, if to be greater than standard thickness given in table "Shaft Thickness for 'Never Give' Columns."

Specifications

In specifying, it should be clearly stated that all columns are to be "Never Give" Lock Joint construction, using hardwood spline and waterproof glue, as sold by the American Wood Column Co., 905 Grand Street, Brooklyn, N. Y. The information required for estimates as set down above should also be supplied.

A List of Prominent Installations

Troy, Ala., Bibb Graves Hall, State Normal
Warren, Knight & Davis, Birmingham, Ala., Architects

New London, Conn., Connecticut College
E. R. Loud, New York, N. Y., Architect

Ames, Iowa, Iowa State College Women's Dormitory
Proudfoot, Pawson, Souers & Thomas, Des Moines, Iowa, Architects

Lexington, Ky., Memorial Hall, University of Kentucky
Warner, McCormick & Mitchell, Cleveland, Ohio, Architects

U. S. Veterans Hospital
U. S. Veterans Bureau's Architect

Sykesville, Md., Springfield State Hospital
Henry Hopkins, Baltimore, Md., Architect

Holyoke, Mass., Holyoke Savings Bank
Hutchins & French, Boston, Mass., Architects

Boonton, N. J., Knoll Golf Club
Walker & Gillette, New York, N. Y., Architects

Great Neck, L. I., N. Y., Glen Oaks Golf & Country Club
Buchman & Kahn, New York, N. Y., Architects

Portland, Ore., U. S. Veterans Bureau Hospital
Government Architect, Washington, D. C.

Coatesville, Pa., U. S. Veterans Hospital
U. S. Veterans Bureau's Architect

Myrtle Beach, S. C., Ocean Forest Hotel
Johnson & Brannan, Lynchburg, Va., Architect

Alexandria, Va., Dormitory, Virginia Episcopal Theological Seminary
Frederick H. Brooke, Washington, D. C., Architect

Washington, D. C., Building for Food Administration & Council of National Defense
Waddy B. Wood, Architect

Fairmont, W. Va., Physical Education and Science Building for Board of Education
L. D. Schmidt, Architect



No. 105
Fluted Column Doric Cap Attic Base



No. 110
Tuscan Column



No. 115
Plain Column Doric Cap Attic Base



No. 120
Roman Doric Column Fluted



No. 130
Greek Doric Column Fluted



No. 135
Plain Column Angular Ionic Cap Attic Base



No. 140
Plain Column Corinthian Cap Attic Base



No. 145
Roped or Twisted Column



No. 150
Plain Column Tower of Winds Cap Attic Base



No. 160
Plain Column Roman Ionic Cap Attic Base

We make columns up to 54-in. diameter and proportionate length.

HARTMANN-SANDERS CO.

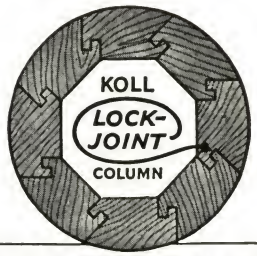
Exclusive Manufacturres of Koll's Patent Lock-joint Wood Staved and Turned Columns

MAIN OFFICE AND FACTORY
2155-2187 Elston Avenue, CHICAGO, ILL.
EASTERN OFFICE, 101 Park Avenue, Architects Building, NEW YORK, N. Y.

Products

KOLL'S PATENT LOCK-JOINT WOOD STAVE COLUMNS for exterior and interior; columns made in all woods. ROPED COLUMNS with pilasters and square columns. EXTERIOR AND INTERIOR COLONIAL WOODWORK. COMPOSITION ORNAMENTAL CAPITALS.

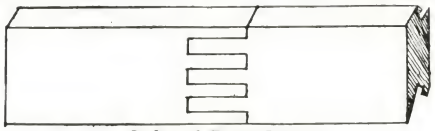
Also manufacturers of Pergolas, Lattice Work and all architectural work for the garden.



THEY CANNOT COME APART

Spliced Butt Joint

In addition to the perfect lock joint of the staves, a joint has been devised to splice



Spliced Butt Joint

the butts of the staves should the length of column call for material longer than can be secured in one piece. In this process joints are put together with screw pressure and cold water waterproof glue, another feature which adds to make these columns mechanically perfect.

Architect's Details

Columns conform accurately to any detail, are of the best materials and at as reasonable rates as are consistent with good work.

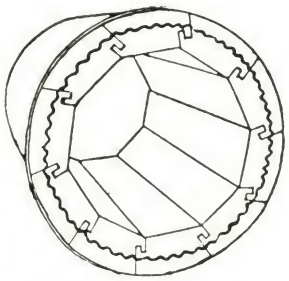
Our Patent Correct Entasis

Correct entasis secured in forming stave itself—The staves in all columns manufactured under Koll's patent are, in order to secure the proper entasis, straight one-third and swell-tapered upper two-thirds, so that when shaft is formed the correct entasis is obtained, securing sufficient stock at top and bottom of shaft to permit turning to detail without cutting too close to joint.

Columns furnished with any style of fluting or reeding desired.

Steel Reinforcement

A corrugated steel band or ferrule reinforcement is applied to the bottom end of all Doric columns. The steel band, while adding considerable strength to the shaft, permits some flexibility so that no injury can be done by moisture that may be absorbed. This reinforcement is also added to both ends of all large column shafts.



Steel Reinforcement



No. 195
Greek Doric Column Fluted



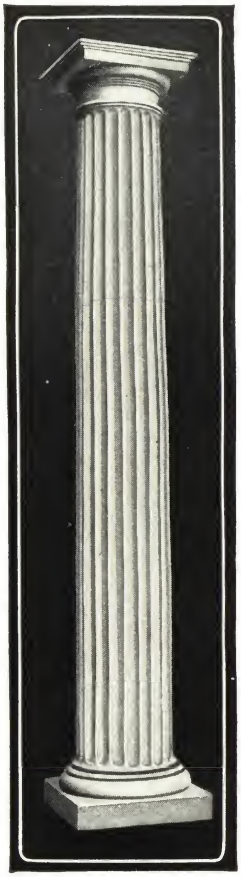
No. 200
Tuscan Column



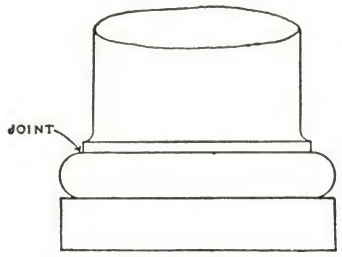
No. 220
Plain Column Doric Cap Attic Base



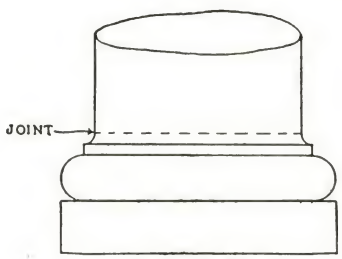
No. 225
Fluted Column Doric Cap Attic Base



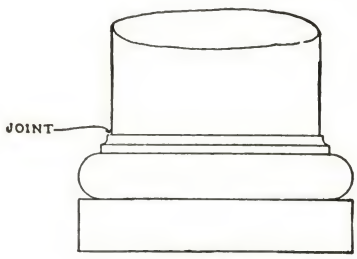
No. 215
Roman Doric Column Fluted



Style A Cove



Style B Cove



Style C Cove

KOLL'S PATENT WOOD COLUMNS

	2-in. stock	2½-in. stock	3-in. stock	4-in. stock
With Cove on Shaft Like Style A				
Plain shaft .....in.	up to 18	19 to 22	23 to 30	31 and up
Doric and Ionic fluted .in.	up to 16	17 to 19	20 to 27	28 and up
Doric fluted, No. 195...in.	up to 22	21 to 28	29 to 39	40 and up
Cove Planted on Like B, or Made a Base Member Like C				
Plain shaft .....in.	up to 22	23 to 30	31 to 40	41 and up
Ionic fluted .....in.	up to 22	23 to 28	29 to 38	39 and up

Note: Before ordering columns, it would be well to examine detail closely and note whether the cove is to be part of the shaft, or whether this can be planted on. This company can make the column either way, but of course must be guided by what specifications and details call for.

Waterproof Glue

All columns are glued with cold water, waterproof, casein glue.

The staves of all columns and all exterior work produced by us are put together with waterproof glue. The inside of all columns and pilasters above 14 in. is waterproofed with a special waterproof compound.

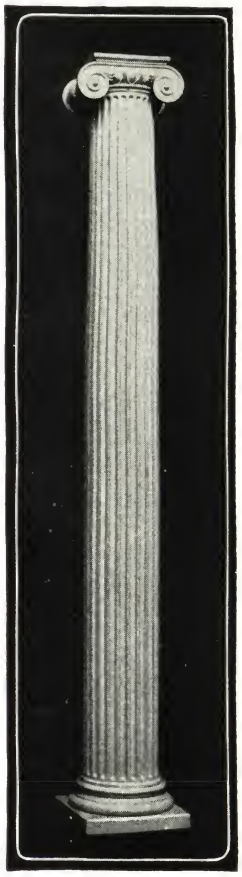
Thickness of Stock

As the price of the column is regulated by the amount and kind of lumber that enters into its construction, it is very important to state in the specifications the thickness of stock of which columns are to be made.

Our experience as specialists in column construction has demonstrated that the thickness of stock for the various sizes, as called for in the table on the following page, provides enough material to carry out properly the architectural detail and to afford the required strength. Should an unusual load be placed on the columns, they can be reinforced by inserting a timber or iron column. When necessary to incase a structural timber or iron column already in place, columns can be made in halves and doweled or rail bolted as desired.

Flashings

The entire top of all wood and ornamental caps should be flashed with either galvanized iron, copper or sheet lead to protect the same from the weather. These flashings will be furnished when the specifications call for them.



No. 235
Fluted Column
Roman Ionic Cap
Attic Base



No. 240
Plain Column
Angular Ionic Cap
Attic Base



No. 255
Fluted Column
Corinthian Cap
Attic Base



No. 335
Fluted Column
Tower of Winds Cap
Attic Base



No. 155
Roped or Twisted Column

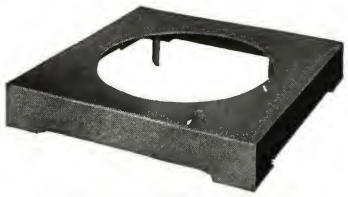
We make columns up to 54-in. diameter and proportionate length.

Roped Columns

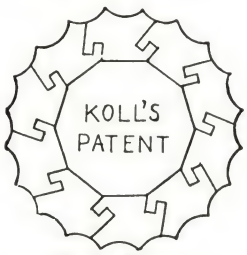
We have facilities for making roped columns and Colonial roped balusters, both for exterior and interior work. The roped column shown is our stock design, but we can furnish the same according to the architect's detail if desired.

Cast Iron Metal Plinths

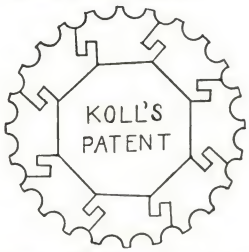
When columns rest on cement or brick floor, the use of cast iron metal ventilated plinths is recommended. We furnish these in all sizes.



Cast Iron Metal Plinth



Doric Fluting Columns, 195, 195⅔, 215 and 215⅔



Ionic Fluting Used on All Other Fluted Columns Shown in Catalogue

Specifications

As a guide to the architect, we offer the following paragraph for properly specifying our columns in his specifications:

Columns to be the Koll's Patent Lock-joint Staved Wood Column, manufactured by the HARTMANN-SANDERS Co., Chicago and New York, to be made according to their design No. .... (here specify the number in catalogue and if design is to be made according to the architect's drawing say: To be made according to details furnished). Staves to be made of clear stock (here specify the thickness wanted). See schedule for thickness of staves necessary for the various sizes of columns. Shafts, bases and gaps to be glued with waterproof cold water glue; for staves longer than ordinary lumber length, the staves are to be lengthened with a splice joint. The top of all column caps is to be flashed with galvanized iron (sheet lead or copper). The flashing to extend half-inch over the edge of caps. The square plinths of column to be cast iron ventilated plinths (or proper ventilation to be provided for the columns if stone concrete or wood plinths are to be used).

Columns to be primed at the factory with a coat of white lead and oil on the outside, and all columns above 14 in. to receive a coat of waterproof asphaltum paint on the inside of shaft.

Should the columns arrive at the building before they are ready to install, they must be stored in the building, or properly protected with waterproof coverings in a thorough manner, including both ends, and top of the column shafts. Do not lay columns directly on the ground.



Entrance to the Old Runyon House, Trenton, N. J.



Entrance to the City Tavern, Alexandria, Va.

Instructions for Ordering

When ordering columns from our catalogue refer always to our catalogue numbers—give quantity wanted and size at largest and smallest diameter of shaft, and length over all. State if for *interior* or *exterior* use.

Note: All our details are carefully planned from the dimensions given by the approved authorities but we make no extra charge for following your detail, if similar to any of the designs shown in our catalogue.

We will promptly furnish estimates on any special column or pilaster work according to architect's drawing and full size details.

When ordering pilasters to match columns, give dimensions at top as well as bottom of shaft, or state whether width is to be equal to the largest or smallest diameter of the column, or if they are to have the mean diameter of column shaft or if they are to have the same taper as the column. This, you will note, makes four ways of making square columns and pilasters. Give also depth of return. Refer to line drawing of sections of columns and pilasters when ordering.

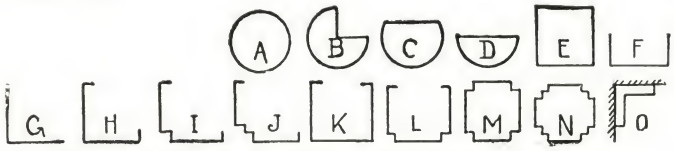


Diagram Showing Section of Columns and Pilasters

We prime all exterior and interior columns (unless made of hardwoods) one coat of lead and oil unless otherwise notified. We make no extra charge for priming.

When composition caps are to be used, we furnish without extra cost suitable wood dowels with columns to carry the weight of the overhead work.

Details

Unless specified to the contrary when ordering, all columns are made according to the proportions of the styles of architecture shown by the various cuts in the catalogue, but we can, if desired, make them according to the architect's detail.

Colonial Entrances and Millwork

Our extended efforts in the field of Colonial Architecture has enabled us to develop our organization to such a degree that we are in position to furnish in addition to our columns and pilasters, also Colonial entrances and millwork generally, either to the architect's detail or our own design.

Catalogues

We publish the following catalogues, which we would be glad to send on request:

Catalogue No. 48-8, Wood Columns and Pilasters.
Catalogue No. 53-8, Colonial Entrances.
Catalogue No. 39-8, Pergolas, Architectural Woodwork for the Garden and Garden Accessories.



John M. Olin Residence, East Alton, Ill.
CHESTER H. WALCOTT, Architect



Church at Pinehurst, N. C.
HOBART UPJOHN, Architect, New York, N. Y.
Columns are 27 in. diameter, 22 ft. long

A. F. SCHWERD MANUFACTURING CO.

Manufacturers of Wood Staved Columns

PITTSBURGH, PA.

Schwerd's Quality Columns

The A. F. Schwerd Manufacturing Co. has for many years been contributing to the architecture of this country wooden columns that are not only correct artistically, but scientifically as well. Many of these columns, installed in buildings a quarter of a century ago, are in as good condition as when they left our factory.

Our painstaking attention to detail in the manufacture of these columns has made the name "Schwerd's Quality Columns" known throughout the building industry.

Service to Architects

For the convenience of architects, contractors and builders in ordering columns, the information set forth in the following pages has been compiled by an architect of prominence. The designs and proportions have been worked out in accordance with the best practice and are suitable for use with the very highest class of work.

The dimensions given in the tables on the following pages are authoritative and render further research unnecessary. Architects are urged to place their column problems with us because of our facilities for production and service.

THE MANUFACTURING OF "SCHWERD'S QUALITY COLUMNS"

Seasoning of the White Pine Lumber—*White Pine Lumber is used exclusively in "Schwerd's Quality Columns."* To serve properly its purpose as a support and to withstand successfully the action of the elements, a column must be made of thoroughly seasoned stock. We maintain at all times a year's supply of lumber at the source of supply, where it is seasoned by nature's slow but sure process—the open air.

Making the Staves—The stave machines were built specially to the order of the Schwerd Company. These machines shape and taper and tongue and groove the staves in one operation. By this method, when the staves are glued together, the shaft has the proper entasis, and the turning removes only the roughness of the lumber without weakening the shaft, and leaves shaft equal in thickness of material at any point in its length—an important detail in the life of a support.

Assembling and Gluing—After forming, the staves are spread with a special waterproof glue (by means of rotary brushes so that an even and properly distributed coat is maintained) and assembled. Heavy screw clamps, having a pulling power of 5000 lb., are then applied and drawn tight.

Caps and Bases—These members are made of mitered pieces and held together with corrugated steel fasteners and waterproof glue. This process seals the joints against moisture and prevents opening and consequent decay.

Column Troubles Eliminated—See that columns are in good condition before taken from the railroad station—or have notation made by your agent on your freight receipt of the damage.

See that columns are kept stored in a dry place.

Do not allow columns to lie in damp cellars or newly plastered houses. Do not set up column until the porch roof is finished. Set base and bottom end of shaft in heavy layer of white lead.

Paint Columns as Soon as Placed—We prime to protect the surface.

We are convinced that by observance of the above rules you will eliminate column troubles, as our long experience and close investigation show that a big percentage of trouble arises from causes beyond the control of the manufacturer.

REASONS FOR THE DURABILITY OF "SCHWERD'S QUALITY COLUMNS"

If a column were made of steel, it would be possible to so fashion the joints of the staves that they would rigidly interlock without any other attachment. In the past, attempts have been made to apply this same principle to wooden columns but it has not been successful, because the strength of wood is not sufficient to withstand the necessary tension on the interlocking members.

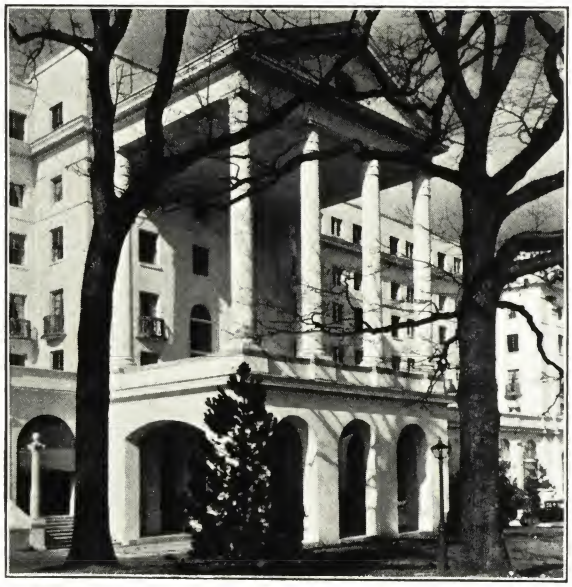
In every test, whether for demonstration purposes or in actual service, the strength of a wood column will be found to be that of the glue in the joints.

Realizing this, the gluing of the Schwerd Column is made a matter of utmost importance. The glue used is the strongest, most permanent glue obtainable. Schwerd millwork is done with such accuracy that the gluing surfaces meet absolutely flush at every joint. Tremendous pressure is applied to the freshly-glued column so that every particle of glue is either forced into the wood or from the joint.

The result of Schwerd gluing is a joint that is actually stronger than the solid wood, a column that will endure until the building of which it is a part is ready to be demolished.

Composition Caps can be furnished in any style desired.





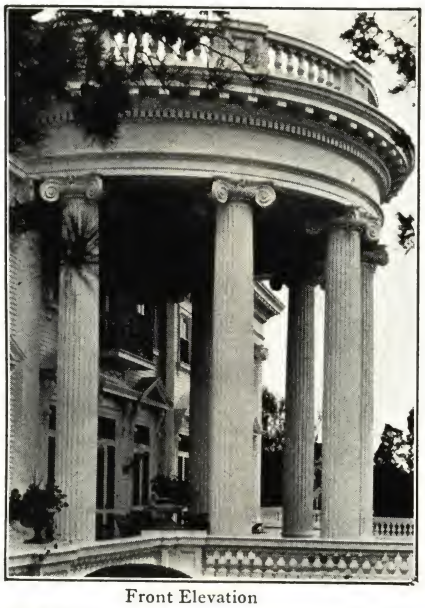
Views of White Sulphur Springs Hotel, White Sulphur, W. Va.

Philip Small Inc., Architect, Cleveland, Ohio — Anderson Mfg. Co., Millwork Contractor, Louisville, Ky.

10 detail round columns, 40 ins. diam. x 36 ft. long—6 square pilasters, 36-in. face x 36 ft. long—8 square columns, 22 ins. square x 22 ft. long—2 square pilasters, 22-in. face x 22 ft. long—182 balusters, 7x7x28 in.

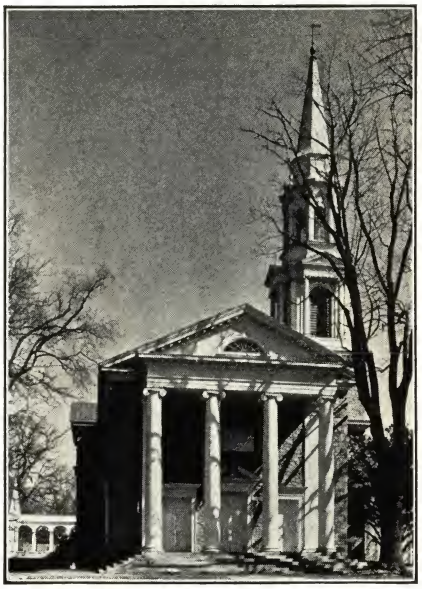


Rear Elevation



Front Elevation

Residence of Mrs. L. C. Ritchie, Spring Lake, N. J.
HORACE TRUMBAUER, Architect
METZGER & COMPANY, General Contractors, Philadelphia, Pa.
GRATER BODEY CO., Millwork Contractors, Norristown, Pa.



First Presbyterian Church, New Rochelle, N. Y.
JOHN RUSSELL POPE, Architect, New York, N. Y.
HYDE, MURPHY CO., Millwork Contractors, Ridgeway, Pa.
4 detail columns, 33 ins. diam. x 27 ft. long.
Also columns and urns on tower

A FEW REPRESENTATIVE BUILDINGS USING "SCHWERD'S QUALITY COLUMNS"

BUILDING	LOCATION	SPECIFICATION		ARCHITECT	MILLWORK CONTRACTOR
Haddon Fortnightly Club	Haddonfield, N. J.	4 No. 120	50″ x 28′	Ellery K. Taylor	T. S. Goslin Lumber Co.
Harvard University "School of Business"	Cambridge, Mass.	6 Detail	48″ x 40′	McKim, Mead & White	Carl Olson & Sons
Harvard University "Langdell Hall"	Cambridge, Mass.	16 Detail	44″ x 22′	Coolidge, Shepley, Bullfinch & Abbott	Hyde, Murphy Co.
Mercersburg Academy	Mercersburg, Pa.	8 Detail	44″ x 26′	Day & Klauder	Hershey Lumber Co.
Masonic Temple	Lock Haven, Pa.	2 Detail	42″ x 32′	Sterns & Woodnutt	Roydhouse, Arey Co.
White Sulphur Springs Hotel	White Sulphur, W. Va.	10 Detail	40″ x 36′	Philip Small, Inc.	Anderson Manufacturing Co.
Peace Institute	Raleigh, N. C.	4 Detail	36″ x 20′	Atwood & Nash, Inc.	Beaman Lumber & Supply Co.
National Park Seminary	Forest Glen, Md.	6 No. 125	36″ x 21′	James E. Ament, Pres. of Seminary	
		24 No. 145	35″ x 28′		Martin Wiegand
		4 No. 170	24″ x 23′		
Mrs. J. S. Jones Residence	Granville, Ohio	6 Detail	34″ x 32′	Snyder & Babbitt	Doddington Co.
Ira Allen Chapel, University of Vermont	Vermont	6 Detail	34″ x 32′	McKim, Mead & White	L. W. Webster Corp.
School for the Deaf	Danville, Ky.	4 No. 154	34″ x 27′	Frankel & Curtis	Frey Planing Mill Co.
Masonic Temple	Floral Park, L. I.	4 No. 145	34″ x 21′	S. Person	John R. Carpenter Co.
St. John's Academy	St. Johnsbury, Vt.	4 No. 135	32″ x 25′	Jens Frederick Larson	Smith & Rumery Co.
Leesburg High School	Leesburg, Va.	4 No. 145	30″ x 28′	J. L. Crouse	W. A. Smoot Co.
Smith College "Music Hall"	Northampton, Mass.	14 Detail	30″ x 26′	Delano & Aldrich	Edw. F. Miner Building Co.
Odd Fellows Home	Lexington, Ky.	4 No. 142	30″ x 24′	Frankel & Curtis	Smith Haggard Lumber Co.
Hollis Rinehart Residence	Charlottesville, Va.	6 No. 152	30″ x 23′	Marsh & Peter	A. Erskine Miller
Gettysburg College	Gettysburg, Pa.	4 Detail	30″ x 20′	Baum, Philadelphia	E. F. Strausbaugh
Baptist Church	Louisa, Va.	4 No. 145	30″ x 19′	W. R. Wright	Charlottesville Lumber Co.
Henry W. Stockes Residence	Media, Pa.	4 Detail	30″ x 19′	Mantle Fielding	Stacy G. Glauser & Son
Middlesex Institute of Savings	Concord, Mass.	4 No. 125	29″ x 20′	Frohman, Robb & Little	Davenport Brown Co.
Jefferson Grade School	Summit, N. J.	4 Detail	26″ x 25′	Guilbert & Betelle	Heidritter Lumber Co.
A. G. Lewis Residence	Geneva, N. Y.	4 No. 145	26″ x 22′	Lloyd P. Adams	The Teachout Company
Holley High School	Holley, N. Y.	6 No. 150	24″ x 24′	Carl C. Ade	Smith Sash & Door Co.
Arlington High School	Arlington, Mass.	12 Detail	22″ x 18′	George Ernest Robinson	Arlington Construction Co.
Albany Boy's Academy	Albany, N. Y.	96 Columns and Pilasters		Marcus T. Reynolds	Rutland Sash & Door Co.
U. S. Veteran's Bureau Hospital	Northport, N. Y.	150 Columns		U. S. Treasury Department	Cole Manufacturing Co.
U. S. Veteran's Bureau Hospital	Hartford, Conn.	36 Columns		U. S. Treasury Department	Lecoutour Bros. Stair Mfg. Co.
U. S. Veteran's Bureau Hospital	Somerset Hills, N. J.	20 Columns		U. S. Treasury Department	Lecoutour Bros. Stair Mfg. Co.
U. S. Veteran's Bureau Hospital	Excelsior Springs, Mo.	30 Columns		U. S. Treasury Department	Lecoutour Bros. Stair Mfg. Co.
U. S. Veteran's Bureau Hospital	Indianapolis, Ind.	28 Columns		U. S. Treasury Department	Lecoutour Bros. Stair Mfg. Co.



E. A. Potter's Residence, Dear Park Drive, Belle Meade Park, Nashville, Tenn.
H. S. VAUGHN, Architect and Builder
Mr. Vaughn has used Schwerd's Columns for 20 years



James B. Duke's Residence, Charlotte, N. C.
CHARLES C. HOOK, Architect E. H. CLEMENT Co., Contractors
This house and columns have been standing since 1921

TUSCAN ORDER



Plain
Tuscan Column
No. 100



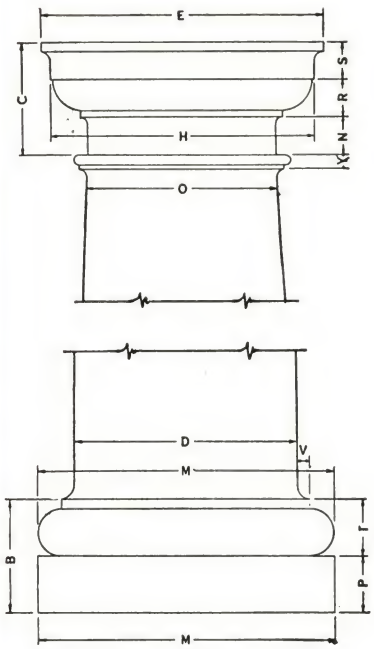
Plain
Tuscan Pilaster
No. 100-F



Fluted
Tuscan Column
No. 105



Fluted
Tuscan Pilaster
No. 105-F

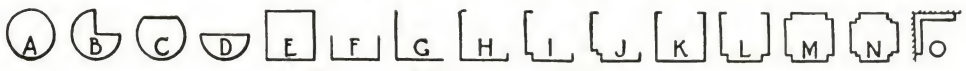


Tuscan Order

TUSCAN ORDER COLUMNS—No. 100, PLAIN; PILASTERS No. 100-F, PLAIN; COLUMNS No. 105, FLUTED; PILASTERS No. 105-F, FLUTED

Dimensions in inches

Diameter at		Total height of			Cap						Base			
					Height				Breadth		Height		Breadth	
Base	Neck	Cap and base	Cap	Base	Square	Round			Square		Square	Round	Round and Square	Cove
D	O	C+B	C	B	S	R	N	Y	E	H	P	T	M	V
6	5	6	3	3	1	1	1	3/8	7 1/2	7	1 1/2	1 1/2	8	3/8
7	5 13/16	7	3 1/2	3 1/2	1 3/16	1 3/16	1 1/8	7/16	8 3/4	8 3/16	1 3/4	1 3/4	9 3/8	7/16
8	6 11/16	8	4	4	1 5/16	1 5/16	1 3/8	1/2	10	9 5/16	2	2	10 5/8	1/2
9	7 1/2	9	4 1/2	4 1/2	1 1/2	1 1/2	1 1/2	9/16	11 1/4	10 1/2	2 1/4	2 1/4	12	9/16
10	8 5/16	10	5	5	1 11/16	1 11/16	1 5/8	5/8	12 1/2	11 11/16	2 1/2	2 1/2	13 3/8	5/8
11	9 3/16	11	5 1/2	5 1/2	1 13/16	1 13/16	1 7/8	11/16	13 3/4	12 13/16	2 3/4	2 3/4	14 5/8	11/16
12	10	12	6	6	2	2	2	3/4	15	14	3	3	16	3/4
13	10 13/16	13	6 1/2	6 1/2	2 3/16	2 3/16	2 1/8	13/16	16 1/4	15	3 1/4	3 1/4	17 3/8	13/16
14	11 5/8	14	7	7	2 5/16	2 5/16	2 3/8	7/8	17 1/2	16 5/16	3 1/2	3 1/2	18 5/8	7/8
15	12 1/2	15	7 1/2	7 1/2	2 1/2	2 1/2	2 1/2	15/16	18 3/4	17 1/2	3 3/4	3 3/4	20	15/16
16	13 5/16	16	8	8	2 11/16	2 11/16	2 5/8	1	20	18 11/16	4	4	21 3/16	1
18	15	18	9	9	3	3	3	1 1/8	22 1/2	21	4 1/2	4 1/2	24	1 1/8
20	16 5/8	20	10	10	3 5/16	3 5/16	3 3/8	1 1/4	25	23 5/16	5	5	26 11/16	1 1/4
22	18 3/8	22	11	11	3 5/8	3 5/8	3 3/4	1 3/8	27 1/2	25 11/16	5 1/2	5 1/2	29 1/4	1 3/8
24	20	24	12	12	4	4	4	1 1/2	30	28	6	6	32	1 1/2
26	21 5/8	26	13	13	4 5/16	4 5/16	4 3/8	1 5/8	32 1/2	30 5/16	6 1/2	6 1/2	34 3/4	1 5/8
28	23 1/4	28	14	14	4 5/8	4 5/8	4 3/4	1 3/4	35	32 11/16	7	7	37 5/16	1 3/4
30	25	30	15	15	5	5	5	1 7/8	37 1/2	35	7 1/2	7 1/2	40	1 7/8
32	26 5/8	32	16	16	5 5/16	5 5/16	5 3/8	2	40	37 5/16	8	8	42 3/4	2
34	28 5/16	34	17	17	5 5/8	5 5/8	5 3/4	2 1/8	42 1/2	39 11/16	8 1/2	8 1/2	45 5/16	2 1/8
36	30	36	18	18	6	6	6	2 1/4	45	42	9	9	48	2 1/4



Section of Column and Pilasters

ROMAN DORIC ORDER



Plain
Roman Doric
Column
No. 110



Plain
Roman Doric
Pilaster
No. 110-F



Fluted
Roman Doric
Column
No. 115

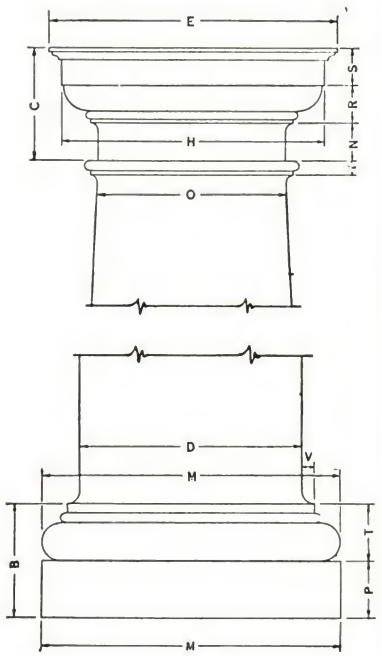


Fluted
Roman Doric
Pilaster
No. 115-F

ROMAN DORIC ORDER COLUMNS—No. 110, PLAIN; PILASTERS No. 110-F, PLAIN; COLUMNS No. 115, FLUTED; PILASTERS No. 115-F, FLUTED

Dimensions in inches

Diameter at		Total height of			Cap						Base			
					Height				Breadth		Height		Breadth	
Base	Neck	Cap and base	Cap	Base	Square	Round			Square		Square	Round	Round and Square	Cove
D	O	C+B	C	B	S	R	N	V	E	H	P	T	M	V
6	5	6	3	3	1	1	1	3/8	7 11/16	7	1 1/2	1 1/2	8	3/8
7	5 13/16	7	3 1/2	3 1/2	1 1/8	1 1/8	1 1/4	7/16	8 7/8	8 1/16	1 3/4	1 3/4	9 3/8	7/16
8	6 11/16	8	4	4	1 5/16	1 5/16	1 3/8	1/2	10 5/16	9 5/16	2	2	10 5/8	1/2
9	7 1/2	9	4 1/2	4 1/2	1 1/2	1 1/2	1 1/2	9/16	11 1/2	10 1/2	2 1/4	2 1/4	12	9/16
10	8 5/16	10	5	5	1 5/8	1 5/8	1 3/4	5/8	12 3/4	11 9/16	2 1/2	2 1/2	13 3/8	5/8
11	9 3/16	11	5 1/2	5 1/2	1 13/16	1 13/16	1 7/8	11/16	14 1/16	12 13/16	2 3/4	2 3/4	14 5/8	11/16
12	10	12	6	6	2	2	2	3/4	15 5/16	14	3	3	16	3/4
13	10 13/16	13	6 1/2	6 1/2	2 1/8	2 1/8	2 1/4	13/16	16 9/16	15 1/16	3 1/4	3 1/4	17 3/8	13/16
14	11 5/8	14	7	7	2 5/16	2 5/16	2 3/8	7/8	17 3/4	16 1/4	3 1/2	3 1/2	18 5/8	7/8
15	12 1/2	15	7 1/2	7 1/2	2 1/2	2 1/2	2 1/2	15/16	19 1/8	17 1/2	3 3/4	3 3/4	20	15/16
16	13 5/16	16	8	8	2 5/8	2 5/8	2 3/4	1	20 3/8	18 9/16	4	4	21 1/4	1
18	15	18	9	9	3	3	3	1 1/8	23	21	4 1/2	4 1/2	24	1 1/8
20	16 5/8	20	10	10	3 5/16	3 5/16	3 3/8	1 1/4	25 1/2	23 1/4	5	5	26 3/4	1 1/4
22	18 3/8	22	11	11	3 5/8	3 5/8	3 3/4	1 3/8	28 1/8	25 5/8	5 1/2	5 1/2	29 1/4	1 3/8
24	20	24	12	12	4	4	4	1 1/2	30 5/8	28	6	6	32	1 1/2
26	21 5/8	26	13	13	4 5/16	4 5/16	4 3/8	1 5/8	33 1/8	30 1/4	6 1/2	6 1/2	34 3/4	1 5/8
28	23 1/4	28	14	14	4 5/8	4 5/8	4 3/4	1 3/4	35 1/2	32 1/2	7	7	37 1/4	1 3/4
30	25	30	15	15	5	5	5	1 7/8	38 1/4	35	7 1/2	7 1/2	40	1 7/8
32	26 5/8	32	16	16	5 5/16	5 5/16	5 3/8	2	40 3/4	37 1/4	8	8	42 1/2	2
34	28 5/16	34	17	17	5 5/8	5 5/8	5 3/4	2 1/8	43 7/16	39 9/16	8 1/2	8 1/2	45 1/4	2 1/8
36	30	36	18	18	6	6	6	2 1/4	46	42	9	9	48	2 1/4



Roman Doric Order



Section of Column and Pilasters

GREEK DORIC ORDER



Plain
Greek Doric
Column
No. 120



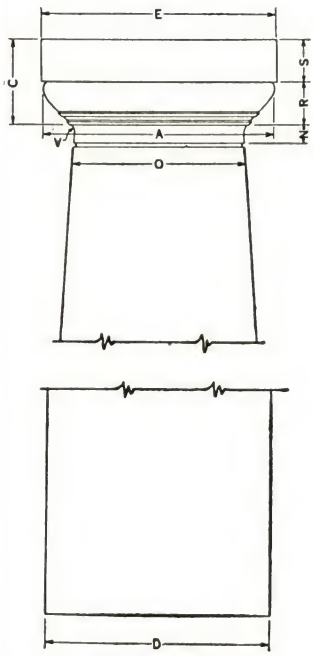
Plain
Greek Doric
Pilaster
No. 120-F



Fluted
Greek Doric
Column
No. 125



Fluted
Greek Doric
Pilaster
No. 125-F



Greek Doric Order

GREEK DORIC ORDER COLUMNS—NO. 120, PLAIN; PILASTERS NO. 120-F; PLAIN; COLUMNS NO. 125, FLUTED; PILASTERS NO. 125-F, FLUTED

Dimensions in inches

Diameter at		Cap						
		Height				Breadth		
Base D	Neck O	Total C	Square S	Round R	Round N	Square E	Round A	Cove V
6	4½	2¼	1⅛	1⅛	½	6⅜	6¼	3/16
7	5¼	2⅝	1 5/16	1 5/16	⅝	7⅜	7¼	¼
8	6	3	1½	1½	¾	8⅜	8¼	5/16
9	6¾	3⅜	1 11/16	1 11/16	13/16	9⅜	9¼	3/8
10	7½	3¾	1⅞	1⅞	⅞	10½	10⅜	3/8
11	8¼	4⅛	2 1/16	2 1/16	15/16	11½	11⅜	7/16
12	9	4½	2¼	2¼	1	12½	12⅜	7/16
13	9¾	4⅞	2 1/16	2 1/16	1⅛	13½	13⅜	½
14	10½	5¼	2⅝	2⅝	1¼	14⅝	14⅜	½
15	11¼	5⅝	2 13/16	2 13/16	1⅜	15⅝	15⅜	½
16	12	6	3	3	1½	17	16½	9/16
18	13½	6¾	3⅜	3⅜	1⅝	18⅞	18⅝	5/8
20	15	7½	3¾	3¾	1¾	20⅞	20⅝	11/16
22	16½	8¼	4⅛	4⅛	1⅞	23	22¾	¾
24	18	9	4½	4½	2	25	24¾	13/16
26	19½	9¾	4⅞	4⅞	2¼	27	26¾	⅞
28	21	10½	5¼	5¼	2½	29¼	28⅞	15/16
30	22½	11¼	5⅝	5⅝	2¾	31¼	30¾	1
32	24	12	6	6	3	34	33	1⅛
34	25½	12¾	6⅜	6⅜	3⅛	35⅝	34⅛	1¼
36	27	13½	6¾	6¾	3¼	37¾	37⅛	1⅜



Section of Column and Pilasters

DORIC CAP AND ATTIC BASE



Plain Doric Cap Attic Base Column No. 130



Plain Doric Cap Attic Base Pilaster No. 130-F



Fluted Doric Cap Attic Base Column No. 135

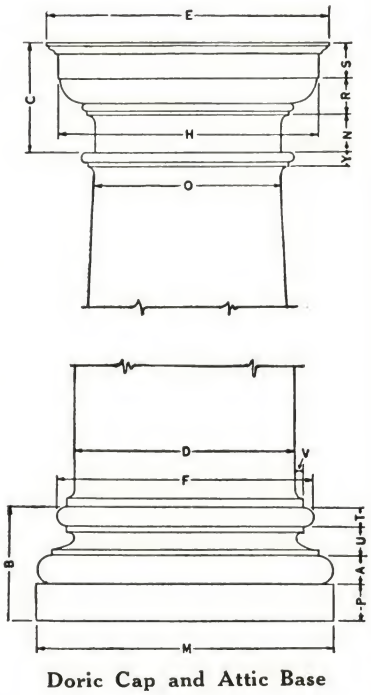


Fluted Doric Cap Attic Base Pilaster No. 135-F

DORIC CAP ATTIC BASE COLUMNS—NO. 130, PLAIN; PILASTERS NO. 130-F; PLAIN; COLUMNS NO. 135; FLUTED; PILASTERS NO. 135-F, FLUTED

Dimensions in inches

Diameter at		Total height of			Cap						Base						
					Height				Breadth		Height				Breadth		
Base	Neck	Cap+base	Cap	Base	Square	Round			Square		Square base	Bottom round	Middle round	Top round	Top round	Bottom round and square	Cove
D	O	C+B	C	B	S	R	N	Y	E	H	P	A	U	T	F	M	V
6	5	6	3	3	1	1	1	3/8	7 11/16	7	15/16	3/4	13/16	1/2	7	8	3/16
7	5 13/16	7	3 1/2	3 1/2	1 1/8	1 1/8	1 1/4	7/16	8 7/8	8 1/16	1 1/16	7/8	15/16	9/16	8 1/4	9 3/8	1/4
8	6 11/16	8	4	4	1 5/16	1 5/16	1 3/8	1/2	10 3/16	9 5/16	1 1/4	1	1 1/8	5/8	9 3/8	10 5/8	1/4
9	7 1/2	9	4 1/2	4 1/2	1 1/2	1 1/2	1 1/2	9/16	11 1/2	10 1/2	1 3/8	1 1/8	1 1/4	3/4	10 9/16	12	1/4
10	8 5/16	10	5	5	1 5/8	1 5/8	1 3/4	5/8	12 3/4	11 9/16	1 5/8	1 1/4	1 3/8	3/4	11 3/4	13 3/8	3/8
11	9 3/16	11	5 1/2	5 1/2	1 13/16	1 13/16	1 7/8	11/16	14 1/16	12 13/16	1 3/4	1 3/8	1 3/8	1	13 1/2	14 5/8	3/8
12	10	12	6	6	2	2	2	3/4	15 5/16	14	1 7/8	1 1/2	1 5/8	1	14	16	3/8
13	10 13/16	13	6 1/2	6 1/2	2 1/8	2 1/8	2 1/4	13/16	16 9/16	15 1/16	2	1 5/8	1 13/16	1 1/16	15 1/4	17 3/8	1/2
14	11 5/8	14	7	7	2 5/16	2 5/16	2 3/8	7/8	17 3/4	16 1/4	2 1/8	1 3/4	2	1 1/8	16 1/2	18 5/8	1/2
15	12 1/16	15	7 1/2	7 1/2	2 1/2	2 1/2	2 1/2	13/16	19 1/8	17 1/2	2 1/4	1 7/8	2 1/8	1 1/4	17 5/8	20	5/8
16	13 5/16	16	8	8	2 5/8	2 5/8	2 3/4	1	20 3/8	18 9/16	2 1/2	2	2 1/4	1 1/4	18 3/4	21 1/4	5/8
18	15	18	9	9	3	3	3	1 1/8	23	21	2 3/4	2 1/4	2 1/2	1 1/2	21 1/8	24	3/4
20	16 5/8	20	10	10	3 5/16	3 5/16	3 3/8	1 1/4	25 1/2	23 1/4	3 1/4	2 1/2	2 3/4	1 1/2	23 1/2	26 3/4	3/4
22	18 3/8	22	11	11	3 5/8	3 5/8	3 3/4	1 3/8	28 1/4	25 5/8	3 1/2	2 3/4	2 7/8	1 7/8	27	29 1/4	7/8
24	20	24	12	12	4	4	4	1 1/2	30 5/8	28	3 3/4	3	3 1/4	2	28	32	7/8
26	21 5/8	26	13	13	4 5/16	4 5/16	4 3/8	1 5/8	33 1/8	30 1/4	4	3 1/4	3 3/8	2 1/8	30 1/2	34 3/4	1
28	23 1/4	28	14	14	4 5/8	4 5/8	4 3/4	1 3/4	35 1/2	32 1/2	4 1/4	3 1/2	4	2 1/4	33	37 1/4	1
30	25	30	15	15	5	5	5	1 7/8	38 1/4	35	4 1/2	3 3/4	4 1/4	2 1/2	35 1/4	40	1 1/8
32	26 5/8	32	16	16	5 5/16	5 5/16	5 3/8	2	40 3/4	37 1/4	5	4	4 3/8	2 5/8	37 1/2	42 1/2	1 1/4
34	28 5/16	34	17	17	5 5/8	5 5/8	5 3/4	2 1/8	43 7/16	39 9/16	5 1/4	4 1/4	4 5/8	2 7/8	40	45 1/8	1 3/8
36	30	36	18	18	6	6	6	2 1/4	46	42	5 1/2	4 1/2	5	3	42	48	1 1/2



Doric Cap and Attic Base



Section of Column and Pilasters

TRIUMPH COLUMN COMPANY, INC.

Manufacturers of Patented Lock-joint Wood Stave Columns
4200 Boston Post Road, NEW YORK, N. Y.
FACTORY LOCATED IN NEW YORK CITY
SOLE SALES REPRESENTATIVE: Fireproof Products Co., 536 East 133rd Street, NEW YORK, N. Y.

Products

TURNED COLUMNS, SQUARE COLUMNS and PILASTERS for Exterior and Interior Work.

Also Pergola Work; Twisted Columns; Composition Capitals; Wood Carving; Cast Iron Column Plinths; Balusters; Small Turnings.

GUARANTEED

TRADE-MARK

Executing Work to Details

We specialize in building columns to architect's details and especially solicit this class of business.

Unless details are furnished standard designs are made to conform to the Architectural Standards of Vignola. Columns are made turned, either plain or fluted; and square, either plain, fluted or paneled. Pilasters can be supplied to match any column.

Requirements for twisted turnings can be met without delay. Special machinery has been installed to do this type of work.

Triumph Lock Joint

Particular attention is called to the patented lock joint used to lock the staves of our columns securely together. The design of this joint is such that it also gives an unusually large area of contact between glued surfaces, thus giving increased security against opening up of the joints.

Waterproof Glue

Waterproof, cold water glue is used in putting together all columns, pilasters, caps and bases to prevent the destructive effect of moisture on joints.

Stock and Thickness

Unless otherwise specified, all Triumph columns are made of white pine expressly selected for our use. We can, however, furnish any wood desired. It is important that the desired thickness of stock be specified, as this determines the price to a large degree. Stock 1½ to 4 in. thick is used, depending on size of column and load to be carried. In general, the following proportions are used:

*Diameter of column	Up to 20 in.	20 to 26 in.	26 in. up
Thickness of stock	2 in.	2½ in.	3 in.

*For unusual heights or loading, consult us for specifications.

Entasis

All staves are formed to correct entasis in the rough, thus securing maximum amount of stock. Staves are made one-third straight, upper two-thirds tapered, unless otherwise specified.

Caps and Bases

Columns can be furnished with wood caps and bases, or with composition caps of any style desired. Special detail capitals of either composition or carved wood can also be furnished.

When desired, we are prepared to furnish cast iron plinths in all sizes.

Flashing

When erecting, cap must be entirely covered with flashing of sheet lead or copper. Architects should not overlook this in their specifications.

Reinforcing

The bottom of all columns without bases and the bottom and top of all large columns are reinforced with a heavy corrugated steel band. See detail below.

Waterproofing

The insides of all columns 16-in. diameter and over are painted with a special waterproofing paint.

Priming

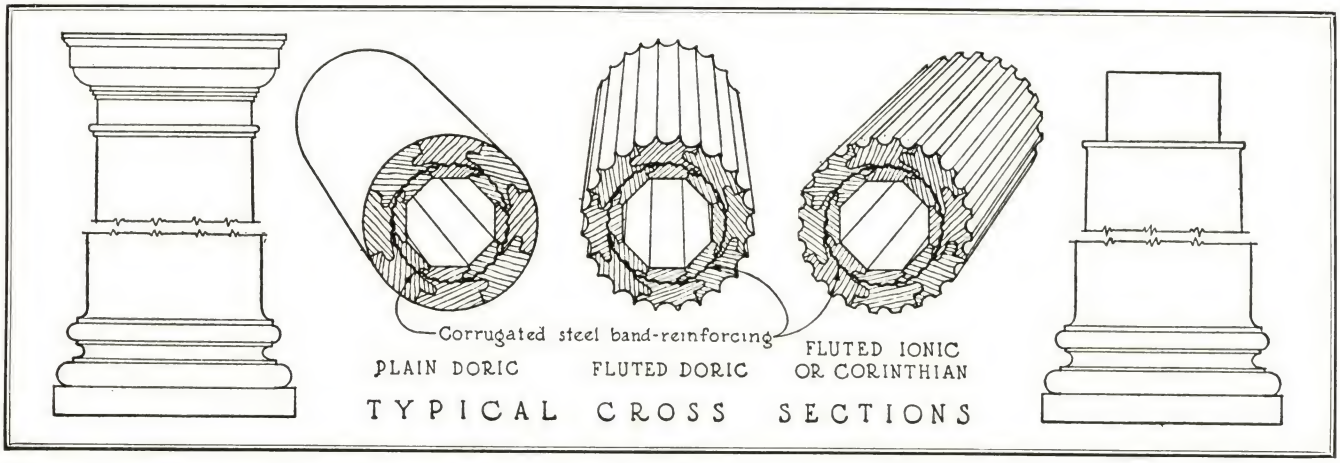
Unless otherwise specified, all columns and pilasters are given two priming coats of paint specially designed to give protection but easily covered by a finish coat which should be applied immediately on receipt of columns.

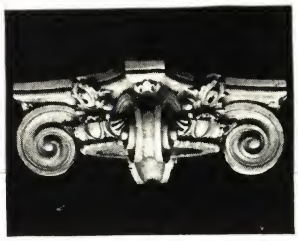
Guarantee

All columns are absolutely guaranteed as to material, workmanship and durability. Defects due to inferior materials or workmanship will be rectified without question.

Architect's Specification

All exterior columns shall be built up of selected white pine staves [other woods, such as cypress, may be used when desired], which shall be joined by a lock joint with waterproof cold water glue. Stock to be used shall be (*) in. thick. The inside of all columns 16 in. in diameter and over shall be coated with a waterproofing paint and all columns shall be primed at the plant of the manufacturer with a protective paint In erecting, care must be taken to cover entire caps of all columns with flashing of copper or sheet lead.

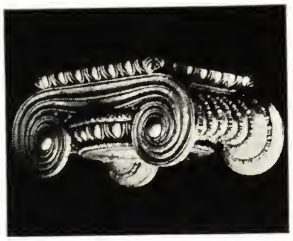




A-SCAMOZZI CAPITAL



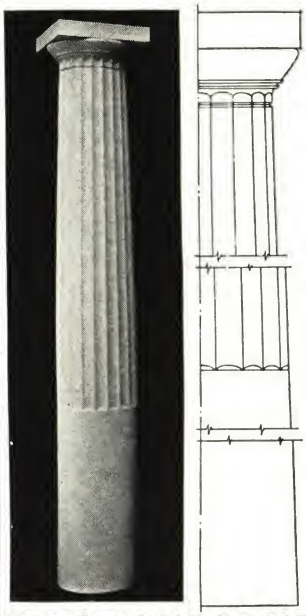
B-ROMAN IONIC CAPITAL



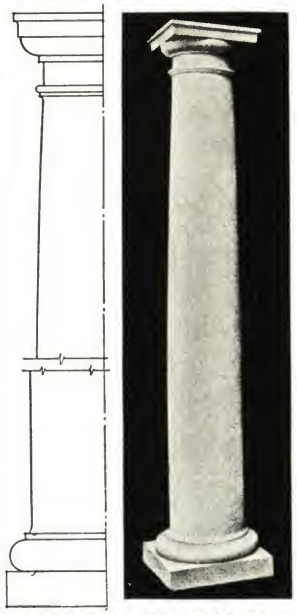
C-GREEK IONIC CAPITAL



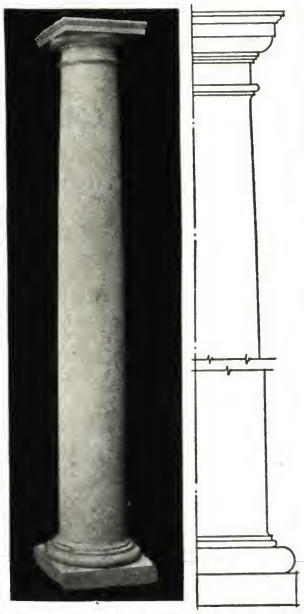
G-GREEK ERECHTHEUM CAPITAL WITH NECKING



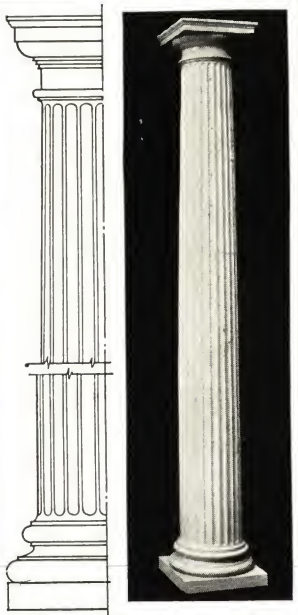
Nº 65⅔-GREEK DORIC
Fluted ⅔
Nº 60 Similar but without flutes.



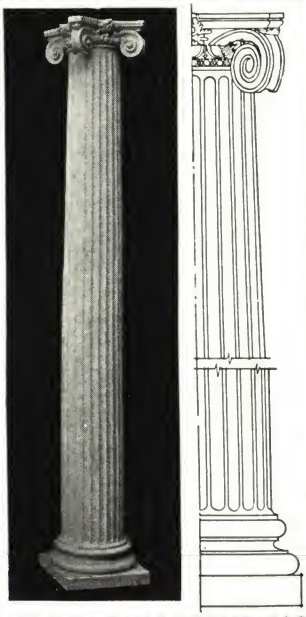
Nº 70-TUSCAN
Plain
Nº 75 Similar but with flutes.



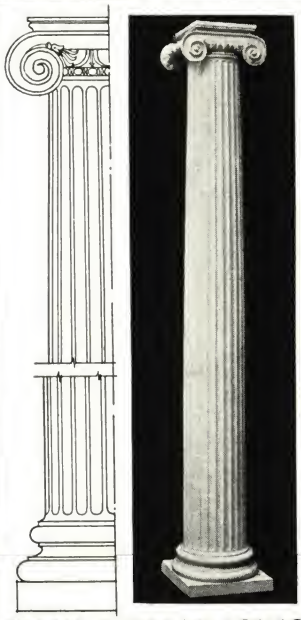
Nº 80-ROMAN DORIC
Plain
Nº 85 Similar but with flutes.



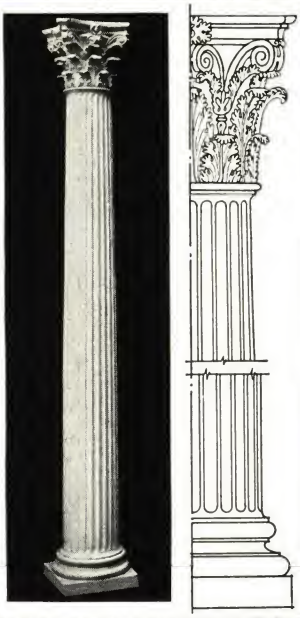
Nº 95-DORIC CAP
ATTIC BASE Fluted
Nº 90 Similar but without flutes



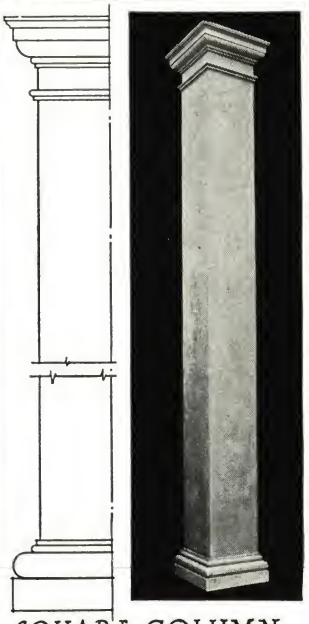
Nº 105-SCAMOZZI CAP
ATTIC BASE Fluted
Nº 100 Similar but without flutes



Nº 115-ROMAN IONIC
Fluted
Nº 110 Similar but without flutes



Nº 135-ROMAN CORINTHIAN
Fluted
Nº 130 Similar but without flutes



SQUARE COLUMN
Fluted, Plain or Paneled

DRAWN BY SWEET'S CATALOGUE SERVICE, INC.	TRIUMPH LOCK-JOINT COLUMNS	NOT DRAWN TO SCALE DATE: FEB.-29	DRWG 1

THE UNION METAL MANUFACTURING CO.

GENERAL OFFICES AND FACTORY
CANTON, OHIO

SALES OFFICES

ATLANTA, GA., 1508 Candler Building
BOSTON, MASS., Room 101, Statler Building
CHICAGO, ILL., 230 So. Clark Street
DALLAS, TEX., 728 Allen Building
LOS ANGELES, CALIF., 511 Financial Center Building
NEW YORK, N. Y., 110 E. 42nd Street
SAN FRANCISCO, CALIF., 155 Montgomery Street

Products

UNION METAL COLUMNS and PILASTERS.

For Exterior Lighting Fixtures, see Manufacturer's Index.

UNION METAL
FLUTED STEEL PRODUCTS

Stock and Special Designs

Ten classical designs are shown herewith.

Our portfolio of designs and installations shows many buildings where our columns have been used and a large number of attractive Colonial entrances. Also an attractive line of garden pergolas. Write for combined column and pergola Catalog No. 50-D.

Advantages of Union Metal Columns

(1) Architecturally correct.
(2) Clean cut, highly ornamental and stately.
(3) Will not rot, check or open at joints.
(4) Fireproof and weatherproof.
(5) Have entasis and stopped flutes.
(6) Not experimental, but used on thousands of representative buildings in the United States and abroad.
(7) Indestructible and will outlast the buildings; suitable for all climates and temperatures.
(8) Easily handled, transported and erected.

Load-bearing Formulae

(Result of tests made by Robert W. Hunt & Co.).

Applies to designs, Numbers 240, 246, 212, 213, 219, 224, 230, 237 and 222.

For 1-ply, 22 gauge shaft:
460 x top diameter in inches equals .... pounds dead load.
For 2-ply, 22 gauge shaft:
860 x top diameter in inches equals .... pounds dead load.

Example: 12-inch diameter column tapering to 10-inch top diameter—
1-ply shaft: $460 \times 10 = 4600$ pounds dead load.
2-ply shaft: $860 \times 10 = 8600$ pounds dead load.

Note: When designs using composition capitals are ordered and are expected to carry an unusually heavy weight, this should be explained to us so that a heavier core band than ordinarily furnished will be supplied for inside the capital.

Load-bearing Formula for Design Number 700—

For 1-ply, 22 gauge shaft:
1250 by top diameter in inches equals .... pounds dead load.
For 2-ply, 22 gauge shaft:
2000 by top diameter in inches equals .... pounds dead load.

Example: Number 700 column, 12-inch tapering to 9-inch top diameter—
1-ply shaft: $1250 \times 9 = 11{,}250$ pounds dead load.
2-ply shaft: $2000 \times 9 = 18{,}000$ pounds dead load.

A safety factor of 2 is recommended.

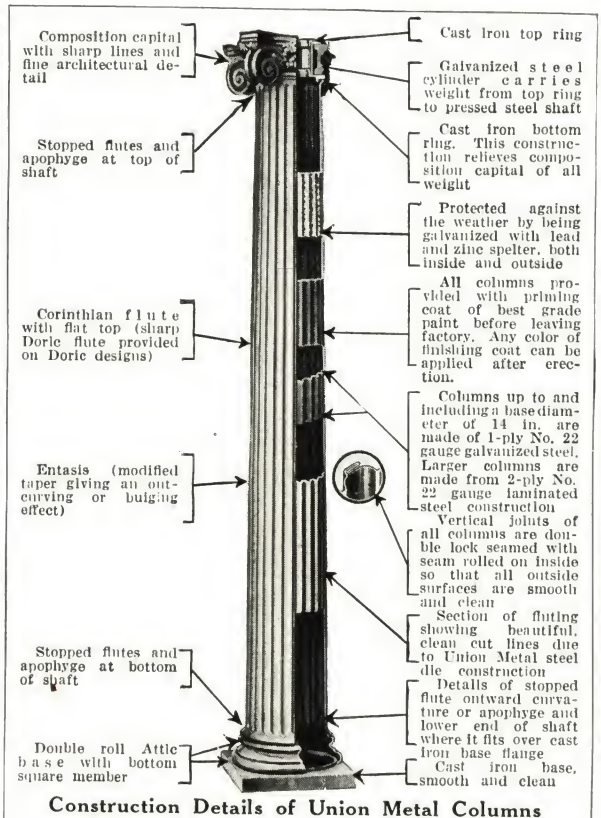
Standard practice is to furnish columns up to and including 14-inch diameter with 1-ply shaft, but when desired, 2-ply can be furnished at an increase in price. All columns larger than 14-inch diameter are furnished 2-ply, 22-gauge shaft.



Design 212
Roman
Corinthian



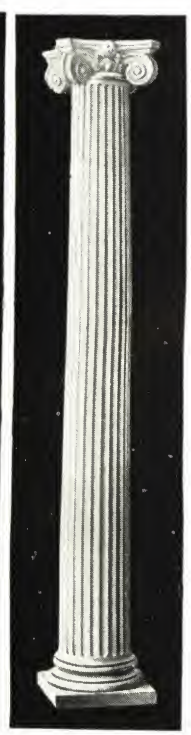
Design 230
Greek
Ionic



Construction Details of Union Metal Columns



Design 237
Modern
Ionic

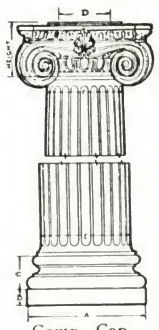


Design 222
Italian
Ionic
(Scamozzi)

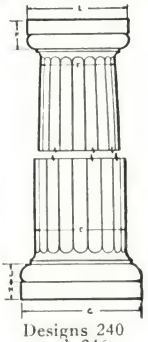
Architects' Specification

The fluted columns used shall be Union Metal Pressed Steel Columns with entasis and stopped flutes, manufactured by THE UNION METAL MANUFACTURING CO., Canton, Ohio. The design number, style and size of columns to be used are indicated on drawings. The manufacturer shall apply a priming coat of high grade paint to all columns before shipment from his plant.

Dimension Chart of Union Metal Columns



Comp. Cap. Designs 212, 230, 237, 222, 213, 219, 224



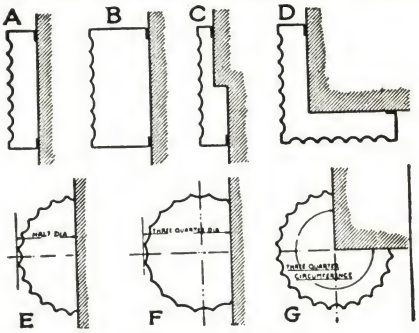
Designs 240 and 246



Design 700

Pilasters and Odd Shaped Columns

We can furnish flat and corner metal pilasters and half-round and three-quarter round metal columns in all sizes to match stock or special designs of Union Metal Columns.



A—Quarter return pilaster
B—Half return pilaster
C—Unequal return pilaster
D—Quarter return corner pilaster
E—Half column
F—Three-quarter column
G—Three-quarter corner column

Union Metal Pilasters and Odd Shaped Columns

When ordering pilasters, specify whether face shall be tapered to match columns or whether face shall be straight from top to bottom. Unless otherwise ordered, bottom and top faces of pilasters will be furnished same as bottom and top diameters of columns, in which case pilaster bases and caps will match those of columns in height A. All Union Metal pilasters are fluted on front face to match columns but are not fluted on return faces without extra cost. Pilasters are not provided with entasis

DIMENSIONS OF UNION METAL COLUMNS

Bott. dia. of shaft	Designs No. 212, 230, 237, 222, 213, 219 and 224													Design No. 240					Design No. 246						Design No. 700						
	A	B	C	D	E	F	Height of Capital							G	H	J	K	L	G	H	J	K	L	R	M	N	P	Q	R	S	T
							212	230	237	222	213	219	224																			
8	$10\frac{5}{8}$	$1\frac{5}{16}$	3	$3\frac{5}{16}$	8	$6\frac{1}{2}$	$9\frac{7}{8}$	$6\frac{5}{8}$	$4\frac{5}{8}$	$4\frac{5}{8}$	$8\frac{7}{8}$	$11\frac{1}{8}$	$4\frac{5}{8}$	11	$1\frac{9}{16}$	$1\frac{5}{8}$	$2\frac{1}{2}$	$8\frac{5}{8}$	$10\frac{9}{16}$	$1\frac{15}{16}$	$1\frac{15}{16}$	$4\frac{3}{8}$	$9\frac{3}{4}$	5	$12\frac{3}{8}$	$2\frac{1}{2}$	$4\frac{5}{8}$	$10\frac{7}{8}$	$5\frac{1}{4}$	$7\frac{1}{2}$	10
10	$13\frac{15}{16}$	$1\frac{11}{16}$	$3\frac{3}{8}$	$5\frac{3}{16}$	$9\frac{3}{4}$	8	$13\frac{1}{16}$	$9\frac{1}{16}$	$6\frac{9}{16}$	$5\frac{5}{16}$	$12\frac{9}{16}$	$13\frac{1}{16}$	$6\frac{1}{16}$	$13\frac{1}{4}$	$1\frac{15}{16}$	$1\frac{7}{8}$	$3\frac{3}{16}$	11	$13\frac{1}{4}$	$2\frac{7}{16}$	$2\frac{7}{16}$	$5\frac{7}{16}$	12	$6\frac{1}{4}$	$14\frac{1}{2}$	3	$5\frac{5}{16}$	13	$6\frac{1}{2}$	9	12
12	16	$1\frac{7}{8}$	$4\frac{5}{16}$	$6\frac{15}{16}$	12	$9\frac{3}{4}$	$15\frac{1}{8}$	$11\frac{1}{8}$	$6\frac{7}{8}$	$5\frac{5}{8}$	$15\frac{7}{8}$	$15\frac{3}{8}$	$7\frac{5}{8}$	16	$2\frac{5}{16}$	$2\frac{1}{4}$	$3\frac{13}{16}$	$13\frac{1}{4}$	$15\frac{7}{8}$	$2\frac{7}{8}$	$2\frac{15}{16}$	$6\frac{11}{16}$	$14\frac{7}{8}$	8	$14\frac{1}{2}$	3	$5\frac{5}{16}$	13	$6\frac{1}{2}$	9	12
14	$18\frac{5}{8}$	$2\frac{5}{16}$	$4\frac{3}{4}$	$8\frac{5}{8}$	14	12	$16\frac{3}{4}$	$13\frac{1}{4}$	$7\frac{5}{8}$	$6\frac{3}{4}$	$18\frac{1}{2}$	$19\frac{1}{4}$	$8\frac{3}{4}$	$18\frac{5}{8}$	$2\frac{3}{4}$	$2\frac{3}{4}$	$4\frac{9}{16}$	16	$18\frac{1}{2}$	$3\frac{3}{8}$	$3\frac{3}{8}$	8	18	$9\frac{1}{2}$	$16\frac{5}{8}$	$3\frac{3}{8}$	$6\frac{1}{2}$	$15\frac{1}{2}$	$7\frac{1}{4}$	11	14
16	$20\frac{5}{8}$	$2\frac{9}{16}$	$5\frac{7}{16}$	$8\frac{5}{8}$	$15\frac{3}{4}$	12	$16\frac{7}{8}$	$13\frac{3}{8}$	$7\frac{3}{4}$	$6\frac{7}{8}$	$18\frac{5}{8}$	$19\frac{3}{8}$	$8\frac{7}{8}$						$20\frac{13}{16}$	$3\frac{3}{4}$	$3\frac{3}{4}$	8	18	$9\frac{1}{2}$	$18\frac{7}{8}$	$3\frac{7}{8}$	$7\frac{1}{16}$	$16\frac{3}{4}$	$7\frac{7}{8}$	12	16
16	$20\frac{5}{8}$	$2\frac{9}{16}$	$5\frac{7}{16}$	$10\frac{5}{16}$	$15\frac{3}{4}$	14	$18\frac{1}{2}$	$15\frac{3}{4}$	10	8	$21\frac{1}{4}$	$22\frac{1}{2}$	$10\frac{3}{4}$						$20\frac{13}{16}$	$3\frac{3}{4}$	$3\frac{3}{4}$	$9\frac{3}{8}$	21	10							
18	$22\frac{15}{16}$	$2\frac{13}{16}$	$6\frac{1}{16}$	$10\frac{5}{16}$	$17\frac{3}{8}$	14	$18\frac{1}{2}$	$15\frac{3}{4}$	10	8	$21\frac{1}{4}$	$22\frac{1}{2}$	$10\frac{3}{4}$						$22\frac{7}{8}$	$4\frac{3}{16}$	$4\frac{1}{8}$	$9\frac{3}{8}$	21	10	$20\frac{1}{4}$	$4\frac{1}{4}$	$8\frac{1}{16}$	$19\frac{1}{4}$	$8\frac{3}{4}$	14	18
20	$25\frac{7}{8}$	$3\frac{3}{16}$	$6\frac{3}{4}$	11	$19\frac{1}{2}$	$15\frac{3}{4}$	$23\frac{7}{8}$	$17\frac{7}{16}$	$11\frac{3}{16}$	$8\frac{15}{16}$	$24\frac{7}{16}$	$24\frac{3}{16}$	$11\frac{5}{16}$						$25\frac{3}{4}$	$4\frac{11}{16}$	$4\frac{11}{16}$	$10\frac{3}{8}$	$23\frac{5}{8}$	$12\frac{1}{2}$	$23\frac{3}{8}$	$4\frac{3}{4}$	$9\frac{11}{16}$	$21\frac{15}{16}$	$10\frac{1}{16}$	15	20
20	$25\frac{7}{8}$	$3\frac{3}{16}$	$6\frac{3}{4}$	$13\frac{9}{16}$	$19\frac{1}{2}$	$17\frac{3}{8}$	$26\frac{13}{16}$	$17\frac{9}{16}$	$12\frac{5}{16}$	$10\frac{1}{16}$	$26\frac{9}{16}$	$27\frac{9}{16}$	$13\frac{9}{16}$						$25\frac{3}{4}$	$4\frac{11}{16}$	$4\frac{11}{16}$	$11\frac{1}{4}$	26	14							
22	$28\frac{3}{4}$	$3\frac{13}{16}$	$5\frac{7}{8}$	$13\frac{9}{16}$	22	$17\frac{3}{8}$	$26\frac{13}{16}$	$17\frac{9}{16}$	$12\frac{5}{16}$	$10\frac{1}{16}$	$26\frac{9}{16}$	$27\frac{9}{16}$	$13\frac{9}{16}$						29	$5\frac{1}{4}$	$5\frac{5}{16}$	$11\frac{1}{4}$	26	14	$25\frac{7}{16}$	5	10	24	$9\frac{3}{4}$	17	22
24	$32\frac{1}{16}$	4	$6\frac{3}{4}$	$15\frac{5}{8}$	$23\frac{1}{2}$	$19\frac{1}{2}$	$29\frac{11}{16}$	$20\frac{11}{16}$	$12\frac{7}{16}$	$10\frac{15}{16}$	$28\frac{11}{16}$	$29\frac{11}{16}$	$15\frac{3}{16}$						31	$5\frac{5}{8}$	$5\frac{11}{16}$	$12\frac{5}{8}$	$29\frac{1}{4}$	15	$27\frac{1}{2}$	$5\frac{1}{2}$	$10\frac{3}{16}$	$24\frac{3}{8}$	10	18	24
26	$34\frac{1}{2}$	$4\frac{1}{2}$	$7\frac{7}{16}$	$15\frac{5}{8}$	25	$19\frac{1}{2}$	$29\frac{11}{16}$	$20\frac{11}{16}$	$12\frac{7}{16}$	$10\frac{15}{16}$	$28\frac{11}{16}$	$29\frac{11}{16}$	$15\frac{3}{16}$						33	6	6	$12\frac{5}{8}$	$29\frac{1}{4}$	15	30	6	12	$28\frac{3}{8}$	$13\frac{1}{2}$	20	26
26	$34\frac{1}{2}$	$4\frac{1}{2}$	$7\frac{7}{16}$	$17\frac{1}{4}$	25	22	$32\frac{9}{16}$	$21\frac{13}{16}$	$12\frac{9}{16}$	$12\frac{1}{16}$	$32\frac{13}{16}$	$32\frac{9}{16}$	$16\frac{13}{16}$						33	6	6	$14\frac{9}{16}$	33	$15\frac{13}{16}$							
28	$37\frac{1}{8}$	$5\frac{1}{8}$	$8\frac{7}{16}$	$17\frac{1}{4}$	$26\frac{7}{8}$	22	$32\frac{9}{16}$	$21\frac{13}{16}$	$12\frac{9}{16}$	$12\frac{1}{16}$	$32\frac{13}{16}$	$32\frac{9}{16}$	$16\frac{13}{16}$						$35\frac{1}{2}$	$6\frac{7}{16}$	$6\frac{1}{2}$	$14\frac{9}{16}$	33	$15\frac{13}{16}$	32	$6\frac{3}{8}$	$13\frac{1}{4}$	$31\frac{3}{4}$	15	22	28
30	39	$5\frac{1}{2}$	$9\frac{7}{16}$	19	$29\frac{1}{4}$	$23\frac{1}{2}$	$35\frac{7}{16}$	$23\frac{7}{16}$	$13\frac{11}{16}$	$13\frac{3}{16}$	$35\frac{7}{16}$	$35\frac{7}{16}$	$17\frac{15}{16}$						$38\frac{1}{2}$	7	7	$15\frac{3}{8}$	$35\frac{1}{4}$	18	$34\frac{1}{2}$	$6\frac{7}{8}$	$14\frac{1}{2}$	$34\frac{3}{4}$	16	24	30
32	$41\frac{9}{16}$	6	$10\frac{7}{8}$	$20\frac{5}{8}$	$31\frac{7}{8}$	25	$39\frac{11}{16}$	$24\frac{13}{16}$	$13\frac{3}{16}$	$14\frac{3}{16}$	$34\frac{7}{16}$	$36\frac{13}{16}$	$18\frac{7}{16}$						$42\frac{1}{4}$	$7\frac{11}{16}$	$7\frac{11}{16}$	$16\frac{1}{4}$	$37\frac{1}{2}$	$19\frac{1}{2}$	$36\frac{3}{4}$	$7\frac{3}{8}$	$14\frac{1}{2}$	$34\frac{3}{4}$	16	24	32
34	$42\frac{1}{2}$	$6\frac{1}{16}$	$10\frac{1}{4}$	$23\frac{3}{8}$	34	$26\frac{7}{8}$	42	26	16	15	36	40							$44\frac{3}{4}$	$8\frac{3}{16}$	$8\frac{1}{8}$	$17\frac{1}{2}$	$40\frac{3}{8}$	22	39	$7\frac{3}{4}$	$16\frac{1}{2}$	43	18	28	34
36	$45\frac{1}{2}$	$6\frac{5}{8}$	$11\frac{3}{4}$	$25\frac{5}{8}$	36	$29\frac{1}{4}$	$42\frac{3}{16}$	$28\frac{3}{16}$	$18\frac{3}{16}$	$16\frac{3}{16}$	$40\frac{3}{16}$	$42\frac{3}{16}$	$21\frac{3}{16}$						$47\frac{1}{2}$	$8\frac{5}{8}$	$8\frac{11}{16}$	$19\frac{1}{16}$	$43\frac{3}{4}$	23	$41\frac{1}{2}$	$8\frac{1}{4}$	$16\frac{1}{2}$	43	18	28	36
42	56	7	14	$26\frac{7}{8}$	42	34					$44\frac{7}{16}$								$55\frac{3}{8}$	10	$10\frac{1}{16}$										

D and R dimensions represent opening through capital.



Design 213
Temple of the Winds



Design 219
Italian Composite



Design 224
Roman Doric (Diocletian)



Design 246
True Roman Doric



Design 700
Greek Doric



Design 240
Modern All-steel Doric

MAPLE FLOORING MANUFACTURERS ASSN.

Northern Hard Maple, Beech and Birch Floorings

332 South Michigan Avenue, CHICAGO, ILL.

Products

NORTHERN HARD MAPLE, BEECH, and BIRCH FLOORINGS, standardized, trade-marked and guaranteed as to grade and manufacture.

Slogan

Floor *with* Maple
Beech *or* Birch

General Characteristics

Northern Hard Maple, Beech, and Birch offer a wide range of uses and color possibilities, yet in general characteristics the three are closely kindred woods.

All three are close grained, hard fibered, free from slivering and splintering, and polish under friction in a way which increases their wearing qualities.

All three have natural beauty when given a wax or varnish finish, and are suitable for use in any room of a fine dwelling, as well as for hard industrial service.

All three have a subdued grain pattern, in keeping with the changing taste, which is away from gaudiness in woods.

All three are particularly clean and sanitary, since the closeness of their grain and the smoothness of their surface afford no lodging place for dirt or germs.

Once laid a Northern Hard Maple, Beech or Birch floor is like a smooth, one-piece area of hardest wood because each piece is side and end matched to perfection.

Individual Characteristics

Northern Hard Maple—Is dense, strong, heavy, remarkably hard, supremely durable. The color of the heartwood is brownish, the sapwood is much lighter. The grain is close—sometimes curly or birdseye. Hard Maple has unusual ability to resist pointed pressure without abrasion. It takes a high polish and acid stains. Research work has developed transparent stains which produce a colorful finish enhancing the natural beauty of the wood.

Northern Beech and Birch—These woods show slightly more grain pattern than Hard Maple and have slightly more natural color when varnished or waxed. In physical properties they are so close to Maple that they are frequently used instead of Maple.

Beauty

Due to their leadership in wearing qualities, these three woods have sometimes been stressed for service uses, to the exclusion of any consideration of their beauty. And yet no one who has seen the mirrorlike luster of a dance floor can deny that such a floor has beauty.

Color Possibilities of Hard Maple

Hard Maple shows an attractive golden hue when waxed or varnished—it is literally a "floor of captive sunlight" which mellows and ripens with passing years. The color of Hard Maple flooring, when used for its beauty, is demonstrated by its appearance in ballrooms, where the cushioning comfort of wood is almost universally preferred.

Research work of the past few years has resulted in the development of improved Acid Stains by which the extremely hard texture of Northern Maple, hitherto impervious to attractive color staining, is made to take a variety of delightful, transparent, permanent color finishes.

The application of these finishes brings out the delicate grain of the wood and enhances the pleasing effect of birdseyes, burls, etc., thus creating a distinctive type of beauty in wood floors.

Color Possibilities of Beech and Birch

The grain pattern of Beech and Birch, like that of Hard Maple, is a delicate tracery, without fibrous ridges. Beech and Birch take approved stains readily and evenly, so that a floor laid with either of these woods will present an attractive appearance which lasts for years.

In residential buildings, Beech and Birch are widely used where dark floors are desired. Their hardness and their susceptibility to staining, places them in a class with Hard Maple for residential purposes.

Standardization

MFMA flooring is made to accurate specifications and this accuracy is attained by the use of standard gauges. The Official Inspector of the Association regularly visits the mills of the members of the Association to see that the standard grades established by the Association are being maintained.

MFMA Grading Rules

Northern Hard Maple, Beech, and Birch Floorings are kiln-dried products sold in standard grades, described in accurate detail in a book of Grading Rules which may be had on application to the Association.

The standard lengths, in $\frac{25}{32}$ inch and thicker, are as follows:

MFMA First Grade: 2 to 16 feet, may contain up to 25% of 2 to 3½ feet, inclusive.

MFMA Second Grade: 1½ to 16 feet, may contain up to 40% of 1½ to 3½ feet, inclusive.

MFMA Third Grade: 1 to 16 feet, may contain up to 60% of 1 to 3½ feet, inclusive.

Hard Maple stock is a rigid requirement of the MFMA Grading Rules for Maple flooring. A specification of MFMA Maple flooring assures a product made from all Northern Hard Maple lumber. Soft Maple (acer saccharinum) flooring or a mixed species of Maple stock cannot wear equally well with all Hard (acer saccharum) Maple flooring.

Special Grades

MFMA White Clear Northern Hard Maple selected for color uniformity.

MFMA Brown Clear Northern Hard Maple selected for color uniformity.

MFMA "Birdseye Figured" Clear Northern Hard Maple is especially selected stock.

MFMA Red Clear Northern Beech and MFMA Red Clear Northern Birch especially selected for color.

Standard Measurement

Flooring ½ inch and thicker, all faces, is measured ¾-inch waste for matching.

Flooring ⅜ inch ($^{11}/_{32}$-inch) thick, all faces, is measured ½-inch waste for matching.

Jointed flooring all thicknesses and faces, is measured ½-inch waste.

Kiln Drying

Flooring shall not be considered of standard grade unless the lumber from which the flooring is manufactured has been properly kiln dried.

End Matching

All flooring shall be end matched unless otherwise specified.

Custom in Bundling

It is the custom in bundling flooring to "give and take" by including pieces of flooring 3 inches over and 3 inches under the length marked on the bundle, and to include some pieces of flooring 3 inches (plus allowance for waste in end matching) under the minimum lengths specified in the Grading Rules.

Uses of the Different Grades

MFMA First Grade—This grade is the highest standard grade. It makes the most durable and desirable floor for any building, and is particularly suited for fine homes, apartment buildings, churches, clubs, dance floors, gymnasiums, hospitals, hotels, office buildings, public buildings, roller skating rinks, schools, stores and other buildings, where fine appearance as well as wear is desired.

MFMA Second Grade—This grade is nearly as serviceable as First Grade and can be used in the same type of buildings as First, if the slight imperfections permitted under the rules are not objectionable. Such imperfections, it will be noted, have an actually pleasing effect when the wood is given a color finish as per standard formulae.

MFMA Third Grade—This grade gives excellent satisfaction in factories, creameries, granaries, mills, warehouses, workshops, or at mines, on farms, etc. It is also coming into very general favor for use in grill rooms, billiard rooms, dens, or rooms of antique design and decoration, where the desire is for the unusual rather than for the conventional.

THICKNESS AND FACES, NORTHERN HARD MAPLE, BEECH AND BIRCH FLOORINGS; MFMA FIRST, SECOND AND THIRD GRADES. TONGUED AND GROOVED FLOORING

Thicknesses	Face Widths
Standard Thickness	
$^{25}/_{32}$ in.	1½, 2, 2¼ and 3¼ in.
Special Thicknesses	
$^{33}/_{32}$, $^{41}/_{32}$ and $^{53}/_{32}$ in.	2, 2¼ and 3¼ in.
⅜, ½ and ⅝ in.	1½, 2 and 2¼ in.

Jointed (or Square Edge) Flooring of $^{25}/_{32}$ and $^{33}/_{32}$-in. thicknesses is made in 2½ and 3½-in. faces.

MAPLE, BEECH AND BIRCH TONGUED AND GROOVED FLOORING BLOCKS, TO BE LAID OVER CONCRETE OR WOOD SUBFLOORS IN HERRINGBONE PATTERN, IN SQUARES OR OTHER PATTERNS

Thickness and Face Width	Face Length
$^{25}/_{32}$x2¼ in. $^{33}/_{32}$x2¼ in.	6¾, 9, 11¼, 13½, 15¾, 13½ in.

FABRICATED BLOCKS—SQUARES AND RECTANGLES

Maple, $^{13}/_{16}$ in. thick	Maple, $1^{1}/_{16}$ in. thick	Beech, $^{13}/_{16}$ in. thick
1½-in. slats { 7½x7½ in.; 9 x9 in. }		{ 7½x 7½ in.; 9 x 9 in.; 12 x12 in. }
2-in. slats { 8x 8 in.; 10x10 in.; 12x12 in. }		
2¼-in. slats { 6¾x 6¾ in.; 9 x 9 in.; 11¼x11¼ in. }	{ 6¾x6¾ in.; 9 x9 in. }	{ 6¾x 6¾ in.; 9 x 9 in.; 11¼x11¼ in. }
3¼-in. slats { 9¾x 9¾ in.; 13 x13 in. }		
1½-in. slats, 6 x12 in.		6 x12 in.
2¼-in. slats, 6¾x13½ in.		6¾x13½ in.
3¼-in. slats, 6½x13 in.		

Uses of Different Thicknesses

The $^{25}/_{32}$-inch thickness of Hard Maple, Beech or Birch Flooring is the most commonly used for general purposes. The ⅜-inch thickness is very satisfactory for laying over old floors but care should be taken that underfloor is dry, sound and of uniformly even surface.

The $^{33}/_{32}$-inch thickness with its ¼-inch additional wearing surface is recommended when floor is to be subjected to extraordinary strain and wear.

The ½-inch, ⅝-inch, $^{41}/_{32}$-inch and $^{53}/_{32}$-inch thicknesses are manufactured for special purposes and can be obtained if desired. Jointed flooring, also called Square Edge flooring, possesses the advantage of easy replacement in industrial floors.

Abrasive Tests of Flooring Materials

Tests conducted by the Mellon Institute of Industrial Research show comparative values for wearing qualities of Maple and non-wood materials as indicated in the table below. The tests were made with a machine which ingeniously brought to bear on the flooring material samples an action similar to that of human footsteps. After a test period of the same duration for each material, the percentage loss by abrasion was determined. The indentation test reveals hardness, and the abrasive test more particularly the resistance to friction.

Material	Average per cent loss	Indentation test*
Vitreous tile	4.57	0.
Marble	23.18	0.
Maple wood	23.79	0.0
Rubber	20.59	4.0
Linoleum	56.57	13.6
Oxychloride cement	50.10	0.0
Neat portland cement	16.79	0.0
Asphaltic composition	80.11	61.9
Cork tile	45.93	26.7

*Note that Maple was the only wood selected for comparative tests with vitreous tile and marble. It was untreated and without benefit of surface finish.

How to Lay MFMA Flooring

Subfloor—The $^{25}/_{32}$-inch and thicker flooring can be laid directly on the joists or on sleepers embedded in concrete spaced no wider than 16-inch centers, but is more frequently laid on a subfloor.

For best results a subfloor made of softwood boards surfaced on one or two sides is strongly recommended.

These boards should be no wider than 6 inches, nailed ⅛-inch allowance between boards and laid diagonally to the top floor. This permits of the top floor being laid at right angles to joists or sleepers, and the use of the narrower subfloor boards prevents the development of cracks between joints in the top floor due to shrinkage in subfloor boards. It should be securely nailed. It should be dry. A cover of black, glazed, waterproofed and coated building paper should be laid between subfloor and hardwood floor as a protection against moisture absorption by the top floor.

Top Floor—The top flooring should not be laid until plastering is thoroughly dried and woodwork and trim are installed. In fact, the laying and finishing of the hardwood floors should be the last operation in connection with the construction of the building. As a final precaution it is strongly recommended that either in summer or winter heat be on at least 10 days before flooring is laid.

After the trim is in place, line up the first course of strips flush with the face of the baseboard which must not extend below the surface of the top floor. Nail the first course directly through that portion to be covered with the quarter round or base shoe. Do not, under any circumstances, lay the flooring tight against studding or walls. Use short piece of flooring to put against end or edge of flooring strip when driving it up.

Literature for Free Distribution

The following booklets and folders are offered through the office of the Association, and will gladly be mailed on request, free of charge:

"MFMA Grading Rules and Standard Specifications, including other data of value to Architects—issued in filing pocket folder of A.I.A. file size."

"The New Color Enchantment in Hard Maple Floors."

"Achieved 3 Heavy Duty Finishes for Hard Maple Flooring."

"Grading Rules for MFMA Floorings—pocket size."

OAK FLOORING MANUFACTURERS' ASSOCIATION OF THE UNITED STATES

EXECUTIVE OFFICES
1812 Sterick Building, MEMPHIS, TENN.

Oak Flooring

The widespread use of Oak Flooring is an extraordinary fact, because it is the outcome of a deeply rooted preference for this material on the part of the architect and the public. No other wood compares with Oak in this respect. It is rich and cheerful in color, and blends harmoniously with any type of furniture and decoration. It is a wood that will harmonize with any interior trim and will do much to give distinction to any room.

All Flooring produced by O. F. M. A. Member Mills is branded with this trade mark

Owners and prospective purchasers and tenants instinctively ask for "hardwood floors," by which they usually mean *Oak* Floors. Nearly every one who builds, rents or sells property emphasizes Oak ("Hardwood") Flooring when advertising the property. "Oak" is almost synonymous with "homes" and "apartment buildings."

It is widely used in school classrooms, clubs, hotels, offices, and stores. Its price is comparable with any high grade flooring. Architects are invited to seek comparison in this respect, when writing specifications for schools, stores and similar projects. Its beauty and durability are proverbial. *The Oak Floor will last for the life of the building.* Use Oak and there will be no future wasteful floor replacements.

Oak Floors in Modernization Work

In connection with the growing tendency towards salvaging old properties by the modernization method the advantages of installing new Oak Floors over other old floors, should be emphasized.

There is no single feature, perhaps, which can be installed so readily with such ease and relatively low cost as new Oak Flooring in such cases. It is doubtful if any single item of an interior alteration job gives more satisfaction to the owner or improves the appearance as much as new Oak Floors laid over the existing surfaces of other materials.

The modernization movement is extending into all classes of buildings. New floors are usually one of the chief items, whether the building to be remodeled, or modernized, is a residence, apartment, hotel, office building, store, hospital, school, or otherwise. Oak Floors will add value and enduring beauty to any property.

Finishing

There are proper finishes for Oak Floors for every type of building. A residential finish is not usually suited to rough usage buildings. There are finishes devised for rough usage which avoid maintenance cost admirably, in offices, work spaces, stores, hotels, hospitals, schoolrooms, etc.

Finishes put on by floor finishers of the better kind generally give enduring satisfaction to the architect, his clients, and to operating managers of buildings.

Local preferences for finishing Oak Floors vary somewhat. The architect would assure himself of the best results by consulting with a floor laying contractor in his vicinity who has a proven record of good work and who will be glad to recommend a finish suited to a given purpose. In any case the Research Division of this Association is at the service of the architects and the public, supplying detailed information in connection with finishing work for all types of buildings in any section of the country. Such requests will be given immediate attention.

Write to This Association

For more detailed information regarding finishes, subfloors, and nailing, send for our data sheets.

This Association serves as a clearing house, as it were, for information regarding Oak Flooring materials, qualities, laying methods, finishing and the care and maintenance of floors.

The "Modernistic" Style

Our research division will be glad to assist architects confronted with problems of a technical or designing nature. Its services are tendered also in connection with achieving interesting effects with Oak Flooring in harmony with the modernistic note. The adaptability of Oak in the standard sizes of strip flooring, for patterns and bright colorful stained effects, should not be overlooked by the architect.

DATA FOR THE SPECIFICATION WRITER
Subfloors—Sleepers—Nailing—Surfacing

OAK FLOORING SHOULD BE SPECIFIED "ACCORDING TO THE GRADING RULES OF THE OAK FLOORING MANUFACTURERS' ASSOCIATION OF THE UNITED STATES"

Subfloors—Specify carefully that subflooring should be no wider than 6 in., and preferably should be square-edged. No. 1 Common or No. 2 Common boards, 1x4 or 1x6 surfaced four sides and dry, driven close and nailed with two 10d nails to every bearing, and all butt joints to rest on bearings. It is preferable, when specifying the thinner sizes of Oak Flooring, to call for shiplap or tongue and grooved subflooring, where wood joist construction is used.

Over concrete, however, do not use close joined subflooring. Leave ¼ to ½ in. space between subfloor boards (to assist in ventilating and drying out the concrete slab or filler between sleepers).

In the interest of insuring a good job of flooring, architects should not permit subflooring to be wider than 6 in. In some sections of the country there is a tendency to use 10 and 12-in. boards. This practice is not in the interest of good construction or satisfaction.

Building Paper—Some architects dispense with the building paper customarily employed over concrete, in the interest of ventilation. If building paper is used over concrete, it should be put down *before* the subflooring is laid and not on *top* of the subfloor. Building paper should always be used on top of subflooring not laid over concrete. A good quality saturated felt known as "15-lb. felt" is recommended, lapped not less than 4 in., for the first story. Lighter paper upstairs.

Under Oak Floors in rooms directly over a heating system or subject to heat originating below such floors, it is advisable to use 30-lb. felt; or some standard insulating board not over ½ in. thick; *under the subfloor.* Insulation of Oak Flooring from such temperature conditions will keep its surface free from cracks sometimes found in non-insulated cases.

Nailing—In all cases, keep in mind that plenty of nailing of the subfloor is important. Good nailing makes it properly rigid, and prevents creeping due to the natural shrinkage and expansion of the lumber that subfloors are usually made of.

One of the secrets of obtaining a rigid, non-squeaking, compact, almost one-piece finish floor, is to see that plenty of nails are used and close spacing of the nailing. It will insure more satisfaction when the architect can specify 12 in. on centers for sleeper spacing instead of the customary 16 in. on centers, when no subfloor is used over the sleepers. Close sleeper spacing means close nailing of the Oak Flooring—12 in. on centers. This is the maximum spacing for nails, to make the right kind of an Oak Floor job. As a matter of fact, nails should be spaced 10-in. centers when it is feasible to do so when laying finish flooring on top of subfloors. If a

subfloor is laid over sleepers (or screeds or furring, as they are called differently) the sleepers may be spaced 16 or 18 in. on centers.

Plenty of Nailing—The one sure means of preventing squeaks in floors. Squeaks result most frequently from too few nails, too small a nail, subfloors not nailed solidly, or sleepers not tightened in place.

What has been stated above applies more especially to the $\frac{13}{16}$-in. standard thickness. The following table gives nailing spacing for all thicknesses:

$\frac{13}{16}$x2¼ in.—nails 10 in. on centers. Use 8d steel cut flooring nail.
$\frac{13}{16}$x1½ in.—nails 12 in. on centers. Use 8d steel cut flooring nail.
½ in.—nails 10 in. on centers. 6d bright wire finishing nail.
⅜ in.—nails 8 in. on centers. 4d bright wire casing nail.
(All of the above to be "blind nailed.")
$\frac{5}{16}$ in. square edge—1⅛ in. barbed wire flooring brad, No. 16, two nails every 7 in., face nailed.

There are various methods of fastening sleepers to concrete. Some architects prefer to tighten them down with wiring twisted in place, in addition to the grip exercised by the concrete filler.

There are certain kinds of nailing concrete which have proven satisfactory when attention has been given to the application of the material and necessary drying out before the Oak Flooring is laid on same. Some notable projects have been executed with certain brands of nailing concrete, used in lieu of sleepers and subfloors, or in lieu of sleepers and cinder-fill. The use of nailing concrete makes it unnecessary to use sleepers or subfloors over concrete slab or tile slab construction.

Surfacing—Finish flooring should not be surfaced until all other work in the building or on that story has been completed, including all but the final coat of paint. By doing this, the extra protection which a floor requires after it is surfaced is not imposed on the contractor. After the rough work is completed the Oak Flooring can be swept clean (use no water for cleaning) and turned over to the surfacers.

Surfacing may be done by hand scraping or by electric machines. State in the specifications who is to pay for the electricity used. Floors should be traversed more than once and several times, according to quality wanted. Properly graduated sandpaper should be used. Again, it is desirable to make sure of the finisher's qualifications so that a well built and well laid floor will not otherwise prove unsatisfactory in the final processes. A machine cannot work too near wall, in tight corners, or inside of closets. These should be hand scraped. Use fine sandpaper for cleaning down after the scraping or sanding is done. Then sweep perfectly clean. Permit no one to walk on the floor after the surfacing is done, until filler is applied, and is dry. Apply the filler at once.

STANDARD OAK FLOORING GRADES

According to the Grading Rules of the Oak Flooring Manufacturers' Association of the United States

Quarter Sawed

Clear—Shall have one face practically free of defects except ⅜-in. of bright sap. The question of color shall not be considered. Bundles to be 2 ft. and up, not to exceed 20% under 4 ft. average length 5 ft.

Sap Clear—Shall have one face practically free of defects but will admit unlimited bright sap. The question of color shall not be considered. Bundles to be 2 ft. and up, not to exceed 20% under 4 ft. Average length 5 ft.

Select—May contain sap, and will admit pinworm holes, streaks, slight imperfections in working or a small, tight knot, not to exceed one to every 3 ft. in length. Bundles to be 1¼ ft. and up. Average length 4 ft.

Plain Sawed

Clear—Shall have one face practically free of defects except ⅜-in. of bright sap. The question of color shall not be considered. Bundles to be 2 ft. and up, not to exceed 20% under 4 ft. Average length 5 ft.

Select—May contain sap, and will admit pinworm holes, streaks, slight imperfections in working or a small, tight knot, not to exceed one to every 3 ft. in length. Bundles to be 1¼ ft. and up. Average length 4 ft.

No. 1 Common—Shall be of such nature as will make and lay a sound floor without cutting. Bundles to be 1¼ ft. and up. Average length 3 ft.

No. 2 Common—May contain defects of all characters, but will lay a serviceable floor with some cutting. Bundles to be 1¼ ft. and up. Average length 2½ ft.

OAK FLOORING SIZES, KINDS, AND USES

There is an Oak Flooring grade for every flooring purpose and adaptable to any type of structural system in buildings, large or small.

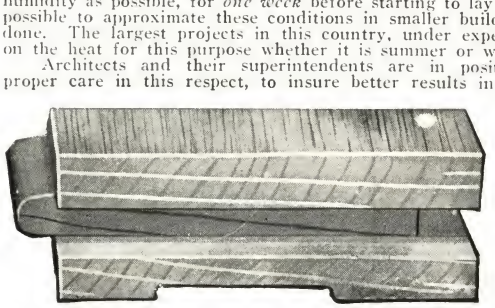
Suggested Uses of the Different Grades

Fine residences, apartments, hotels, clubhouses— CLEAR Quarter Sawed White or Red Oak SAP CLEAR Quarter Sawed White or Red Oak *SELECT Quarter Sawed White or Red Oak CLEAR Plain Sawed White or Red Oak	
Fine residences, apartments, hotels, churches, schools, fine stores, clubhouses, public buildings— *SELECT Quarter Sawed White or Red Oak CLEAR Plain Sawed White or Red Oak	Suited to "natural" finish or any stained or fumed effects.
Apartments and medium price residences, hotels, schools, office buildings, stores, institutions— CLEAR Plain Sawed White or Red Oak *SELECT Plain Sawed White or Red Oak	
Dwellings and tenements, schools, stores, higher class factories, and manufacturing and loft buildings— No. 1 COMMON Plain Sawed	Suited to any stained or oiled effect.
Factories, manufacturing and loft buildings, warehouses, cheap tenements— No. 2 COMMON Plained Sawed	Suited to any oiled effect.

Caution—Oak flooring should never be laid when plaster is damp or when there is damp brickwork or concrete. Flooring can, and should, be the last equipment installed in the building. See that all slabs, fireproof fills or nailing concrete, over which the oak is to be laid, are thoroughly dried out before starting to lay floors.

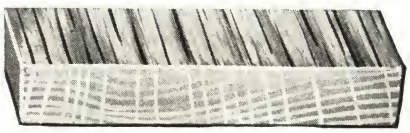
In winter, the building should have the heating system in operation. For best results in large projects, it is advisable to have the heat turned on at the proper time, and the oak flooring then delivered into the building and kept stored there, under as near a *normal* condition of heat and humidity as possible, for *one week* before starting to lay the floors. When possible to approximate these conditions in smaller buildings it should be done. The largest projects in this country, under expert guidance, turn on the heat for this purpose whether it is summer or winter.

Architects and their superintendents are in position to insist on proper care in this respect, to insure better results in the finished job.



$\frac{13}{16}$x2¼-in. Oak Flooring

*Note: *Select Grade* is equal to *Clear Grade* in durability.



$\frac{5}{16}$x2-in. Square-edge Oak Flooring
Actual size



½x2-in. Oak Flooring
Actual size



⅜x2-in. Oak Flooring
Actual size

SOUTHERN OAK FLOORING INDUSTRIES

EXECUTIVE OFFICES

902-907 Boyle Building, LITTLE ROCK, ARKANSAS

A TRADE ASSOCIATION COMPRISING THE FOLLOWING SUBSCRIBERS:

ARKANSAS OAK FLOORING COMPANY, Pine Bluff, Ark.
E. L. BRUCE COMPANY, Memphis, Tenn.
CROSSETT LUMBER COMPANY, Crossett, Ark.
DIERKS LUMBER & COAL COMPANY, Kansas City, Mo.
FORDYCE LUMBER COMPANY, Fordyce, Ark.
LONG-BELL LUMBER SALES CORPORATION, Kansas City, Mo.
MEMPHIS HARDWOOD FLOORING CO., Memphis, Tenn.
NASHVILLE HARDWOOD FLOORING CO., Nashville, Tenn.
PERFECTION OAK FLOORING COMPANY, Shreveport, La.
SOUTHERN PINE LUMBER COMPANY, Texarkana, Tex.

SOFI OAK FLOORING

Southern Oak Flooring Industries

Comprises a major portion of the total Oak Flooring industry, and some of the largest mills in the world. The product of these manufacturers is highly standardized and interchangeable in quality, and is identified by the above trade-mark figure of the SOFI craftsman. In addition, SOFI Oak Flooring is branded with a bright-colored label stating the exact kind, quality, and grade. This makes it instantly possible for the architect or contractor to identify the flooring material in every detail, and to remove technical difficulties sometimes associated with the use of lumber products.



REG. U. S. PAT. OFF.

Adaptability of SOFI Oak Flooring

In Modern Architecture—SOFI Oak Flooring is supremely functional. It is a most scientifically designed flooring material. It is as modern as tomorrow and is essentially suited to the contemporary style—L'Art Moderne, or the "modern" manner. SOFI Oak Flooring has been "discovered" in Europe and the demand is fast increasing there for installation in the new and distinctive European architecture of today. The architectural profession both here and abroad is offered the facilities of the technical division of SOUTHERN OAK FLOORING INDUSTRIES in developing the full possibilities of this material in the contemporary idea in architecture—in pattern, brilliant coloring, or smooth sheet-glass floor effects. SOFI Flooring has proved the amazing adaptability of oak—an age-old building material—to changing architectural conceptions.

Address Design Department, Industries Research, care of this Association.

In "Traditional" Architecture—In "Traditional" Architecture also Oak Flooring is indispensable. The crafting of oak for flooring purposes to meet the instinctive liking on the part of architects and the public for this notable wood has reached an exceedingly high degree of perfection. The addition of further and more recent quality standards, introduced in the product bearing the SOFI trade-mark, assure a continuance of the high prestige which Oak Flooring has acquired through the centuries.

SOFI'S Extraordinary High Grading Standards

SOFI grades are among the highest in the world, and are protected by official grading rules issued by this Association, reinforced by an official inspection service which it maintains. This inspection service includes close control of manufacturing processes in order to preserve evenness of quality in every piece of SOFI Oak Flooring produced, and attain fair uniformity of color. A re-inspection service is maintained, to protect all users of this product, which further guarantees the quality of Oak Flooring produced by SOFI mills.

Low Prices—Due to Mass Production Facilities and Research

The enormous mass production capacity embraced in the SOFI manufacturing plants, situated in the heart of the Southern hardwood growing regions, has made it possible to maintain new low prices which give SOFI flooring products an economic advantage in initial cost, and, through the intensive research facilities of this Association, there have been developed finishing and maintenance methods which give SOFI Floors a new advantage. This permits utilization of this material where great initial economy is required and insures an exceedingly low overhead on floor maintenance.

Architects' Specifications Protective Clause

Specifications may now, and should, contain the following protective clause—*at no increase in cost:*

All Oak Flooring shall come to the building in original unbroken bundles, and shall bear the SOFI brand as authorized by, and shall be according to Grading Rules and subject to the official re-inspection service of, SOUTHERN OAK FLOORING INDUSTRIES, *Little Rock, Arkansas.*

SOFI OAK FLOORING GRADING RULES

(Effective June 15, 1931)

Note: These improved Oak Flooring grading rules provide for superior grades and lengths.

Quarter Sawed*—Tongue and Groove

SOFI Clear—Face shall be all heartwood and practically free of defects. Bundles to be 2 ft. and up, not to exceed 20% under 4 ft. Average length 5 ft.

SOFI Sap Clear—Face shall be practically free of defects but will admit unlimited bright sap. Question of color shall not be considered. Bundles to be 2 ft. and up, not to exceed 20% under 4 ft. Average length 5 ft.

SOFI Select—Face may contain sap, and will admit pinworm holes, streaks, slight imperfections in dressing, or a tight pin knot not to exceed one to every 4 ft. in length. Bundles to be 2 ft. and up. Average length 4¼ ft.

Plain Sawed*—Tongue and Groove

SOFI Clear—Face shall be all heartwood and practically free of defects. Bundles to be 2 ft. and up, not to exceed 20% under 4 ft. Average length 5 ft.

SOFI Select—Face may contain sap, and will admit pinworm holes, streaks, slight imperfections in dressing or a tight pin knot not to exceed one to every 4 ft. in length. Bundles to be 2 ft. and up. Average length 4¼ ft.

SOFI No. 1 Common—Shall be of such nature as will make and lay a sound floor without cutting. Bundles to be 2 ft. and up. Average length 3¼ ft.

SOFI No. 2 Common—May contain defects of all characters, but will lay a serviceable floor. Bundles to be 3 ft. and up. Average length 2½ ft.

**Note:* When referring to SOFI Clear or SOFI Select or SOFI No. 1 Common, be sure to state whether Quarter Sawed or Plain Sawed.

Square Edge Flooring

Grades as shown above, but bundling and lineals as follows:

SOFI Clear—$\frac{5}{16}$x2 in. and $\frac{5}{16}$x1½ in. (face). Bundled 3 ft. and up, lineal average 6 ft.

SOFI Select—$\frac{5}{16}$x2 in. and $\frac{5}{16}$x1½ in. (face). Bundled 2 ft. and up, lineal average 5 ft.

SOFI No. 1 Common—$\frac{5}{16}$x2 in. and $\frac{5}{16}$x1½ in. (face). Bundled 2 ft. and up, lineal average 4 ft.

STANDARD SIZES OF SOFI OAK FLOORING

Nominal, in.	Actual, in.	Counted, in.
$\frac{13}{16}$x2¼	$\frac{25}{32}$x2¼	1x3
$\frac{13}{16}$x2	$\frac{25}{32}$x2	1x2¾
$\frac{13}{16}$x1½	$\frac{25}{32}$x1½	1x2¼
$\frac{3}{8}$x2	$\frac{11}{32}$x2	1x2½
$\frac{3}{8}$x1½	$\frac{11}{32}$x1½	1x2
$\frac{1}{2}$x2	$\frac{15}{32}$x2	1x2½
$\frac{1}{2}$x1½	$\frac{15}{32}$x1½	1x2

SOFI SQUARE EDGE FLOORING

Nominal, in.	Actual, in.	Counted, in.
$\frac{5}{16}$x2	$\frac{5}{16}$x2	1x2
$\frac{5}{16}$x1½	$\frac{5}{16}$x1½	1x1½

Estimating

To compute the quantity of flooring to be ordered for a given room, add to the square foot area of the room as follows:

33⅓%	for $\frac{13}{16}$x2¼ in.	33⅓%	for $\frac{3}{8}$x1½ in.
37½%	for $\frac{13}{16}$x2 in.	25%	for $\frac{3}{8}$x2 in.
50%	for $\frac{13}{16}$x1½ in.	33⅓%	for $\frac{1}{2}$x1½ in.
		25%	for $\frac{1}{2}$x2 in.

For irregularities caused by closets, bay windows, fireplaces, etc., an additional provision of 5% should be made to cover cutting and fitting.

HOW TO SPECIFY SOFI OAK FLOORING—AND WHY

Subflooring—Underflooring to be 1x4 or 1x6-in. sized, No. 1 common or No. 2 common grade of lumber, *and dry,* laid diagonally and driven close *but not tight.* Boards should preferably be square edge, and never wider than 6 in.

Nailing Subfloors—To be facenailed, at every bearing, with two 10d nails; butt joints must rest on bearings. If it becomes *necessary* to use subfloor boards wider than 6 in. *extra nailing* must be employed at *every bearing.* The occasional use of 1x10 and 1x12-in. subfloor boards has proven *not satisfactory,* because the ratio of natural contraction and expansion of wide boards is out of proportion to that of *oak flooring,* develops "squeaks" and an unsightly condition in top floor. Plenty of nailing is the *improved way* and vitally important, in *both* subfloor and oak top floor. Good nailing *holds floors* rigid, and *prevents* the creeping sometimes caused by shrinkage and expansion in subfloor lumber.

Subfloors Over Concrete—Spaced ½ in. apart to assist ventilating and drying out the concrete or floor fill—use square edge boards only. Sweep top of concrete clean. *Do not use water.* Examine subfloor and repair any damage and make sure the floor is renailed and made level, cleaned and swept. *Use no water.* A subfloor must be provided in all cases where the Oak Flooring material is less than $\frac{13}{16}$-in. standard thickness.

Building Paper—*Lay a good quality building paper over the subfloor*—the type known as 15-lb. asphalt-saturated felt, in rolls, laid in place as the floor work proceeds, and lapped about 4 in.

Sleepers—Screeds or sleepers, when no subfloor is intended to be laid, should be *spaced not more* than 12-in. centers. The customary 16 and 20-in. spacing of sleepers is not recommended as good practice. Sleepers closely spaced compel *close nailing.*

When a subfloor is to be installed, sleepers may be spaced 16 or 18 in. on center. Sleepers (screeds) should be tightened in place. There are various methods, such as galvanized metal clips, expansion bolts in lead sleeves, and wire. Tightening by twisting strong wire around sleepers has proven effective. Sleepers should be wedged up level. A light-weight non-concrete floor fill is required in some cities, others use cinders, concrete or a mortar fill.

Treated Lumber—Sleepers should preferably be of pre-treated lumber, impregnated with wood preservative. If pre-treated sleepers are unavailable, the preservative should be brushed in on all sides and ends, before putting them in place, and be of a lumber grade equivalent to No. 1 common 2x4 or 2x3 in. Lay with the flat side down. When a subfloor is to be omitted—and if doubtful as to precise direction the finish flooring strips are to be laid—lay sleepers 12 in. centers at 45° diagonal, permitting finish floor to be laid in either direction.

Nailing Concrete—This material takes the place of sleepers and a wood subfloor over concrete slabs. Nailing concrete is a mortarlike mix troweled up smooth to subfloor level, and requires several weeks for drying before Oak Flooring may be laid. Nailing concrete should be scheduled well in advance to allow time for drying. Cover with building paper, and apply the Oak Flooring, nailing directly into the nailing concrete, using specially hardened steel cut nails.

Nails and Nailing—Tongue-and-groove oak floorings must be blindnailed. Start nails through the strip in angle above the tongue, and drive inwardly at angle of 45° or 50° to floor, and countersink.

Direction of the Flooring—Flooring strips should be laid longest way of room, when possible. Strips to run continuous through doorways into adjoining rooms, without thresholds. Use the shortest and cut pieces of flooring inside of closets, and scattered over the floor area.

SOFI OAK FLOORING NAIL SCHEDULE

Flooring dimensions, in.	Size of nails	Spacing of nails
$\frac{13}{16}$x2¼	8d light flooring nail—wire nail or steel cut casing nail—(use cut nails when possible)	10 in. apart
$\frac{13}{16}$x1½		12 in. apart
Following sizes of oak flooring must always be laid on a subfloor and blindnailed:		
½x2 or ½x1½	6d bright wire casing nails	10 in. apart
⅜x2 or ⅜x1½	4d bright wire casing nails	8 in. apart
Square edge flooring, as follows, to be facenailed—through top face—instead of blindnailed:		
$\frac{5}{16}$x2 or $\frac{5}{16}$x1½	1⅛-in. barbed wire flooring brad No. 16, heads countersunk and puttied	2 nails every 7 in.

Joints—Standard SOFI Oak Flooring is tongued and grooved on sides and *ends*—this is called side and end matching. Pieces fit *perfectly* when laid side to side and end to end. End joints may come anywhere in the floor, without regard to whether there is a joist or sleeper bearing. The end and side tongues support the flooring.

Surfacing—Scraping and Sanding Oak Floors

SOFI Oak Flooring is delivered to the job with a smooth wearing surface, perfect as modern machinery can make it. However, during its laying, slight inequalities develop and dirt accumulates, which may be removed by scraping and sanding. Surfacing must not be done until all other interior work has been completed, and just before applying the final coat of interior painting.

Surfacing—The floor should be swept clean—use no water. When surfacing by machine, the floors should be traversed several times, working first across the grain and then lengthwise with the grain, starting with No. 2 sandpaper on the machine and graduating to No. ½ sandpaper on the second traverse with No. 0 or 00 sandpaper on third and fourth traverses. For fine floors four or five traverses are essential. Floor should then receive a final buffing or cleaning with fine sandpaper or No. 3 steel wool—by machine or by hand. Then sweep clean and permit no one to walk on the floor until floor stain, filler, or first coat of finish, has been applied *and is dry.*

Sanding machines cannot work too near a wall, in corners, or inside of closets. A small hand sander (power operated) may be used for tight places and along walls, or a hand scraper tool.

Modern Floor Finishing Methods

The finishing and polishing of SOFI oak floors has been studied from a special *and modern* floorwise point of view. The methods which have been investigated by *Industries Research* represent an important advance over previous finishing ideas, and are *essentially for floor service.* With improved methods, floors can be kept permanently gleaming, because these new floor finishes are "patchable." Worn spots can be covered without showing a patched effect; freshness of finish can be easily renewed, and the recommended finishes are economical. Places which are subject to unusual wear may be kept uniform in appearance at all times.

Caution: SOFI oak is at its best and produces its finest effect and wear when it has been properly sanded and finished. With modern methods it is not necessary to use oils—"oiling" a floor is poor "economy."

New Handbook on Oak Flooring—Details regarding floor finishes for both residential and heavy duty floors, have been published in a new handbook entitled "How to Lay and Finish SOFI Oak Floors," and is available on request, without charge, to any inquirers. This has been pronounced the most authoritative treatise—written especially for architects and building managers—that has been offered to date on this interesting subject. Supplemental information on any floor problem will be gladly sent to architects.

Other technical publications of value, issued under direction of *Industries Research,* are a series of Oak Flooring Work Sheets, prepared for immediate incorporation by architects into their specifications. Address Industries Research, Boyle Building, Little Rock, Ark.

The New Economics of Floors

The SOFI organization has put this subject to a research test and has evolved some important facts which bear on investment types of buildings, showing the economic effect in this new decade of flooring materials which last for the life of the building—as SOFI Oak Flooring does—which save replacement costs, and bear both the lowest possible first cost and maintenance cost.

Oak Flooring Used for Walls

Beautiful and *absolutely new wall effects,* particularly fitting to the modern trend in architecture, are possible now by the use of standard SOFI Oak Flooring. This method has been devised by the technical division of SOUTHERN OAK FLOORING INDUSTRIES, under the direction of competent architectural and designing ability. Information will be supplied on request. Bold, yet withal very beautiful and striking effects in either quiet tones or *brilliant colorings* are now available. Fullest assistance will be rendered interested architects for new projects, or for bringing old buildings up to date.

E. L. BRUCE COMPANY

Member of the Producers Council, Inc.

Manufacturers of Hardwood Floorings, Lumber and Preservatives

EXECUTIVE OFFICES

MEMPHIS, TENN.

MILLS

NASHVILLE, TENN. CAIRO, ILL. MEMPHIS, TENN. LAUREL, MISS. LITTLE ROCK, ARK. BRUCE, MISS. PRESCOTT, ARK. OAK GROVE, LA. REED CITY, MICH. TORONTO, ONT.

Products

WOOD FLOOR TILE *CELLIZED; OAK FLOOR PLANKS *CELLIZED; STRIP HARDWOOD FLOORINGS *CELLIZED OR UNTREATED; CEDA'LINE (Tennessee Red Cedar closet lining); BRUCE FLOOR FINISH and PRESERVATIVES; X-ITE.

Also manufacturers of: Oak and Gum Finish and Mouldings; Stair Treads; Oak, Beech and Gum Dimension Stock; Oak Bridge Plank and Timbers; Dense Southern Yellow Pine; Southern Hardwood Lumber, air-dried or kiln-dried, rough or surfaced.

Bruce Wood Floor TILE *CELLized

A design pattern floor at a reasonable initial expenditure, and at lowest maintenance cost, suitable for all types of buildings, from homes to commercial and public structures. Ease and low cost of maintenance are especially advantageous in schools, hotels, and all installations of large area and heavy traffic. Squares or rectangles or combinations, in a wide range of woods, beveled or square-edge, afford ample opportunity for variety, and adaptation to the scheme of decoration. Write for A1A file No. 19-E-92, and for full details as to nature and application, see pages of *CELLized Oak Flooring Inc., immediately following.



Bruce Solid Oak Floor Planks

Accurately kiln-dried lumber machined with the greatest care into boards of 4, 5, 6, 7 and 8 in. widths with tight fitting tongues and grooves on both sides and ends. Edges are beveled. Three grades: Mansion, Fireside and Tavern. Bruce planks may also be obtained in Walnut and Philippine Hardwood. Untreated, or *CELLized, by a chemical process to minimize the possibility of distortion.

Architects are invited to inspect the display of floor, wall and ceiling application of both planks and wood tile in the Bruce offices at Memphis.



Bruce Strip Oak Flooring—*CELLized or Untreated

Manufactured from the best raw material, in modern daylight plants, equipped with machinery and tools of the most efficient type. Kiln drying represents the latest improvement in the proper seasoning of lumber.

Sizes and Grades—Each bundle is marked in accordance with new grading rules of the Southern Oak Flooring Industries, Little Rock, Ark. Check graders are regrading continuously to see that the regular graders are using the proper judgment in marking.

Methods of Packing—Bruce Oak Flooring is carefully packed in bundles securely bound by wires—enough to guard against one or two wires opening and the breaking of bundles. Due to our careful manufacturing facilities, better than standard average lengths are attained.

Bruce Preservatives—For Lumber Preservation

Impregnating the wood, inexpensively, by open tank method, Bruce Preservatives, three in number, immunize wood to rot and insect attack, lengthen its life, are non-volatile, and are non-toxic to humans; do not chemically react with wood. Applied to rough, finished, or dimension lumber, and will not affect glued joints.

Bruce Preserved wood is practically odorless, unchanged in color, can be painted and handled as untreated wood, and is ready for immediate use after treatment. The moisture content is not affected, and there is no distortion or checking during or after processing. Unqualifiedly recommended for general construction, wherever protection against decay and insects is required. Write for booklet 19-A-31 and 19-A-34.

Bruce Preserving Plants are now being installed throughout the country which will treat lumber for retail lumber dealer distribution.



Ceda'Line—For Closet Lining

Of genuine Tennessee aromatic red cedar, manufactured exclusively by E. L. BRUCE COMPANY, and obtainable through local dealers.

Sizes—$\frac{3}{8}$x1$\frac{1}{2}$ in., $\frac{3}{8}$x2 in., $\frac{3}{8}$x2$\frac{1}{2}$ in., $\frac{3}{8}$x3$\frac{1}{4}$ in., $\frac{13}{16}$x2$\frac{1}{4}$ in. (latter size for floors), and quarter round (for corners of walls, ceilings and floors). One grade only, permitting knots.

Application—Ceda'Line is tongued, grooved and end-matched. Building paper to be used, applying Ceda'Line by blind nailing to studding. Furring strips should be used in applying over lath and plaster in old homes. The cost is little more than the lath and plaster replaced.

Finish—Use no finish whatsoever. Varnish destroys aromatic qualities.

Bruce Floor Finish—A Penetrating Finish

Bruce Floor Finish, developed in the Bruce Laboratories after years of research, is entirely different from the much used shellac and varnish, as it penetrates into the wood and, under heavy traffic, the wood and finish wear together. The surface is hardened and the necessity of complete refinishing is eliminated. Places with exceptional wear by heavy traffic are easily cleaned, and the finish renewed without showing laps. Will not scratch or chip. Economical in cost and application.

X-Ite—For Walls, Ceilings and Floors

X-Ite, the product of the X-Ite Corporation, a division of E. L. BRUCE COMPANY, is a construction material of new wood fibre, binder and color pigments, offering strength and durability in slabs of standard sizes, pre-finished, and shipped ready for installation. X-Ite has the beauty and permanence of aged stone, with a harmonious color range; its weight is only 50 per cent more than wood. See Manufacturers' Index for X-Ite section.

Literature

Booklets on all Bruce Quality Products will be sent on request, including A1A file No. 19-E-9, "Plank Floors as crafted by Bruce," an illustrated 16 pp. booklet in colors. Are you on our list to receive "Bruce Every Month," a house organ valuable to every user of wood products?

**CELLized—Chemically treated to retard shrinkage or expansion.*

CELLIZED OAK FLOORING, INC.

MEMPHIS, TENN.

MANUFACTURED BY THE FOLLOWING LICENSEES

ARKANSAS OAK FLOORING CO., Pine Bluff, Ark.
E. L. BRUCE COMPANY, Memphis, Tenn.
NASHVILLE HARDWOOD FLOORING CO., Nashville, Tenn.
LONG-BELL LUMBER SALES CORP., Kansas City, Mo.

Products

WOOD FLOOR TILE (*CELLized)), in oak, maple, beech, walnut, Philippine mahogany, yellow pine, cherry. Each tile is a complete unit of 3 or more wood flooring strips, $\frac{13}{16}$ or $1\frac{1}{16}$-in. thickness, joined into squares or rectangles by one or more steel splines at the back. Sizes of squares 6¾, 9 and 11¼ in.; rectangles, 6¾x13½ and 6x12 in.

Beauty — Durability — Economy

*CELLized Wood Floor Tile combines the design pattern effect of parquetry flooring with the known wearing and comfort producing qualities of wood, at low cost, both initially, and in maintenance expense. This versatility permits its use not only in residences, but in schools, apartments, hotels, clubs, office and public buildings and commercial structures generally. *CELLized Wood Tile is laid rapidly in EVERBOND, a sound-deadening plastic cement, directly over the wood subfloor or concrete without nails. *CELLized—a chemical deep-cell wood treatment which (1) reduces the tendency toward shrinkage or expansion by making the wood more moisture resistant; (2) prevents decay and damage by wood-boring insects; (3) takes an improved finish; (4) adds little to the cost.

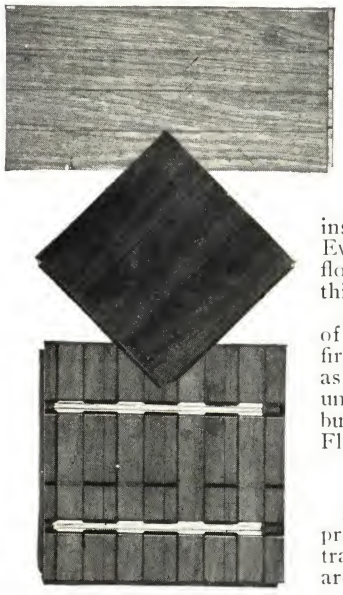


Bevel Edge Wood Tile in Typical Office

For School Rooms, Auditoriums, and Other Interiors of Large Area and Constant Traffic

*CELLized Wood Floor Tile has all the desired advantages of wood, together with many additional advantages over the regular wood strip flooring laid (in fireproof construction) on screeds or sleepers, namely:

(1) A more quiet floor. *CELLized Wood Tile Floors cannot squeak, and they eliminate the drum effect so noticeable in strip flooring on screeds. The plastic cement in which they are laid absorbs a large percentage of sound produced.



(2) Elimination of the possibility of the rotting of screeds.

(3) More sanitary. Being laid direct on concrete with no air space underneath, there is no place for vermin and dirt to collect.

(4) Elimination of damage to floor by termites (white ants) and other wood-boring insects. Due to complete seal of EVERBOND over concrete subfloor, no approach can be made to this type of floor by these insects.

(5) Less *fire hazard.* Method of laying makes it impossible for fire to spread from the flooring as fire depends on a draft from underneath to burn. Test fires built on *CELLized Wood Tile Floors would not spread.

Low Maintenance

A *CELLized wood tile floor properly finished with a penetrating finish (several of which are on the market) can be very inexpensively maintained. Mopping with a wet or damp rag should never be tolerated. Floor should be swept with a dry, soft broom. A good type of floor sweeping compound can be used. Avoid all water.

About twice each year the finish can be renewed for a cost not exceeding two cents per square foot.

Cost of maintenance on a *CELLized Wood Tile Floor properly finished will be at least 50% less than that on almost all substitutes for wood flooring.

Durability

The life of most substitutes is from 5 to 10 years. *CELLized Wood Floor Tile laid in mastic will last almost indefinitely. Where necessary, worn parts of this type of floor can be replaced as easily as any substitute. Hardwood floors are known to wear almost as long as marble floors.

LICENSED UNDER PATENTS OWNED BY *CELLized Oak Flooring INC. MEMPHIS TENNESSEE. FLOORING CONTRACTOR

Copyright 1929
*CELLIZED OAK FLOORING, INC.

*CELLized
TRADE-MARK



***CELLized Wood Tile Laid in EVERBOND Over Steel Sub-floor, Administration Building, "Century of Progress" Exposition, Chicago, Ill.**
E. H. BENNETT, H. BURNHAM, J. A. HOLABIRD, Architects



***CELLized Wood Floor Tile in the New Chicago Post Office**
GRAHAM, ANDERSON, PROBST & WHITE, Architects
To be laid by KAUCHER ENGINEERING CO., Chicago

Approximately 2,000,000 sq. ft. of *CELLized Wood Floor Tile will be installed over entire working and office floor areas in the new Chicago Post Office now under construction

*CELLized—Chemically treated to retard shrinkage or expansion.

Maple and Beech Tile, Factory Sanded, Then *CELLized

A very material saving in finishing costs is effected by the use of factory sanded tile where durability is the first consideration. At the same time, the appearance is highly pleasing.



Crocker Highland High School, Oakland, Cal.
BLAINE & OLSON, Architects
Inset: Seats screwed to the floor in North Little Rock, Ark., High School

Guarantee and Laying

In order to assure proper application and no divided responsibility, *CELLized Wood Floor Tile is laid only by application companies, licensed by this Company; names in your locality on request. The five-year guarantee given on all *CELLized Wood Tile Floors is backed by four large Hardwood Flooring Manufacturers.

TABLE OF WOODS AND SIZES

Rectangular tile, 6x12 in. and 6¾x13½ in.; also in maple 6½x13 in. Square tile, $\frac{13}{16}$-in. thickness in the following sizes:

Oak	Beech	Maple	Cherry	Walnut	Philippine mahogany	Maple 1 1/16-in. thick
6¾ in.	6¾ in.	6¾ & 7½ in.	6¾ & 7½ in.	6¾ & 7½ in.	6¾ & 7½ in.	6¾ & 7½ in.
7½ in.	7½ in.	8 in.	8 in.	8 in.	8 in.	8 in.
9 in.	9 in.	9 in.	9 in.	9 in.	9 in.	9 in.
		9¾ in.	9¾ in.	9¾ in.	9¾ in.	9¾ in.
10½ in.		10 in.	10 in.	10 in.	10 in.	10 in.
11¼ in.	11¼ in.	11¼ in.	11¼ in.	11¼ in.	11¼ in.	11¼ in.
12 in.	12 in.	12 in.	12 in.	12 in.	12 in.	12 in.
		13 in.	13 in.	13 in.	13 in.	13 in.

Yellow pine squares 9¾x9¾ in.; rectangles 6½x13 in.



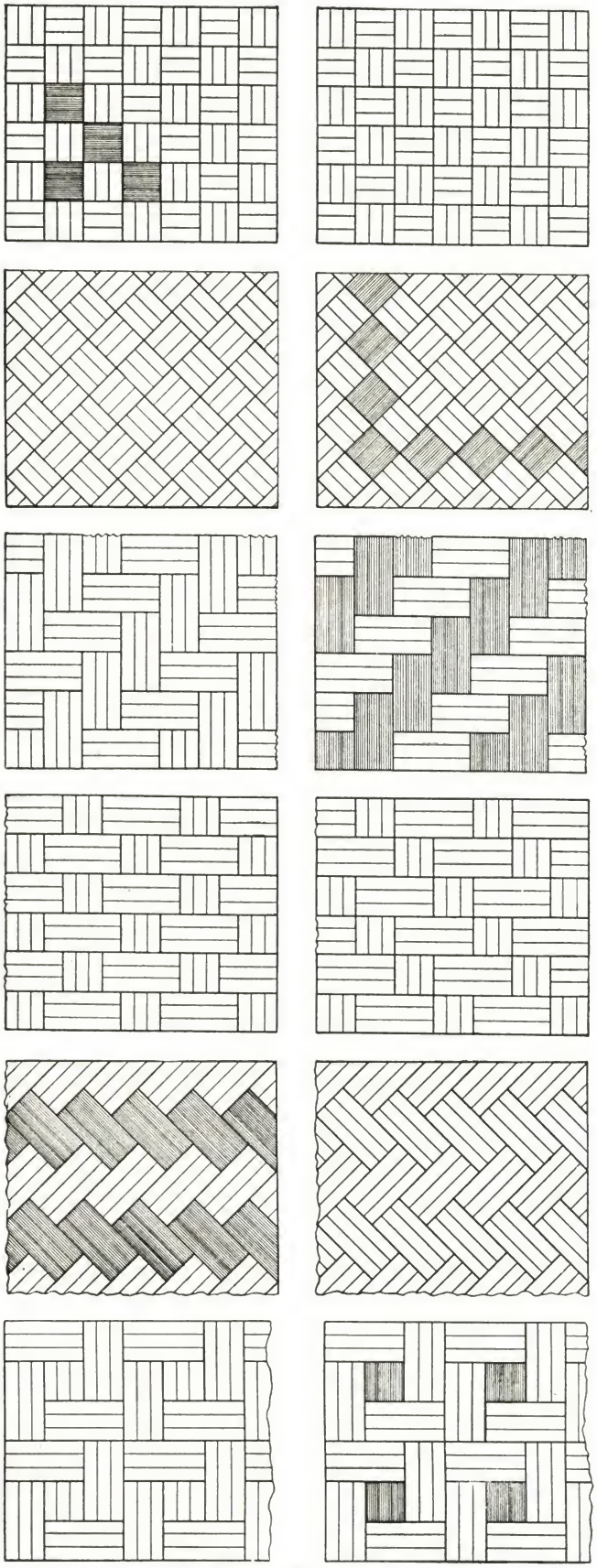
Dormitory, Massachusetts Institute of Technology, Cambridge, Mass.
COOLIDGE & CARLSON, Architects, Boston



Fairview Junior High School, Memphis, Tenn.
E. L. HARRISON, Architect

Literature

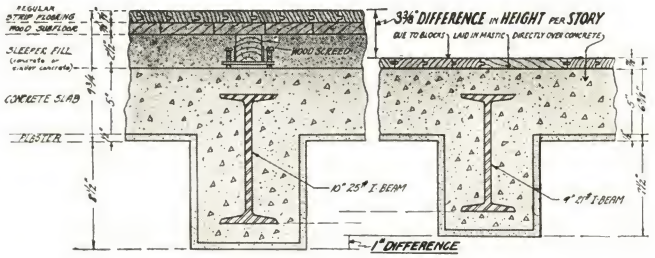
Architects' data sheets, loose leaf A.I.A. file size. Sizes and grades with standard specifications; basic designs; monthly list of licensed flooring contractors.



Styles of Laying

Economy in Laying Over Concrete

*CELLized Wood Floor Tile, laid in EVERBOND directly over concrete, saves the material and labor cost of wood subfloor, screeds and cinder fill; also, approximately, from 2½ to 3⅜ in. in height per story, without loss of headroom. This combined saving often exceeds the entire cost of the floor, laid and finished. See drawing at right.



MASTER SPECIFICATIONS FOR *CELLized WOOD FLOOR TILE

(A) Sub-surface and Trim Provisions

Note: That the Wood Tile Floor installation may be accomplished with the greatest degree of economy, permanence and satisfaction as to appearance, it is recommended that the following provisions, executed by others, be included under the various other specification divisions where and when they apply.

(A1) Sub-floors

(A1a) **Concrete**—The topping, or finish coat of the concrete slab, shall be made as follows: Screed off the slab, removing any large rocks that might affect the surface, being careful not to "puddle" the mix until sloppy. Uniformly dust this freshly screeded concrete with a dry mixture of 50 per cent sand and cement Trowel this dusted surface with a wood float or a leveling darby float to a uniform level finish without projections or depressions. Adequately protect this surface from injury until the concrete slab sub-floor has "set." Protect all sub-floors, as finished, against concrete or plaster dropping.

(A1b) **Old Concrete**—All conditions applicable to new concrete sub-floors shall apply. If sub-floor does not meet requirements and presents an uneven bearing surface, it shall be leveled off in a satisfactory manner in accordance with the specifications, which will be supplied by *CELLized OAK FLOORING, INC.

(A1c) **Wood**—Solid wood sub-floors shall be thoroughly seasoned and dry, and shall be made of 4-in. to 6-in. dressed and matched stock, not less than thirteen-sixteenths of an inch ($\frac{13}{16}$ in.) thick; floor joists not more than sixteen inches (16 in.) on centers. Sub-floor must present an even bearing surface seven-eighths of an inch ($\frac{7}{8}$ in.) below finished floor grade, and shall be double face-nailed, preferably with cement-coated eight-penny nails.

(A1d) **Old Wood**—All conditions applicable to new wood sub-floors shall apply. All rotten, splintered, or weakened boards shall be replaced. All loose nails shall be drawn out and boards renailed.

(A1e) **Steel**—Steel shall be free from laitance, dust, grease and loose foreign matter and free from any projection that might prevent uniform contact of the tile with the sub-floor surface. Steel shall be primed with one coat of good asphalt priming paint. Tile shall not be laid until priming coat is thoroughly dry.

(A2) Waterproofing

Note: Always include the following where sub-floors to receive Wood Tile Flooring are below grade or laid in direct contact with the ground.

(A2a) All floors in direct contact with the ground or below grade shall be membrane waterproofed according to the following specifications:

(A2b) The concrete sub-floor shall be smooth, clean, dry and free from loose material and foreign matter.

(A2c) Over the concrete sub-floor a two-ply membrane waterproofing of *(asphalt) (coal tar pitch)* and *(asphalt) (tarred)* felt shall be laid.

Note: Select either "asphalt and asphalt saturated felt" or "coal tar pitch and tarred felt" as desired.

(A2d) Prime the concrete surface with asphalt primer before application of the membrane waterproofing.

Note: Include only if "asphalt and asphalt saturated felt" are specified.

(A2e) Coat the entire surface of the concrete sub-floor with waterproofing pitch, into which, while hot, embed a layer of fifteen-pound saturated felt, lapping sheets seventeen inches (17 in.). A half sheet shall be used in starting so that a full two-ply membrane results at all points. The sheets shall be laid without wrinkles, buckles or blisters, and well rubbed into the hot pitch so that a complete bond is obtained between felt and sub-floor. Care shall be taken that the entire surface of the first layer of felt is mopped solid with hot pitch, so that in no place shall felt touch felt. At all wall angles, columns, etc., the felt shall be laid in at a right angle and brought up the wall at least four inches (4 in.) above the finished floor behind the base.

(A3) Wood Baseboards and Plinths

(A3a) All baseboards and plinth blocks shall be set one and one-eighth inches (1⅛ in.) above the top surface of the sub-floor so that there shall be sufficient clearance for the Wood Tile and Border Strips to be moved freely under them.

(A3b) Base shoe moulds shall project beyond the face of the base at least five-eighths of an inch (⅝ in.) and shall be attached (after the Wood Tile Floor has been laid) to the baseboard only (not to the flooring) with a full one-sixteenth inch ($\frac{1}{16}$ in.) clearance between the surface of the finished floor and the underside of the shoe mould.

(A4) Pipe Collars

(A4a) All electric outlets, radiator connections, piping, etc., shall be provided with suitable collars to cover the necessary expansion area.

(B) WOOD TILE FLOORING

(B1) General Conditions

The General Conditions governing the General Contract shall apply to the work under this division of the specifications.

Note: The American Institute of Architects' standard form of General Conditions is advocated.

(B2) Work Included

The work included under this heading shall be the furnishing, laying and finishing of wood tile flooring in the following areas:

Note: Here list and locate the areas.

(B3) Preliminary Provisions

Provision has been made under other specification divisions that all sub-floors, trim, etc. have been constructed in accordance with heading "(A) Sub-floor and Trim Provisions" of the Master Specifications of *CELLized OAK FLOORING, INC.

(B4) Inspection and Cleaning

(B4a) **Inspection**—Before laying the Wood Tile Floor this contractor shall carefully inspect all sub-floors, erected trim, etc. and shall notify the architect promptly (preferably in writing) of any defects which will in any way deleteriously affect the flooring installation. Failure to so notify the architect of these defects will be construed as acceptance of the work as executed and full rsponsibility for the finished results under the guaranty.

(B4b) **Cleaning**—Thoroughly clean all sub-surfaces of dust or other foreign matter before laying the Wood Tile Floor.

(B5) Materials

(B5a) **Wood Tile Floors**—Finished floors shall be *CELLized Wood Floor Tile as manufactured by the licensees of *CELLized OAK FLOORING, INC., of Memphis, Tennessee. Sizes, thicknesses and varieties of wood shall be as listed in paragraph (B7).

(B5b) **Mastic**—Mastic for laying Wood Tile Flooring shall be EVERBOND as manufactured by *CELLized OAK FLOORING, INC.

(B5c) **Finish**—

Note: Here specify the stains, fillers, varnishes, etc. selected. Only strictly oil fillers, as manufactured by V. J. Dolan Co., Inc., Chicago, Ill., or equivalent and only oil stains as manufactured by the Marietta Paint and Color Company or equivalent should be used. We recommend a penetrating finish for all uses (several excellent varieties are now on the market). Where varnish is used, a thin coat of clear shellac must first be applied.

(B6) Patterns, Etc.

Note: Here list, locate and describe the various patterns, sizes and thicknesses of tile to be used.

(B7) Laying

(B7a) All *CELLized Wood Tile Flooring shall be laid by a flooring contractor licensed by *CELLized OAK FLOORING, INC., in strict accordance with their directions applying to the particular installation and in general as follows:

(B7b) Tile shall be laid to a level surface bedded in mastic without the use of nails or screws. Sufficient mastic shall be troweled on to the sub-floor with a ¼-in. tooth sawtooth trowel, depending on its condition, degree of roughness and absorption to thoroughly and permanently bond the blocks to the sub-floor.

(B7c) Tile shall be laid loose or tight, dependent on the humidity conditions of the building and the condition of the sub-floor.

(B7d) In no case shall the edges of the tile come closer than one and one-quarter inch (1¼ in.) to vertical surfaces, nor closer than one-sixteenth inch ($\frac{1}{16}$ in.) to the underside of any standing wood trim. This contractor shall supervise the installation of baseboard shoe moulds, etc. to assure proper clearances for expansion.

(B8) Sanding

All floors shall be properly sanded according to standard practice, leaving a smooth surface without sander marks.

(B9) Finishing

Note: Here specify the various steps in the finishing process selected. Fillers should be thick and rubbed into the cracks by hand or machine—not mopped on with a brush or cloth.

(B10) Protection

During all stages of the work the flooring shall be adequately covered and protected from injury until completion and acceptance.

(B11) Guaranty

The flooring installation shall be guaranteed by *CELLized OAK FLOORING, INC., and covered by their standard five-year guaranty.

CROMAR FACTORY-FINISHED OAK FLOORING

Manufactured Only by

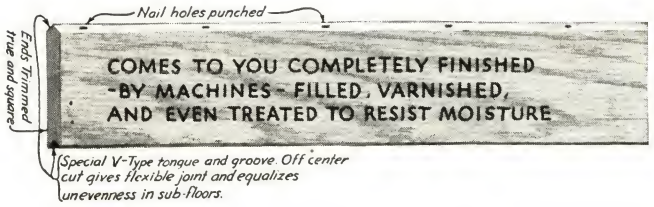
THE CROMAR CO.

WILLIAMSPORT, PA.

Description

Cromar Factory Finished Oak Flooring—now in the thirteenth year of manufacture—is completely finished at the factory. It is milled, filled, varnished and treated to resist moisture—by *machines*. It has a tongue-and-groove of special design, as shown below and described on next page.





Grades, Sizes and Colors

Cromar Golden Brown Varnish Finish	Cromar Tobacco Brown Wax Finish
Plain or quarter sawed white oak	Plain white oak only
No. 1 or No. 2 Grades	No. 1 Grade only
1½ or 2-in. face width	2-in. face width only
⅜-in. thickness	⅜-in. thickness

Lengths—***No. 1 Grade***—Strips come in promiscuous lengths from 2 to 16 ft.

No. 2 Grade—Strips come in promiscuous lengths from 1 to 16 ft. Each length is separately crated (see following page). Lengths are approximately as follows:

No. 1 Grade	No. 2 Grade
15%— 2 to 4 ft. long	25%— 1 to 4 ft. long
30%— 4 to 8 ft. long	35%— 4 to 8 ft. long
35%— 8 to 12 ft. long	30%— 8 to 12 ft. long
20%—12 to 16 ft. long	10%—12 to 16 ft. long

Slight variation in these percentages is permissible.

Specifications for Laying Cromar Factory-Finished Oak Flooring

Note: The following specification covers the materials and laying of the finish floor only.

Finish Flooring—

(1) ***Preparation of Sub-floor***—All common or sub-floor surfaces in rooms or spaces that are to have "Cromar" flooring shall be carefully inspected before finish flooring is laid. The surface shall be brought to a true and level plane. The ends of each sub-floor board shall have a solid bearing on a joist and each board shall be securely nailed to every bearing with at least two 8d or 10d flat head nails.

(2) ***Flooring***—All finish flooring shall be "Cromar" Factory Finished Oak Flooring, manufactured by THE CROMAR CO., Williamsport, Pa., and shall be of the color, grade, face width and thickness specified below (or as shown on plans).

(3) Finish flooring in (state locations) shall be "Cromar Tobacco Brown Oak Flooring," No. 1 Grade, 2-in. face width, Plain Oak, ⅜ in. thick, finished on face with penetrating stain and hard drying wax. No filler or varnish shall be used in the finishing.

(4) Finish flooring in (state locations) shall be "Cromar Golden Brown Oak Flooring" (No. 1 or No. 2 Grade) (1½-in. or 2-in. face width) (Plain or Quartered Oak) ⅜ in. thick finished with one coat of paste filler forced into the pores of the wood under machine pressure and "Cromar" varnish.

Note: Retain Par. 3 or 4 or both as required. In Par. 4 select grade, etc., as desired.

(5) All thresholds shall be of the same kind, grade and finish of wood as that used for flooring.

(6) ***Laying Flooring***—Over all common or sub-flooring surfaces lay one thickness of moisture proof paper (Cromar brand or ..... brand) with all joints lapped not less than 1 in. and extending up on the base board or studding ½ in. or sufficient to be covered by moulding.

(7) Before laying flooring, space shall be "squared up" accurately.

(8) Unless sub-floors are laid diagonally, all flooring strips shall be laid in opposite direction to the boards of the sub-floor.

(9) Allow for any possible expansion of top floor by leaving as much space between base board and flooring, at two sides of room, as will be covered by moulding; but at the two ends of room (i.e. ends of Cromar strips) fit them snug against the base board.

(10) All end joints shall be staggered throughout the floor and, so far as possible, no end joints shall occur in front of door openings. Short lengths shall not be used in front of doors but shall be laid in closets and similar places when possible. Where necessary to cut strips, all end joints shall be made accurately, using fine cutting saw and mitre box.

(11) Each piece of flooring shall be well nailed with 15½-gauge, 1¼-in. cement coated wire nails. The first few strips in each room shall be nailed through each hole punched in the tongue. The remainder of the pieces shall be nailed through every other hole and close to the end of the joints. Further nail the first and last strips through surface close to base board so that moulding will cover nail holes.

(12) If two groove sides come together—as at doorways when strips have been reversed in adjoining rooms—drive nails on 12-in. centers through the lower lip of one grooved edge and fit Cromar slip tongue into groove, placing adjoining flooring strip tight against it.

Note: Where Cromar flooring is to be laid in old buildings the same specification given above can be followed if provision is made for the removal of the base mouldings and thresholds and resetting of same in a neat manner upon completion of the work.

Cromar Raw Materials

Lumber—West Virginia (Appalachian) white oak only. This slow growing timber better takes *and holds* a finish. The better grades of this medium textured oak are only used.

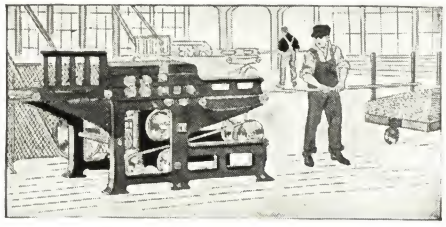
Filler—*Only Silex paste filler is used.*

Varnish—*This material is made specially* by one of America's best known and largest varnish makers. It costs more than the average commercial varnishes—is long in oil, hence elastic and long wearing.

Moisture Resistance—Several years of experimental work and chemical research have brought this to a high degree.

The Cromar Process

Lumber Drying—Improperly dried white oak checks, splits and warps. When scientifically cured, the opposite is true. All lumber going into Cromar Flooring is air dried for at least one year. It is then held in dry kilns of the most modern type until scientific tests prove the moisture content to be between 3% and 4%. This low degree of moisture would be unsafe and impractical were it not for the fact that Cromar Flooring is treated to resist moisture. From the kilns the lumber passes to a "tempering shed" to cool for an average of six days. This prevents shrinking after the material is worked.

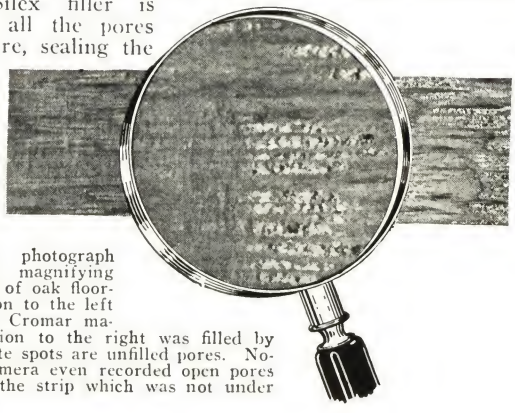


Special Cromar Machines

They not only make the tiring, trying hand methods unnecessary but they insure *uniformly* high quality and reduce costs as well

Milling—Yates American, high speed, disc-head milling machines are used. They produce a surface of satin smoothness. At these machines, operators do the manual work and the man in charge devotes the entire time to watchful care and constant testing of dimensions with metal gauges.

Filling—Here begins a series of finishing operations with the ingenious Cromar machines—the only machines in the world, it is believed, that apply a cabinet finish to wood. First the putty-like Silex filler is forced into all the pores under pressure, sealing the



Difference Between Machine and Hand Filling

From actual photograph made through magnifying glass of a piece of oak flooring. The portion to the left was filled on a Cromar machine; the portion to the right was filled by hand. The white spots are unfilled pores. Notice that the camera even recorded open pores on the end of the strip which was not under the glass

pores and thus preventing the oil of the varnish, which is later applied, from entering the wood. When the varnish oil is taken up by the wood, only a brittle substance remains which ordinary traffic quickly flakes off. With Cromar, you cannot flake off the varnish even with a hammer, as a test of samples will demonstrate.

Varnishing—The machines for applying the varnish are unfailing in their precision. They cannot apply too much in spots or too little; they cannot tire, or forget, or become careless. Furthermore, because powerful machines do the spreading, a larger amount of solids can be carried in the varnish—resulting of course in a much more durable finish. A varnished strip of Cromar is of an excellence which man has never yet equalled by hand or hardwood floors.

Machines which are similar in design to the varnishing machines apply the moisture-resisting compound.

Grading and Packing

Specially trained inspectors trim the flooring strips and grade them for defects in the finish as well as the wood. Finishing flaws caused by knot-holes, bad ends, etc., are cut into waste.

The crating of Cromar strips protects them to such extent that in ten years the company *has made but one claim upon carriers for damage in transit.* Strips are packed face to face, 18 strips of 2-in. width, 24 strips of 1½-in. width to a bundle. Bundles are clamped in a press, edges protected with crating and bound with strap iron to prevent rubbing. Each length is packed separately. Grade and quantity are stenciled on each bundle, the No. 1 with Black Ink, and No. 2 with Red Ink.



Grading and Packing Cromar Strips

Special Tongue-and-Groove

The improved V-joint type of tongue-and-groove fits quickly and snugly without "blocking." Each nail-hole is punched in the tongue. The flat, beveled edge of the tongue permits rapid nailing with no necessity whatever for "setting" the heads and with no sharp edges to show hammer marks. Specially trained floorlayers are not needed; carpenters complete the installation. An ingenious off-center cut has been provided so that the tongue does not fit into the groove on a "dead center." This gives a flexible joint and equalizes unevenness in sub-floors.

Cromar lays satisfactorily over a rougher subfloor than the average tongue-and-groove or square-edge flooring.

When Cromar Flooring is nailed down, a shallow surface seam is formed between the strips. This seam is obtained by slightly rounding both top edges of the strips at the milling machine. It is 1/40 in. deep and *finished exactly like the face.* This provides a thoroughly and easily cleanable surface.

Cost

Naturally, the initial cost of Cromar is greater than that of unfinished oak flooring. But, due to all finishing being done by high speed machinery, it will be found that the *cost of the completed floor* is actually less, providing of course that a fair price for installing is made.

The price for *nailing* Cromar should certainly be no higher than asked for the nailing of unfinished flooring, since Cromar can be nailed *at least* as fast as any other hardwood flooring.

Cromar Offers You a Choice of Two Beautiful Colors

The high lustre and the brighter beauty of Golden-Brown Cromar makes this type of hardwood flooring still the more popular. But some little time ago a demand for a darker colored flooring sprang up, inspired by leaders among architects and interior decorators. And to meet this demand, THE CROMAR CO. developed its Tobacco-Brown finish. Golden-Brown Cromar has a varnish finish, while Tobacco-Brown Cromar has a wax finish without varnish.

The beauty of Tobacco-Brown Cromar flooring is more restrained. Dark floors have a quiet charm that lends greater warmth to the tone of a room and, to some at least, conveys a feeling of a quality more sound and substantial. The background of history and tradition favors the darker floor. Much of the charm of Europe's old manors and of the stately mansions of our own earlier periods, rests in the impressive beauty of their oak floors, dark-stained and waxed. Certainly there is a practical value in giving floors a darker tone, since it is a surer foundation for the colors of any decorative scheme. And the separate strips of the darker flooring, joined one to the other, blend more easily regardless of the varying character of the grain.



Cromar Flooring Blends Well Regardless of Varying Character of the Grain

To achieve the rich beauty of those deep-brown floors which have borne the tread of many generations, we had to adopt the same principle of finishing oak strips that was then in vogue. Hence, in making Cromar Tobacco-Brown Flooring, we had to apply a deep-penetrating stain and a special, heavy-bodied cake-wax. This wax is forced deep into the pores of the wood, by machines, under extreme pressure, and at a temperature of 250 degrees.

The result is that the finish actually becomes a part of the wood itself! And hence the wearing qualities of this darker finish are most unusual.

Rules for Calculating Quantity

To the square footage *to be covered* add one-fourth (if using 2-in. face width) to obtain *strip measure.* For 1½-in. width add one-third. To either total add 2% for carpenter's cutting waste.

Specifications should always state whether *square measure* or *strip measure* figures are given.

Cromar Dealers—Literature and Samples

Not all retail lumber dealers stock Cromar, but any of them can obtain immediate shipment of flooring, finished base moulding, insulating paper and cement coated wire nails (15½ gauge x 1¼ in. long) from key dealers or from factory.

Your request will bring literature, samples and names of nearby dealers who can show you Cromar floors in use.

Patent Protection

Product, finishing machines, bundle, bundling machines and other devices fully covered by patents.

ESTABLISHED 1894

CINCINNATI FLOOR COMPANY

Designers and Builders of Fine Hardwood Floors

Eastern and Linwood Avenues
CINCINNATI, OHIO

Empire Building
CLEVELAND, OHIO

Sample Display, Building Arts Exhibit, Terminal Group, Cleveland, Ohio

SPECIALISTS IN HARDWOOD FLOORING LAID OVER WOOD OR CEMENT SUBBASES

Brown Oak

Design and Parquetry Flooring, Period and Plank Flooring, Antique Reproductions.

"PLANKWOOD" Flooring—plank flooring laid in mastic on concrete.

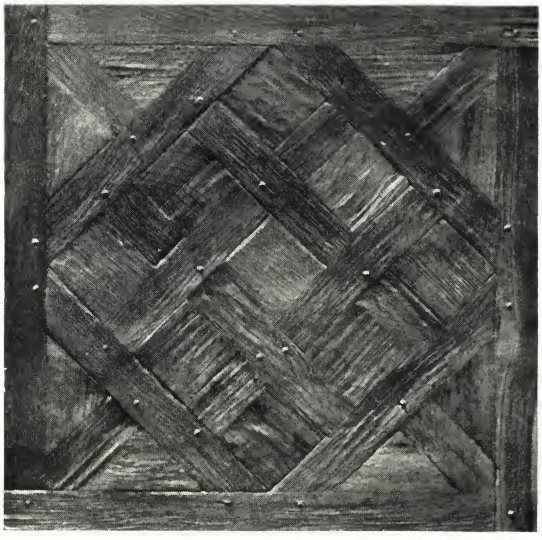
"PATTERNWOOD" Flooring—design flooring laid in mastic on concrete.

"SHOPWOOD" Flooring—industrial flooring laid in mastic on concrete.

Also Imported Antique Flooring.

Service

Our service includes the producing and laying of the above types of floors. We maintain an organization long experienced in designing and building fine hardwood floors. This organization we place at the disposal of the architects to consult with on flooring problems. Our central location enables us to provide a prompt and reliable service for architects and contractors throughout the Middle West.



Parquetry Reproduction

A reproduction in "brown oak" of an old French parquetry floor in the Fontainebleau pattern

The Company

The Company has been established thirty-eight years. Those associated with it have an experience in making and laying hardwood floors extending over this period. Many of our employees and workmen have more than thirty years' experience.

Woods

We build floors of any known cabinet wood suitable for the purpose. We urge, however, the use of woods rich in natural color which do not require staining. Hardwood floors of permanent color offer unbelievable economies in maintenance. "Brown Maple" (selected heartwood) and "Weathered Oak" (color treated in manufacture) are two economical woods of permanent color. Others such as "English Brown Oak" (American reproduction), sometimes called "Gothic Oak," and walnut can be had at reasonable prices. Teak, mahogany and kokowood likewise have this advantage.

Construction and Treatment

We are able to lay any of our floors directly over concrete in mastic or upon wood subfloors.

We make a specialty of reproducing old floors (see illustrations). Through artistic hand-tooling and finishing these reproductions can scarcely be distinguished from the originals.

"Plankwood" Flooring

"PLANKWOOD" Flooring is a random width plank flooring for laying in "Sealtite" mastic over concrete subbases. Furnished $\frac{13}{16}$ in. thick, solid or veneered in random widths and random lengths. "Plankwood" is secured at regular intervals to the concrete with patented expansion screws over which occur endwood pegs. Furnished in any wood, antiqued, or finished smooth, "Plankwood" is especially suitable for use in residential construction.



Plank Flooring in English Brown Oak

A late style of plank floor hand-tooled to produce a wormwood surface and introducing the hand wrought nail instead of the conventional peg

"Patternwood" Flooring

"PATTERNWOOD" Flooring is a design flooring for laying in "Sealtite" mastic over concrete subbases. Of single strip construction, each piece being laid individually, it provides a floor least affected by the swelling and shrinking of the wood. Furnished principally in solid oak and maple $\frac{13}{16}$ in. thick, $2\frac{1}{4}$ ins. wide, full-backed for mastic application. Special sizes, designs and woods will be furnished if required. For a decorative floor, where economy and durability are desirable in a fireproof construction, we recommend "Patternwood." Adapted especially for apartments, residences, schools, institutional and public buildings.

"Shopwood" Flooring

"SHOPWOOD" Flooring is a heavy duty industrial maple flooring for laying in "Sealtite" mastic over concrete subbases. Furnished $1\frac{3}{4}$ or $1\frac{1}{16}$ ins. thick, $2\frac{1}{4}$ ins. wide and 9 ins. long, of northern maple, laid in a herringbone design. This everlasting floor is able to withstand any amount of abuse. Economical, easily cleaned, non-fatiguing, this floor will outlast a building.



Herringbone Design in American Walnut

We furnish similar designs in "Patternwood" for mastic application at nominal cost.

Specifications and Guarantee

Every installation of this Company carries our unqualified guarantee. Through undivided responsibility in producing and laying hardwood floors, we provide a guarantee of greatest dependability. Detailed specifications and information sent upon request.

Note: An unlimited list of references and installations will be provided upon inquiry.

HARDWOOD PRODUCTS CORPORATION

Laminated (Three Ply) Hardwood Flooring

MAIN OFFICE AND FACTORY
NEENAH, WISCONSIN

SALES OFFICES

NEW YORK, N. Y.
1021—101 Park Avenue
Telephone: Ashland 7594

CHICAGO, ILL.
1310—333 No. Michigan Ave.
Telephone: State 6088

CLEVELAND, OHIO
416 Midland Bank Bldg.
Telephone: Main 1465

SAN FRANCISCO, CAL.
3045 19th Street
Telephone: Valencia 2241

THE COMPANY—ITS FACILITIES

The Company—Located in the heart of the hardwood country, the company has been continuously in business for twenty (20) years specializing in the manufacture of high quality veneered products.

Responsibility—Our rating in R. G. Dun's and Bradstreet's is over $1,000,000—first grade of credit.

Facilities—We operate one of the largest plants in the country devoted to the manufacture of hardwood veneered products equipped with the most modern dry-kilns and equipment.

Other Products—We also make the highest quality veneered hardwood doors (see Sweet's Manufacturers' Index for catalogue).

LAMINATED (THREE PLY) HARDWOOD FLOORING

Construction

Made of thoroughly kiln dried hardwood stock built up three (3) ply with the grain of the center ply set at right angles to bottom and selected face veneers. The flooring is accurately tongued and grooved on all four (4) edges and carefully sanded to a uniform thickness ready for finish.

Advantages

(1) More beautiful selected grain effects can be produced especially in the wider plank flooring.

(2) Elimination of shrinkage, swelling and warpage inherent in ordinary solid strip flooring.

(3) Labor saved in the nailing of the larger units as compared with narrow strips.

(4) Labor saved in the usual scraping and sanding.

Patterns or Types

Plank Flooring—Random widths and lengths showing artificial crack lines, plugs and keys, reminiscent of the days when the size of a plank was determined primarily by the tree from which it was hewn.

Period Patterns—Fontainebleau, herringbone or any of the standard or special period or modern designs.

Thicknesses

Plain or Period Patterns—$\frac{13}{16}$ in. thick with net $\frac{3}{16}$ in. face veneer; $\frac{7}{8}$ in. thick with net $\frac{1}{4}$ in. face veneer.

Woods

Plain or Quartered White Oak; Plain Red Oak; Walnut; Teak and other accepted flooring woods.

Fuming

Plain or Quartered White Oak can be furnished fumed where required.

Fireproofing

We have a complete plant for fully fireproofing wood which will meet the rigid requirements of the building code of the City of New York. Where required, our flooring can be fireproofed.



Plank Flooring—Random Widths and Lengths



Fontainebleau Pattern—Quartered White Oak

ESTABLISHED 1899

HASBROUCK FLOORING COMPANY

Parquetry and Wood Block Flooring, Cork Tiling

MAIN OFFICE, MILL AND YARD

TELEPHONE
RAvenswood 8-2682, 8-4289

Thirty-fifth Avenue and Thirty-sixth Street
LONG ISLAND CITY, N. Y.

SHOWROOM: 101 Park Avenue, MANHATTAN

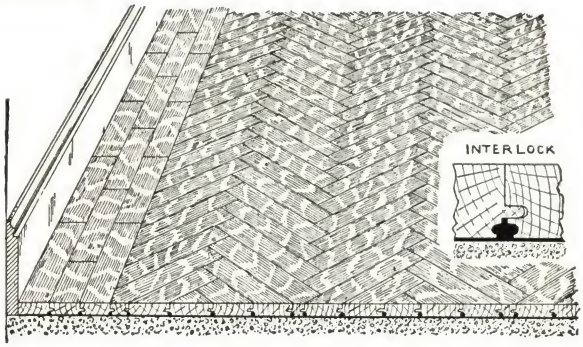
Products

Wood Block Flooring; Period and Wide Plank Flooring; Parquetry; Compressed Cork Tiling.

Wood Block Flooring

Hasbrouck wood block flooring consists of tongued and grooved blocks so designed as to interlock at both ends and sides, insuring permanently level and even floors. These blocks are set in an asphaltic composition on a cement base. The sides are grooved at the bottom edge to form a key for the mastic, which binds the whole so as to form a solid permanent floor surface.

Hasbrouck wood blocks are made in two thicknesses, ⅞ and 1⅛ in. and can be furnished in teak, walnut, oak, maple and Georgia comb grained pine. For private residences and where the best class of floor is desired, we recommend that teak, walnut or oak be used and that maple or pine be used in public buildings and institutions.



Hasbrouck Wood Block Flooring

These blocks can be laid in a great variety of designs. They should not be confused with pine end wood blocks set on a sand or concrete base.

Advantages—***Fireproof***—There are no air spaces under this flooring to feed flames.

Sanitary—No cracks or unevenness to hold filth or germs.

Durable—It will outwear marble.

Dampproof—Asphaltic composition effectually prevents all passage of moisture and prevents *dry rot.*

Noiseless—The composition fills up all hollow spaces and acts as a cushion, making floor soft and easy to the feet, unlike tile, marble, terrazzo or cement.

Saves Floor Height—Cement foundation may be carried just high enough to cover conduits, pipes, etc., saving the thickness of sleepers and underfloor.

Specifications for Hasbrouck Wood Block Flooring

On the cement foundation of rooms specified, furnish and lay a wood block floor of Hasbrouck Flooring Company's manufacture, or equal, to be approved by architect and to conform to the following requirements:

Blocks to be ⅞ or 1⅛ in. x 2 or 2½ in. x 12 or 14 in. of (wood specified) milled in such manner as to interlock on sides and ends with solid tongues and grooved at bottom edges to form key for mastic. Blocks to be laid in basket or herringbone design with strip borders formed by laying the blocks end to end.

Mastic to be a pure asphaltic composition, sample of which shall be submitted to architect for his approval.

These floors shall not be laid until the foundations are thoroughly seasoned and dried out, when the foundation will receive a coat of special preparation to act as a binder. On this the wood blocks are to be set in the mastic, which must be heated to such temperature as to allow it to flow freely, and fill all grooves at bottom of blocks.

Floors to be traversed, smoothed and sandpapered to smooth even surface ready for painter's finish.

Contractor shall be required to give a written five-year guarantee that the floor will not become detached or loose from the foundation, or show any other defects attributable to imperfect materials or workmanship, and to make good any such defects which may develop; also to repair any damages to other work by reason of such repair.

Period and Wide Plank Flooring

We make a specialty of these floors, both veneered and solid. Any special pattern or design desired by the architect to carry out the scheme of decoration can be furnished, as all floors laid by us are made from the rough lumber at our plant in Long Island City and under our supervision. Our men, both in mill and outside, are trained in the making and laying of high class floors, many of them having been in our employ over twenty-five years.

Besides our domestic hardwoods, we use, in the manufacture of our floors, all of the foreign woods that are suitable for flooring: teak, French, Italian and Circasian walnut, English oak, mahogany, ebony, and holly are a few of the woods we use in the reproduction of the Old English, French and Flemish floors.

Early Colonial or wide board flooring in oak, pine, or maple is subjected to a process by which the wood is darkened, giving the antique or aged effect to match old interiors, and greatly favored by architects and decorators.

This is done at our plant and the wood is stained through its thickness, not merely on the surface. This color cannot be produced by surface staining.

Cork Tiling

Pure cork compressed to great density and baked. Particularly suitable where a sanitary, noiseless flooring is desired.

This tiling may be laid on a wood or cement foundation. In either case they are set in our special cementing compound which holds the tile firmly in place and seals the joints, making a waterproof and acidproof floor when treated with our tile finish. The tiles are made in colors to give designs of a very pleasing effect.

A sanitary cove and base can be furnished for use with these floors.

Stock sizes of cork tiling are ½ in. thick, by 4½x4½, 6x6, 9x9, 12x12, 3x6, 4½x9, 6x12, 9x18, 12x18 and 12x24 in.; but any intermediate size can be cut to order at small additional cost, and it is possible to work out any parquetry or marble design with this material.

References and Installations

List of references and installations furnished upon application.

A. J. LEHMER, INC.

Designers and Manufacturers of Hardwood Floors

Main Office and Eastern Sales Office
16 East 43rd Street, NEW YORK, N. Y.

Factory and Western Sales Office
Yale and McKinley Avenues, COLUMBUS, OHIO

ACCREDITED AGENCIES IN PRINCIPAL CITIES

Products

COLONIAL STYLE PLANKS (wide boards).
REPRODUCED FRENCH PARQUETRY and PARQUETRY DESIGNS.
MODERN and MODERNISTIC DESIGNS executed in all Domestic and Imported Cabinet Woods in solid and veneered (3-ply) stock. Made for nailing or for laying in mastic.
Also Squash Courts furnished installed complete.

Hardwood Floors BY LEHMER

Service

All matters pertaining to wood flooring work are handled by our own organization. This comprises not only the manufacture and sale of complete lines of the desired flooring item, but also the full installation, including material, labor, etc.

When desired, layout drawings are furnished showing the exact relationship of the floor design to the room or space where it is to be used. The exactness of our execution of these layout drawings is reflected by the fact that over 75% of our total manufacture is for work where such drawings have been made.

Experience

Importers, designers, manufacturers and contractors of the better class of wood flooring for many years. The president, Mr. A. J. Lehmer, was associated with G. W. Koch & Son for thirty-five years. We have designed, manufactured and installed wood floors in some of the finest homes, churches, clubs, office and art buildings, etc., throughout the country.

Literature

Illustrated catalogue and leaflets, detailing full information and suggested specifications, furnished promptly upon request.

Description of Various Woods

Appalachian White Oak—The oak which we use for flooring, either in solid or veneered planking or special parquetry designs, comes to our factory from the Appalachian District. It is used by us because of its superior texture and color.

Teakwood—A hard weather-resisting wood, India, Burmah and Siam furnishing the best character. Used extensively for fine floors in veneered planks or parquet designs.

Lega Wood—A rich, brown colored wood with a reddish cast quite similar to Koko Wood and used extensively by ourselves in plank and special design floors. This wood comes from the Madagascar Island off the Coast of Africa.

American Walnut—The foremost cabinet wood of North America, used exclusively in solid and veneered for trim, paneling and floors. Runs from light grayish brown to a dark chocolate brown, making a very effective plank floor.

Pine (Curly)—A wood which we have made up and laid very extensively in random plank designs. It has a very beautiful figure although the supply is rather limited.

Mahogany—Considered the foremost cabinet wood of the world, originating in Mexico, Central America, West Indies and the West Coast of Africa. Makes up very well in a veneered plank floor.

Koko Wood—A rich, brown colored wood, very adaptable for panelings and extensively used by ourselves for floors in either plank or parquet designs. The supply is somewhat limited but on account of its rich brown color it is greatly desired. The best variety comes from the Andaman Islands off the Coast of India.

Italian, Turkish and Circassian Walnut—Three walnuts resembling one another, the Italian possibly being more solid in color, running grayish, rather finer in grain than American walnut. The Turkish and Circassian have a variation of color giving a beautiful mottled effect. Used along the same lines as American Walnut.

Tiger Wood—A light colored cabinet wood similar in texture to African Mahogany, coming from the West Coast of Africa. Has been used for flooring principally made up in veneered parquet design. Makes a very handsome floor on account of its light yellowish gray color with contrasting darker lines.

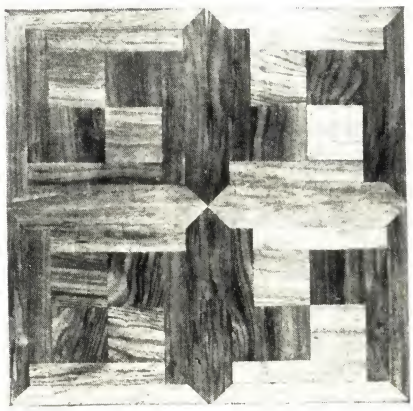
Koa Wood—Sometimes called "Hawaiian Mahogany. Mild, easy working wood, brown in color, sometimes showing color figure and cross bar.

Mahajua Wood—A beautiful cabinet wood of Cuba, grayish green in color with great tensile strength. Effective in a design floor. Limited in quantity.

Ipil Wood—A hard grained yellow wood from the Philippine Islands, being imported to a limited degree in this country. Rather too hard for a cabinet wood; used locally for excellent flooring.

Yalapa Wood—A hard, yellowish colored wood coming from India, too hard for ordinary cabinet work but excellent wood for flooring. The supply is rather limited.

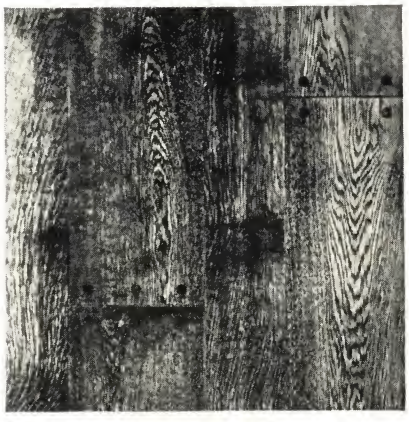
The above woods, particularly the foreign woods, are either imported direct or through an accredited representative, and fabricated in random plank or parquetry designs in our own factory, under our own direct supervision



Design No. 62-P



Design No. 50-K



Design No. 10-F

MASONITE CORPORATION

Manufacturers of Masonite Cushioned Flooring
111 West Washington Street
CHICAGO, ILLINOIS

INTRODUCTION

Masonite Cushioned Flooring

Masonite Cushioned Flooring, an all wood fibre, attractive, wear-resisting, resilient floor covering, unique in physical characteristics, is made possible through the recent development by the Research and Development Department of the MASONITE CORPORATION, of Tempered Presdwood, which forms the exposed or wearing surface of this laminated floor square.

The new material, Tempered Presdwood, should in no way be confused with the previously made material, "Masonite Presdwood," still admirably adapted to many uses in building and other industries.

Tempered Presdwood is much denser, less absorptive, and of considerably greater structural strength than Presdwood. To the long and favorably known unique qualities of Presdwood have been added almost unbelievable new qualities of tough, wear-resisting ruggedness and strength.

The Company

The MASONITE CORPORATION has been continuously in business since 1925. All of its products, "Masonite Insulation," "Quartrboard," "Presdwood," the new "Tempered Presdwood," and "Masonite Cushioned Flooring," are produced by the "Mason Process" from fresh, clean wood fibre.

Distribution

All of the products of the MASONITE CORPORATION are sold nationally through the better retail lumber merchants.

Made Entirely of Wood

Masonite Cushioned Flooring is a laminated, three-ply square, made from Tempered Presdwood, and Masonite Quartrboard. Both of these products are made entirely of wood fibre by the Mason Process (patented).

No binders are added, and no chemicals used in manufacture.

All Masonite products are made of the same material, and by the same method. The density and structural strength of the boards depend upon the quantity of fibre, and amount of pressure used.

Producing the Fibres

Clean wood chips are exploded under high steam pressure. This first stage in the manufacturing process produces long cellulose fibres with their original strength unimpaired, and the lignins or natural cementing constituent of the wood retained.

Felting

These clean long fibres are next thoroughly interlaced or felted together. The uncompressed felted sheet is approximately 2¼ in. thick. The finished Presdwood used in the flooring is ⅛ in. thick.

Tempering the Presdwood

The compressed or finished Presdwood boards are treated or tempered by a newly developed process, which adds very greatly to their density, non-absorption, structural strength and toughness. The result is a board of absolute uniformity in thickness and physical properties.

Fabrication

Two Tempered Presdwood boards (polished surface exposed) are glued with a special high grade waterproof glue in glue presses to either side of a single thickness of Quartrboard, thus forming a three-ply laminated board ½ in. thick, with a resilient insulative center, faced on both sides with smooth, dense, moisture resistive Tempered Presdwood.

Milling the Square

The three-ply laminated boards are next accurately milled into the various square sizes or shapes. Two adjacent sides of each square are milled to receive a Tempered Presdwood spline, forming a tongue. The splines are glued into the groove with a special waterproof glue, in such manner that they are permanently attached to the tile. The two remaining adjacent sides are grooved to receive the Presdwood tongues. Thus, the squares, when laid, are interlocked or matched together.

The exposed surface edges of the Tempered Presdwood are slightly beveled. Either face of the square may be used as the wearing or exposed surface.

PHYSICAL CHARACTERISTICS—ADVANTAGES

Adaptability

Masonite Cushioned Flooring is adaptable to all classes of building where a resilient floor is appropriate. It is particularly adapted to residences, apartments, offices, schools, stores, churches and public buildings where a rich, neutral tone floor covering of fine appearance, long life, low maintenance cost is appreciated.

Tile Sizes and Thicknesses

Masonite Cushioned Flooring is made in squares 6x6 in., 9x9 in. and 12x12 in.; also in strips 3x47 in., 6x47 in. and 12x47 in. The 3x47-in., 6x47-in. and 12x47-in. strips may also be used as a border. The tongue and groove squares and borders are accurately milled to true shape with matched edges and are uniformly ½ in. thick.

Resilient—Quiet

The center Quartrboard thickness of the laminated construction acts as a resilient cushion which absorbs all shock of impact and assures quiet resilience. It is a warm, comfortable floor under foot.

Tough, Dentless Wearing Surface

The Tempered Presdwood wearing surface is dense and tough with unusual abrasive-wear-resisting qualities. It is much harder than natural wood of which it is wholly made. The squares, while surprisingly resilient under foot, do not surface-dent under furniture loads—no need for special casters or glass glides.

No Expansion or Contraction—Non-absorptive

The squares are non-absorptive, consequently atmospheric changes have little or no effect on them. The material is grainless and inert. They do not expand or contract under even the most adverse conditions. Tempered Presdwood which forms the wearing surface is successfully used as concrete form lining subject to constant contact with wet concrete—so used the boards are used over and over again—they do not warp, buckle, shrink or swell.

Color—Appearance

The squares are made in two tones of brown, one dark and the other medium light. The general appearance and color resemble natural walnut in tone, with a medium burl surface. Both sides of the squares are identical, except one side is in dark tone and the reverse in a light tone. Either side, depending on the color combination and contrast desired, may be laid exposed.

Easily and Quickly Laid

Masonite Cushioned Flooring is easily and quickly laid over either a concrete or wood sub-floor by the average good floor laying mechanic. It may be cemented to concrete, or cemented or nailed to the wood sub-floors.

Finish

The flooring when laid is finished, except for damp mopping in preparation of the waxing or any other type of surface finishes or polishes. Masonite Cushioned Flooring should never be sanded.

Maintenance

Masonite Cushioned Flooring is relatively impervious to acids or acid fumes. It should not be exposed to strong alkalis or caustics.

These floors are maintained in good condition and appearance with relatively low upkeep and maintenance cost.

Cleaning

Masonite Cushioned Flooring may be damp mopped with any neutral cleaning agent. Care should be taken not to flood the floor, as excessive water has a deteriorating effect on the adhesives or cements. Alkaline and caustic soaps, cleaning mixtures and powders should not be used.

The following materials made by the following manufacturers have been tested and approved:

Shine-All—Hillyard Chemical Company, St. Joseph, Mo.

Lino-Shine—George L. Williams Co., Cleveland, Ohio.

Briten-All—Vestal Chemical Company, St. Louis, Mo.

Other cleaning agents than those mentioned above may be used satisfactorily, providing they are free from alkalis and caustics.

SUB-FLOOR PROVISIONS

Note: The following sub-floor provisions should be included under the proper specification divisions where and as they apply.

General

Whether Masonite Cushioned Floor Squares are laid over concrete or wood sub-floors, the surfaces shall be smooth and true, without projections or indentations. On new work the sub-floor level shall be finished ½ in. below the finished floor level to allow for the tile thickness.

Floors Below Grade—Waterproofing

All concrete floors below grade or resting directly on the earth shall be thoroughly waterproofed. The method selected shall suit the particular conditions encountered. Waterproofing shall in all cases be carried up all walls, piers, etc. back of base boards for a distance of at least 3 in.

Method No. 1—Apply a good grade of standard primer to the concrete surface, using not less than 1 gal. per 100 sq. ft. of surface.

Over the primer apply a mopping of asphalt or pitch having a melting point of approximately 200° F. Asphalt or pitch shall be applied hot in such a manner that the tile may be placed over it while hot.

Method No. 2—Prime the concrete surface as above specified in Method No. 1. Over the surface so prepared, lay a membrane waterproofing course, mopped on with hot asphalt or pitch. Over this the tile shall be laid in either hot asphalt or Elaterite Gilsonite Mastic.

Method No. 3—Over the waterproofing as above specified in Method No. 2, lay a topping of cement mortar (1 part of cement to three parts of clean sharp sand) 1½ in. thick with the surface troweled smooth and true.

Preparation of Sub-floors

Wood—

New Work—Sub-floor shall be kiln-dried, matched lumber, in widths not to exceed 3¼-in. face, carefully blind and face nailed to all bearing. Special care shall be taken that all springy boards, loose ends or joints, are securely nailed. The lumber shall be free from large or loose knots. All irregularities of surface shall be planed or sanded to a smooth, true and level surface.

Old Work—Old floors shall be thoroughly surface nailed to secure all springy boards, loose butts or joints. High joints or butts shall be scraped or planed smooth and even. All badly worn or decayed boards, and boards containing large knot holes or loose knots, shall be removed and replaced with new lumber.

Concrete—Concrete surfaces shall be trowelled and floated to a hard, smooth, even finish, free from waves, ridges, indentations and irregularities.

All concrete shall be absolutely clean and free from foreign material and thoroughly dry.

MASONITE CUSHIONED FLOORING—MASTER SPECIFICATIONS

Note: *Notes in italics are explanatory or advisory only and are not to be included in the specifications.*

Note: *Words or clauses in italics enclosed within brackets in the specification paragraphs are selective. Choose the word or clause which applies to the particular work. Where the word "specify" is contained in the paragraph (specify) include such words and clauses as are optional with the specification writer.*

Note: *This specification is written in the form of a "Master Specification." All clauses may or may not apply to the particular work. Choose and include those clauses which apply and eliminate those irrelevant.*

(1) Work Included

The following floor areas shall be included under this contract:

Note: *Here list and locate all floors to be covered with Masonite Cushioned Flooring.*

(2) Shop Drawings and Samples

(2a) Shop Drawings—Furnish in triplicate for the approval of the architect, shop drawings of work under this contract. Drawings shall show accurately the pattern or design, borders, tile size, jointing and color variations for each floor area to be covered.

(2b) Samples—File with the architect samples conforming with these specifications and the approved shop drawings.

(3) Sub-surface Provisions

(3a) Provision has been made under other specification divisions that all surfaces to receive Masonite Cushioned Flooring shall be constructed and finished in accordance with the recommendations as set forth by the MASONITE CORPORATION in their catalogue in SWEET'S ARCHITECTURAL CATALOGUES, Twenty-sixth Edition.

(3b) All concrete floors below grade or laid directly on the earth shall be waterproofed.

(4) Inspection and Cleaning

(4a) Before laying the Masonite Cushioned Flooring, this contractor shall thoroughly inspect the surfaces to be covered, make tests, if necessary, to assure absence of moisture and notify the architect promptly (preferably in writing) of any defects. Failure in this respect shall be construed as acceptance of the sub-floors as found and full responsibility for the ultimate condition of the finished work.

(4b) Thoroughly clean all sub-surfaces of dust or other foreign matter before laying the finished flooring.

(5) Materials

(5a) Flooring—Masonite Cushioned Flooring as manufactured by the MASONITE CORPORATION, 111 West Washington Street, Chicago Ill.

Squares and borders shall be ½ in. thick with matched edges of size and disposition as shown on the approved shop drawings.

(5b) Quartrboard—Masonite Quartrboard.

Note: *Often required over old concrete to provide a level true surface to receive the finished floor tile. See paragraph (6a).*

(5c) Cement—Cement for laying Masonite Cushioned Flooring shall be *(specify)*.

Note: *The following cements have proven satisfactory:*

(a) Casco No. 7310—Casein Mfg. Co. of America, Inc., 205 E. 42nd St., New York, N. Y. (a cold water casein glue).

(b) Armstrong's Linoleum Cement—Armstrong Cork Co., Lancaster, Pa. (Spirit Cement).

(c) Sealex Linoleum Cement—Congoleum Nairn, Inc., Kearney, New Jersey (Spirit Cement).

(d) Ohmlac No. 18473-c—Ohmlac Paint & Refining Co., Marquette Bldg., Chicago, Ill. (Elaterite Gilsonite Mastic).

(e) Amtico—Puritan Rubber Mfg. Co., Trenton, N. J. (A spirit cement).

Note: *See also "Floors Below Grade—Waterproofing," page 2. Tile in Method No. 1 are laid in hot asphalt or pitch; tile in Method No. 2 are laid in either hot asphalt or Elaterite Gilsonite Mastic.*

(5d) Nails—2 penny finishing nails, 1 in. long.

(5e) Finish—Finish for Masonite Cushioned Flooring shall be *(specify)*.

Note: *The following floor finishes are satisfactory:*

(a) Non-slip Floor Wax (Any high grade make).

(b) O-Cedar Oil—This treatment will give a long wearing floor, without luster.

(c) Rubber-Var—Continental Car-Na-Var Corp., Brazil, Indiana.

(6) Laying Masonite Cushioned Flooring

(6a) Preparation (old concrete)—Over areas of old concrete badly pitted and too uneven to assure perfect results with the finished floor covering, lay Quartrboard (48 in. x 12 ft.) cemented down to the surface with end joints in adjacent rows staggered or broken and joints carefully butted in moderate contact.

(6b) General Procedure—

(6b1) On existing work, remove all base shoe mould, door thresholds and doors.

(6b2) Carefully check the actual room dimensions with the tile pattern or design as detailed on the approved shop drawings. Determine the dimensions of *(fractional parts of squares) (or) (borders)* required to fill out the full design dimensions. After dimensions of *(fractional parts of squares) (or) (borders)* have been determined upon for symmetrical distribution, allow this distance from the wall and secure a template strip, straight and true to line, parallel with this line. Place a similar strip to form a corner along one adjacent wall. Starting at the corner thus formed, accurately lay one line of squares, butted against the strip. The remaining squares shall then be fitted into place and tapped up to give a snug but not a tight fit. Use a square as a tapping block to avoid bruising the tongue or groove. After the field or body of the floor has been laid, remove the wood template strips and install the *(fractional) (or) (border)* squares accurately cut to fit.

(6c) Nailing—Use a ⅛ in. thick template strip. Set squares with groove side away from strip. Toe nail into the groove. Nails shall be spaced not to exceed 4 in. o.c. driven until they project approximately ¼ in. Drive flush with a nail set. Squares shall have not less than two nails to each groove.

Note: *Nailing may be used over wood sub-floors.*

(6d)—Cementing—

(6d1) Use a 1x2 in. template strip. Set squares with tongue side away from strip. Flooring shall be cemented to the sub-floor. Apply only sufficient adhesive to lay three or four squares before placing the flooring. Approximately *(two) (four) (specify)* hours after flooring has been laid, roll the surface with a heavy roller. If any spots are discovered where firm contact has not been made between the tiles and the subfloor, apply weight with sand bags or similar weights until the cement has set. During the laying of the flooring carefully clean any cement from the surface immediately.

Note: *In the case of Casco the floor should be rolled in approximately two hours—with other materials in about four hours.*

(6d2) Where concrete floors below grade are waterproofed, the tile shall be laid in the hot waterproofing compound as this is applied.

Note: *Use in the case of Method No. 1—see page 2.*

(6d3) Where concrete floors below grade are waterproofed with a membrane waterproofing, the flooring shall be laid in *(hot asphalt) (Elaterite Gilsonite Mastic)*.

Note: *Use in the case of Method No. 2—see page 2.*

(7) Finishing

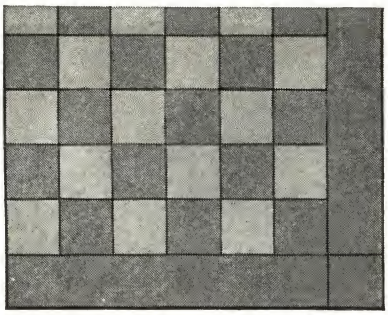
Note: *Here specify in detail the application of the particular finish selected and specified in paragraph (5e).*

(8) Protection

Adequately protect all finished floors with continuous coverings of non-staining building paper until completion of all work and final acceptance.

Note: *Masonite Cushioned Flooring should receive the same care and protection given any high grade wood flooring.*

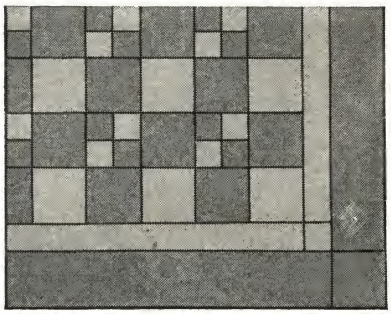
MASONITE CUSHIONED FLOORING—PATTERNS



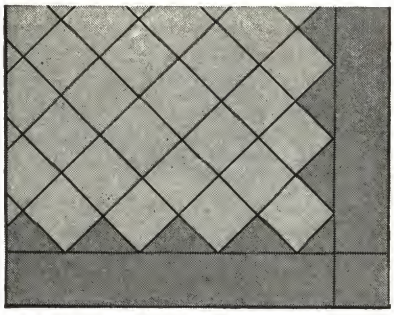
A plain pattern, using 12-in. tiles and border, alternating shades



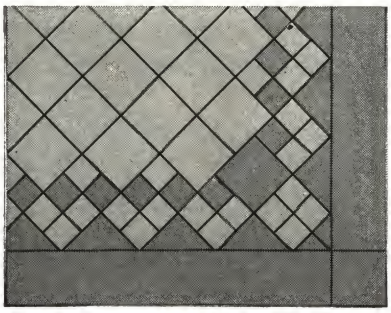
A three-bordered effect of 12-in. border and 12 and 6-in. tiles. Center of 9-in. tile



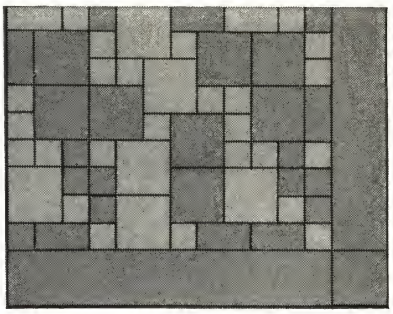
A light edging of 6-in. border inside the 12-in. border adds to the 6 and 12-in. tile center



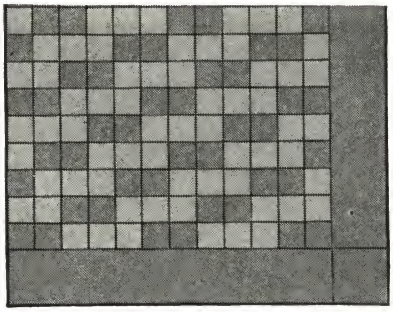
A diagonal design of 12-in. tiles and border; edging of half-tiles



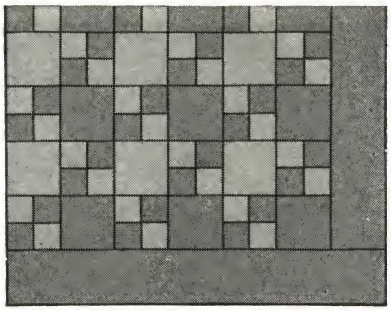
A diagonal variation. 12-in. border and 6 and 12-in. tiles, plain center



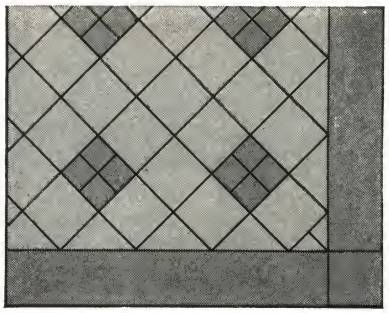
Random pattern. Border 12 in. (dark) 6 and 12-in. (light and dark) for center



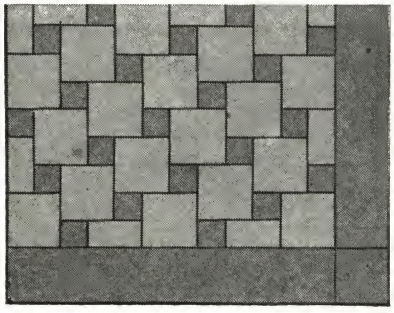
6-in. tiles and 12-in. border, utilizing the two shades to develop pattern



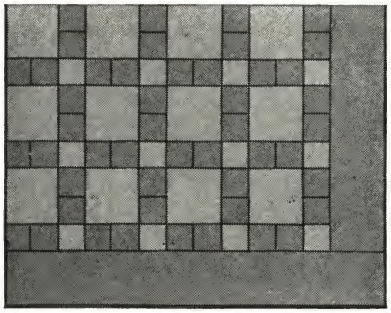
A pleasing combination of 6 and 12-in. tiles, with 12-in. border



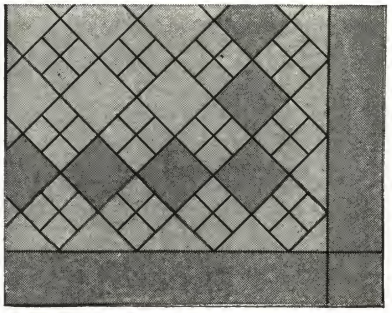
Another diagonal design. Light tiles 12-in.; dark tiles 6-in. 12-in. dark border



A pinwheel design, made of 6-in. tiles and 12-in. border (dark) and 12-in. tiles (light)



12-in. tile (light) is cornered by 6-in. tile (light) and bordered by 6-in. tiles (dark)



12-in. tiles, laid diamond form, achieve an interesting inner border

NATIONAL WOOD PRODUCTS CO.

Manufactures and Installs "Evanite" Wood Block Flooring

3300 Union Guardian Building
DETROIT, MICH.

What It Is

A wood block flooring of distinctive design, dowel-pinned and pen-o-treated to insure permanent beauty and service.

For grades, thicknesses and sizes, see page 3. For complete master specifications, see page 4.

EVANITE
WOOD BLOCK FLOORING
MADE IN OAK, MAPLE, BEECH AND BIRCH

Accessories

Cushionite Mastic Cement.
Pen-O-Treat Wood Preservative.
Wood Floor Fillers, Stains, Cleaners.
Fil-O-Wax and Pyroxylin Rock Finish.

RESOURCES AND FACILITIES
THE COMPANY BEHIND THE PRODUCT

The Company

The NATIONAL WOOD PRODUCTS Co. is a subsidiary of the Evans Loading Co., Inc., well known in the automotive industry as creators and manufacturers of automobile shipping devices.

The parent company owns vast tracts of timber in the south and west and operates mills, or woodworking plants, in:

Jackson, Mississippi	Detroit Michigan
Meridian, Mississippi	Howard City, Michigan
York, Alabama	Brighton, Michigan
Marshfield, Oregon	South Bend, Indiana

The NATIONAL WOOD PRODUCTS Co.'s organization includes executives with years of experience in wood technology, chemistry and practical woodworking.

Sales Organization

EVANITE Wood Block Flooring is available through distributers and accredited dealers located in the principal centers east of the Rockies.

Manufacturing and Installation Facilities

Our modern plant at Howard City, Michigan, has an annual production capacity of two million feet of flooring, assuring prompt delivery on any size order.

Installed Under Factory Supervision—Installations are made under the supervision of experienced factory representatives and are laid by approved floor laying contractors. Competent floor layers can install EVANITE flooring without difficulty, but the NATIONAL WOOD PRODUCTS Co. prefers to contract for the material completely installed and finished, thus centralizing responsibility.

SPECIAL ADVANTAGES AND FEATURES OF MANUFACTURE

Uses and Adaptability

Character, dignity and beauty are inherent qualities of EVANITE Wood Block Flooring. Add to these, low cost and long life and EVANITE is ideal not only for homes, but also:

Public buildings	Universities	Stores
Libraries	Hospitals	Ballrooms
Museums	Offices	Apartments
Schools	Banks	Industrial plants



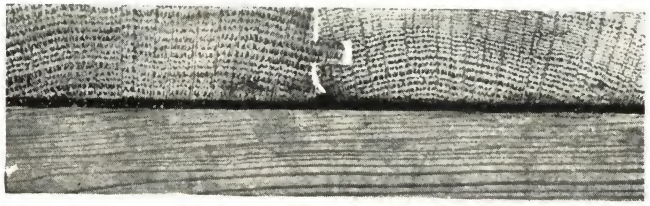
Note how the dowels run to the very edges of the wood cells and become a part of the tongues and grooves. They carry all of the weight and prevent splitting and checking



Manufacturing Process

EVANITE Flooring is specially milled from thoroughly air and kiln dried selected stock. (It is not fabricated from standard strip flooring stock.) Each block consists of accurately milled strips joined with tongue and groove matching and glued with a special waterproof casein glue.

Two ⅜-in. hardwood dowels are inserted entirely through each block, midway between the upper and lower surfaces, at right angles to the grain of the wood and the length of the strip units. The outer edges of



Cross Section Detail of the Special Interlocking Matched Joint Between Block Units

the finished blocks are machined to accurate dimension and true rectangular shape and provided with a special interlocking matched joint. Each block is machine-sanded to uniform standard thickness and is then immersed in Pen-O-Treat Transparent Wood Preservative which, when dried, not only makes the wood permanently moisture-repellent but adds materially to its wear-resistance.

Preservative Treatment

Thoroughly impregnated with Pen-O-Treat Wood Preservative, the wood is rendered permanently impervious to decomposition, fungus growth or insect attack. Of prime importance, the treatment provides protection against swelling or shrinking caused by atmospheric exposure in transit, in warehouse and after installation.

Pen-O-Treat adds materially to surface resistance to wear. It is transparent and in no way detracts from the natural beauty of the wood; and takes any wood floor finish (except water stains).

Laid in Mastic

EVANITE Floor Blocks are laid on *Cushionite Mastic* which retains its elasticity indefinitely. It tenaciously secures the flooring to the base, yet allows the floor units that degree of freedom to move slightly in any direction necessary to accommodate the usual contraction and expansion of the sub-floor.

Smooth Back Construction

The efficiency of any bonding agent varies directly with the areas in contact.

The full smooth back of EVANITE Floor Blocks affords uniformly even contact with the mastic on which they are laid. Thus a complete vacuum is created between the blocks and the mastic. No space is left for the accumulation of water, dampness or other materials that might eventually work into and under the floor surface with resultant damage to the floor.

Noise Abatement

Wood block flooring laid in *Cushionite* is quiet—it successfully eliminates at the source sound transmissions and vibrations resulting from traffic, the movement of chairs, etc.

Comfort

Wood block flooring provides a warmth and resilient comfort under foot not obtainable in any other flooring material of equal appearance, durability and cost.

Cost

The cost of EVANITE flooring is comparable with others of equal merit and much lower than many. The cost of maintenance is surprisingly low.

Excellent Appearance

Made of oak, birch, beech and maple, each in three grades, offering optional color harmony or contrast, together with a variety of standard sizes and shapes economically adaptable to a wide range of patterns in both field and border and susceptible to any wood floor treatment or finish. The designer has comprehensive latitude—a range of colorful, harmonious floor treatments appropriate for any class of work and of a character to suit the most discriminating.



Commercial Installation of Evanite Flooring in the Electrograph Building, Detroit

WESTON & ELLINGTON, Architects — H. G. CHRISTMAN & BURKE CO., General Contractor

Maple blocks 6 ins. wide, 12 ins. long laid in herringbone. A quiet, resilient yet wear-resisting floor

STOCK, GRADES AND SIZES

The selection of the kind and grade of floor with respect to its adaptability to the type, class and architectural detail of the particular building is of paramount importance. Good judgment in this respect will result in great economy and often increased artistic effect, with no lessening of permanent durability.

Stock Grades—EVANITE Wood Block Floors are made in Highland White, or Red Oak, Maple, Beech and Birch. All three grades of EVANITE flooring are equal so far as soundness is concerned. Production processes and treatment are the same.

(A) *First Grade "Clear"*—Specified when color contrasts are to be subdued and first cost is secondary.

(B) *Second Grade "Select"*—Preferred where a variety of eminently beautiful color contrasts are desirable.

(C) *Third Grade*—Chosen either when service is the first consideration or when sap stain and sound knots are preferred to emphasize strikingly beautiful irregular patterns and colors.

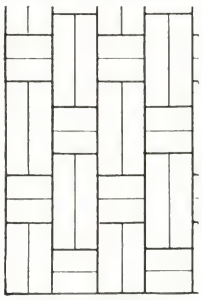
Thickness, Sizes—EVANITE Floor Blocks are sanded to a uniform thickness of $\frac{25}{32}$ in. (Stock $1\frac{1}{4}$-in. thick finished $1\frac{1}{16}$ in. can be furnished for installations subject to heavy trucking or traffic requirements.)

All grades of each wood are furnished in the standard thickness in the following standard sizes: 6x6, 6x12, 9x9, and 12x12 ins. All blocks are perfectly rectangular and sizes given are full face dimensions. No allowance need be made for waste.

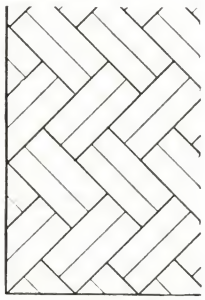
Patterns—Designs

A great variety of beautiful geometric or modernistic designs or patterns can be produced by combinations of these standard block sizes to harmonize with any architectural or decorative scheme. (Suggestions below.)

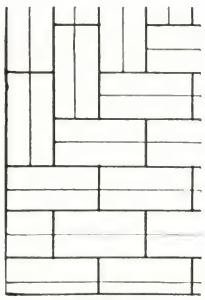
For heavy duty traffic, herringbone design is most efficient because each block is supported and held in position by six adjoining blocks. Trucks move diagonally across the grain with less wear than results from traffic along the grain or at right angles thereto.



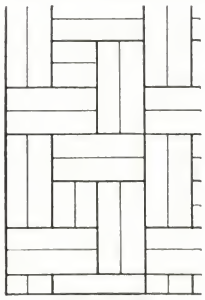
Pattern A



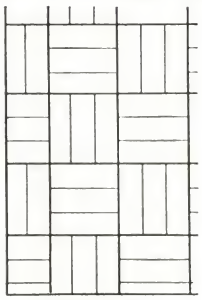
Pattern B



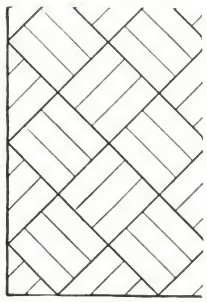
Pattern C



Pattern D



Pattern E



Pattern F

A TREATING PROCESS AND WOOD PRESERVATIVE

PEN-O-TREAT



Evanite First Grade Oak Flooring
An atmosphere of quiet dignity and restfulness is created in this physician's waiting room

Advantages

All EVANITE flooring is rendered moisture-repellent by Pen-O-Treat, a colorless, transparent preservative treatment.

The flooring is submerged (dipped) in the solution which impregnates the wood fiber and coats the cells, the chemical reaction resulting in deep and permanent penetration. The treatment renders the wood proof against the attack of decomposition, fungus growth and insects.

When the flooring is removed from the solution and exposed to the air the surface becomes oxidized and the wood is approximately 30% harder than before treatment. Pen-O-Treated floor blocks are less susceptible to splitting or checking than ordinary flooring.

Workability

The treatment in no way affects the workability of the product. Sawing, scraping, sanding and cleaning are accomplished with the same ease as untreated wood.

Finishing Over Pen-O-Treat

Pen-O-Treated wood is smooth. It is easier to sand and will take fillers and stains better than untreated wood, so long as the ingredients are not of a water base. Pen-O-Treat acts as a filler or base for filler and the stock does not require as much material for finishing as untreated wood. The finish may be shellac and wax, varnish or lacquer.

MASTER SPECIFICATIONS

Note: *Notes in italics are explanatory or advisory only and should not be included in the specifications.*

Note: *The scope of this specification covers conditions ordinarily encountered. Select and include only those clauses which apply to the particular work, supplemented by special conditions or topics not herein included.*

(1) Work Included

The work included under this heading shall be the furnishing *(and)* laying *(and finishing)* of wood block flooring in the following areas:

Note: *Here list the areas. If more than one variety of wood is required, designate each separately and the particular areas covered by each.*

(2) Pattern

(2a) The size and disposition of the wood blocks, including borders, shall be in strict accordance with the architect's detailed drawings.

Note: *Include where details are furnished; otherwise describe the pattern or patterns and the sizes of blocks required.*

(2b) The wood blocks shall be of sizes and disposition shown on EVANITE design *(specify)*.

Note: *Include where the design or pattern is selected from the Standard* EVANITE *suggestions given on opposite page.*

(3) Sub-floors or Base

The wood blocks shall be laid over a *(concrete) (wood)* sub-floor provided by others to receive the work under this contract.

This contractor shall examine all sub-floors and shall report to the architect, preferably in writing, any defects which will prevent the acceptable fulfillment of work under this contract. Failure to so report before commencement of work will be construed as acceptance of the sub-floors as provided and responsibility for the finished result.

Note: *The following should be provided under other divisions of the specifications:*

Concrete Sub-floors*—Concrete sub-floors shall be completed four to six weeks prior to the installation of the wood block finished floor. They shall be finished ⅞ in. below the finished floor grade and shall provide an unyielding, hard, smooth, clean, level surface. Special care shall be exercised to prevent the water content from puddling or rising to the surface which upon drying will leave a thin dust film to prevent a substantial, permanent bond between the mastic and the concrete base. Wood blocks are not to to be laid over a concrete base resting directly on the ground unless the slab is thoroughly and permanently waterproofed.*

Wood Sub-floors*—Wood sub-floors shall be constructed of thoroughly air-dried shiplap or tongued and grooved material, not to exceed 6 in. width, free from knotholes and tightly laid diagonally to the joists, and securely nailed to each bearing. All boards shall be neatly fitted at walls and shall provide a smooth surface, free from projections or depressions that will prevent uniform and continuous contact of the blocks with the sub-floor surface.*

(4) Samples

This contractor shall furnish for the architect's approval at least two (2) samples of each variety of wood block specified. All finished work shall reasonably conform with the accepted samples.

(5) Materials

(5a) Wood Block Flooring—Wood block flooring shall be EVANITE as manufactured by the NATIONAL WOOD PRODUCTS CO., Detroit, Michigan ($\frac{25}{32}$ *in.*) ($1\frac{1}{16}$ *in.*) thick.

Wood and grade, to conform to the schedule given in paragraph (2), shall be as follows:

Note: *Here list the varieties of wood and the grade of each.*

(5b) Mastic—Mastic shall be Cushionite as manufactured by the NATIONAL WOOD PRODUCTS CO.

(5c) Waterproof Paper—*(Specify brand).*

Note: *Used only over wood sub-floors.*

(6) Laying

(6a) The wood block flooring shall be laid by the NATIONAL WOOD PRODUCTS CO. through its approved local floor laying contractor.

(6b) Over the wood sub-floor lay a continuous layer of waterproof paper thoroughly secured in position. Joints shall be carefully butted and the surface left smooth and true to receive the mastic bed for the wood blocks.

Note: *Omit if concrete sub-base is provided.*

(6c) Over the sub-floor trowel a uniform thickness of Cushionite mastic. Only sufficient areas of mastic cushion shall be laid in advance of the laying of the wood block flooring as may be conveniently and immediately covered.

(6d) Over the mastic cushion lay the wood blocks, smooth face up, in accordance with the pattern *(detailed) (specified)*. Blocks shall be laid true to line with even, close joints in such a manner as to disturb the surface of the mastic cushion as little as possible.

(7) Sanding

Thoroughly machine-sand smooth the entire surface, except inaccessible areas, which shall be hand-scraped and sanded smooth.

(8) Protection

Immediately after sanding, floor should be filled or primed for finish specified.

(9) Finishing

Note: *If finish is included under this heading, here specify the application of the particular finish required.*



A Thin Coat of "Cushionite" Mastic Is Evenly Troweled Onto the Sub-floor

Two men with a helper can lay 1700 ft. per day

PLYWOOD PRODUCTS CO.

INCORPORATED

Manufacturers of Hardwood Flooring

2120 Woodland Avenue, LOUISVILLE, KY.

Ribac Construction

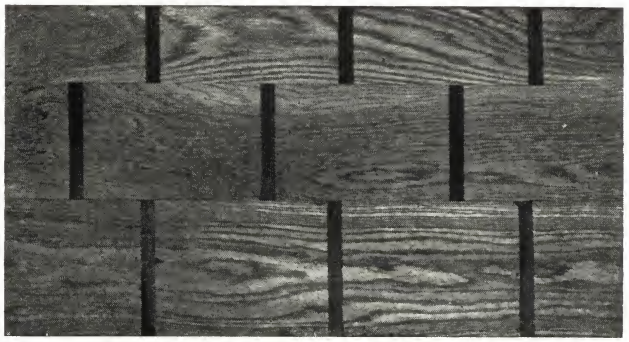
RIBAC construction provides against deterioration of the years—the ever-widening cracks and growing surface irregularities that result when ordinary floors slide, warp, shrink or are otherwise affected by time and atmospheric changes. RIBAC hardwood floors *will not warp.*

"Built-in" Mechanical Features"—RIBAC scientific construction consists of hardwood ribs or splines ½ in. thick inserted and securely glued in dovetailed recesses on the underside at right angles to the grain of the flooring. They are so milled as to form an integral part of the tongue on one edge and the walls of the groove on the other. This principle of construction is applied to both RIBAC blocks and planks.

This mode of construction adequately reinforces the block or plank as well as the entire floor, thereby resisting the atmospheric changes and reducing to the minimum the ever present dangers of expanding, contracting and warping. While RIBAC is a flooring that is mechanically perfect, still it is treated with our moisture resisting preparation if desired at a slightly higher price. Specifications should read RIBAC or RIBAC treated.



Bottom View of Blocks Showing Construction



Bottom View of Planks Showing Construction



Ribac Reinforced Construction

Ribac Lays Perfectly in Mastic—The fact that RIBAC blocks are flat on the underside makes it easy to cover the entire back of the block with mastic, rendering 100% contact with the concrete subfloor possible and highly practicable. RIBAC blocks are milled with a dovetailed groove along four edges under the tongues and grooves, which feature takes up the surplus mastic as the blocks are being pushed and fitted into place and thus the mastic acts as an additional binder. RIBAC blocks are absolutely square, permitting rapid installation.

A Grade and Kind Suitable for Any Type Construction—RIBAC floors can be profitably installed in schools, apartment buildings, clubs, hotels, office buildings, churches and stores, as well as all buildings of fireproof construction. They are easily installed over concrete subfloors in cold or hot mastic. RIBAC floors do not squeak, and are pleasant to walk upon because the mastic acts as a cushion. These floors can be just as easily installed in residences by simply nailing the blocks to a wood subfloor.

Ribac Blocks for Installation on Wood Subfloor

In laying RIBAC blocks over a wood subfloor, there is a great saving in both time and labor, for the process is simplicity itself. The blocks are mathematically square and fit with absolute precision. As each block is fitted and tongue and groove are joined, only four nails are required to make each block a permanent part of the whole structure. There are no slivers to be concerned about, no splitting or weakening of the tongue since the nails are driven only through the end wood (two through the ribs and two through the ends of strips). The RIBAC floor when completed is a snug, tight and permanent whole, the same as if it were one solid structure milled expressly into one piece and then laid.

Two Styles of Ribac Blocks—RIBAC blocks come in two styles: "One-piece" blocks made of one piece of lumber, and "Fabricated" composed of several random width pieces, each piece cabinet jointed and securely glued, with no cracks between the slats where moisture might enter. This type of construction plus the cabinet planning of RIBAC blocks eliminate the need for heavy sanding. "One-piece" RIBAC blocks are furnished in 8x8-in. size only, while "Fabricated" RIBAC blocks may be had in 10x10 and 12x12-in. sizes. RIBAC "Fabricated" makes the more attractive floor, due to the variation in the widths of the pieces of which each block is composed.

Ribac Rectangles

In addition to blocks, RIBAC may be had in "Fabricated" rectangles of 8x16, 10x20 and 12x24-in. sizes, also "One-piece" rectangles in 8x16-in. only.

Ribac Planks

RIBAC planks are equal, if not superior, to 3-ply or laminated construction, due to the fact that RIBAC is a solid plank membered with ½-in. thick dovetail hardwood ribs inserted and securely glued in the backs at 10-in. intervals, forming an integral part of the tongue on one side and the walls of the groove on the other. This permits the use of extra large nails driven only through the end wood ribbed tongue which will not split. This construction positively prevents the planks from warping. The prices of RIBAC planks are far below 3-ply planks. There is a grade available for any type of construction.

Other Special Flooring

In addition to RIBAC, we manufacture many attractive parquetry and period designs.

We exclusively use soft textured Indiana, Kentucky and Appalachian oak. RIBAC is also available in maple, walnut and brown monoke. Samples on request.

Some Recent Installations of Ribac Block Floors

The following installations are among the more recent ones and are singled out because specifications throughout these structures were rigid and called for the highest type of workmanship:

Chateau Laurier at Ottawa in Ontario, Canada; Y.M.C.A. Building, Architects Building, National Breweries, Divinity Hall and Royal Victoria College, all at Montreal in Quebec, Canada. In addition, the St. Liborius School Gymnasium at St. Louis Mo., has recently installed a RIBAC block floor.

W. M. RITTER LUMBER COMPANY

Manufacturers of Appalachian Oak Flooring and Hardwood Lumber
115 East Rich Street, COLUMBUS, OHIO
BRANCH OFFICES
NEW YORK, N. Y., 2568 Park Avenue
LONDON and LIVERPOOL, ENGLAND

Products

Oak Flooring.

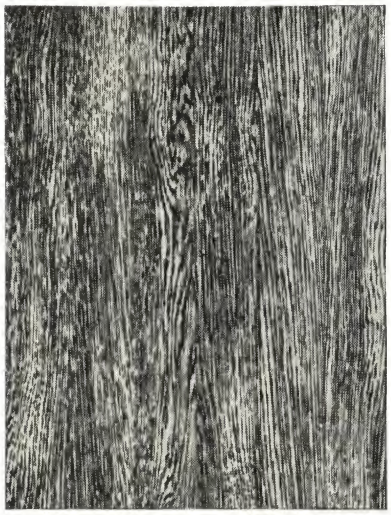
Specialists in Appalachian Oak and Yellow Poplar Lumber.

Also Maple, Beech and Birch Flooring, Appalachian Hardwood Lumber.

Special Features of Ritter Appalachian Oak Flooring

(1) **Ritter Appalachian Oak Flooring Is Scientifically Seasoned**—The lumber is air dried for several months and then carefully kiln dried to an average of 6% moisture content. It is then permitted to cool in a dry place for 72 hours before it is manufactured into flooring, thus preventing the warping and twisting of finished stock and eliminating many of the difficulties of laying floors.

(2) **Ritter Flooring Is Accurately Manufactured**—It must pass a rigid system of inspection. The pieces are tested with a steel templet when leaving the side-matching machines and tested for squareness when delivered from end-matching machines. Two more inspections must be passed before the flooring is bundled and sent to the warehouse.



Typical Example of Ritter Appalachian White Oak Flooring
Panel made of six flooring strips 2¼ in. wide

(3) **Ritter Flooring Is Stored in Heated Warehouses**—To protect Ritter Flooring from absorbing moisture, it is held till shipment in steam heated, well ventilated warehouses, where uniform temperature and moisture conditions are maintained from month to month.

(4) **Ritter Flooring Is Economical to Lay**—Owing to the excellent quality of the oak and the extreme care exercised in its seasoning and manufacture, the initial cost of Ritter Flooring is higher than the average flooring, but in the long run, it is more economical. It matches so accurately that it can be laid with a minimum of labor and material. Because of its excellent texture, it can be properly nailed, scraped and finished more easily than oak flooring produced from timber developed under less favorable conditions of growth. Flooring contractors have estimated the saving on Ritter Flooring in laying and finishing to be five to ten dollars per 1000 board feet.

Grading and Standard Sizes

Same as Oak Flooring Manufacturers Association Rules.

First Grade—Face side is practically free from defects, except ⅜ in. of bright sap wood. The question of color shall not be considered. Shipped in lengths of 2 ft. and up. If a 5-ft. average length is maintained, as much as 20% under 4 ft. may be included. This grade should be used in the better class of residences, apartment houses, clubs and other buildings where only the best grade of flooring is desired.

Prime Grade (Select)—Admits pin wormholes, very slight imperfections in machinery, or sound, bright knots no larger than an ordinary pencil. Not more than one of any of the above mentioned defects is allowed for each 3 ft. of length. Bright sap admitted without limit. Lengths, 1 ft. 6 in. and longer. If a 4½-ft. average is maintained, as much as 35% under 4 ft. may be included. This grade should be used where an excellent but not necessarily the best floor is desired. When finished darker than natural color it is practically equal to the first grade in appearance.

No. 1 Common—Admits pin wormholes, spot wormholes if surrounded by sound wood, and any other smooth, sound, light defects which will enable one to lay a sound, serviceable floor without cutting. Lengths, 1 ft. 6 in. and longer. If a 3½-ft. average length is maintained, as much as 45% under 4 ft. may be included. This grade may be used in the cheaper apartments and residences where a serviceable but not necessarily a perfect floor is required. When properly finished in a color darker than natural, this grade will produce a serviceable as well as a very presentable floor.

No. 2 Common—This grade is composed of pieces containing defects too large or rough to go into the No. 1 Common grade. Used only in factories and similar buildings and will lay a serviceable floor with some cutting.

Important—Specifying Oak flooring by grade only is *not sufficient to obtain the most beautiful results.* This is because oak timber obtained in one section of the country varies greatly in the character of its texture and grain pattern than oak timber of another part of the country. Some oak has a close grain and fine texture while other oak has a wide grain and a coarse texture, depending on the climatic, soil and drainage conditions under which it grows.

Oak timber grown on the highland territory of the Appalachian region (Virginia, West Virginia, Eastern Kentucky, Western North Carolina and Eastern Tennessee) develops slowly and sturdily. This oak possesses a closeness of grain and fineness of texture which makes it highly prized by craftsmen who seek great beauty and refinement in their oak floors, interior trim and cabinet work. In order to be assured of obtaining the best results in your floors, specify the grade of flooring you desire, but also insist that it be *Appalachian* stock. This also applies to your specifications for Oak trim.

Ritter Block and Herringbone Flooring

Ritter Appalachian Oak Flooring is also made in block and herringbone patterns to be nailed or laid in mastic. Our new process of manufacture makes this type of flooring very desirable for any type of building in which a beautiful, durable floor is required.

Our Booklet

"Ritter Oak Flooring" containing useful information will be sent to you upon request.

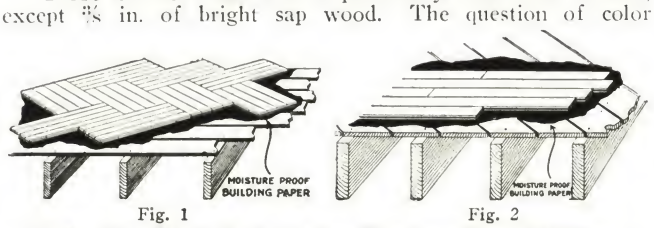


Fig. 1 Fig. 2

Illustrating Method of Laying Flooring Over Subfloors, Non-fireproof Construction

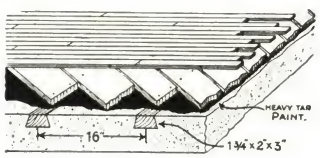


Fig. 3

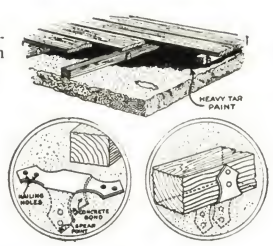


Fig. 4

Illustrating Methods of Securing Subfloor to a Concrete Base

ESTABLISHED 1876

D. M. ROSE & COMPANY

Manufacturers of Distinctive Oak Flooring

KNOXVILLE, TENN.

Distinctive Features of D. M. Rose's Oak Flooring

(1) Genuine Appalachian oak; (2) D. M. Rose matched; (3) shaded for color; (4) extra clear; (5) all heartwood; (6) selected for grain; (7) seasoned the D. M. Rose way.

"There's a Difference"

Results of Distinctive Features

Genuine Appalachian oak has fine grain, soft texture, natural rich color and beautiful figure.

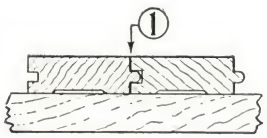
It stays in place exceptionally well, has excellent nail holding ability, weathers uniformly, stains and finishes easily and uniformly, and is especially suitable for weathered and antique treatment.

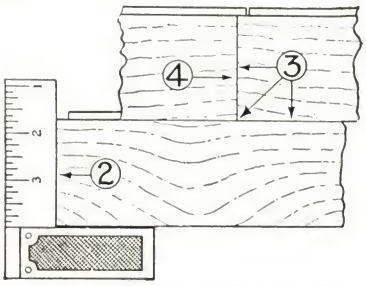
D. M. Rose's scientific milling and matching, plus proper installation, insures a floor with smooth even plane surface and hairline joints, permanently set solid as one piece that will not wear loose or squeak.

Kinks or bends that are too abrupt for the machine to dress to an even plane are cut out of the lumber. This removes a hindrance to easy matching of flooring during the installation of the floor, which in turn lessens the cost of installation and removes resistance to the permanent even plane of the finished floor.

Uneven places in the subfloor will not show on the surface of the floor; there will not be hollow places caused by unnecessary severe scraping and only the minimum of labor and cost of scraping and sanding will be necessary.

Artistic shading prevents the appearance of discordant variations of shades in the finished floor and contributes to harmony and unity of shade, thus making the floor a harmonious background that will add to, rather than detract from, the ornamental art produced by architectural design and arrangement.





Construction Details

(1) Face edge even. (2) Square butt joint. (3) Clean sharp edges and corners. (4) Hairline joints

Extra clear is the highest grade of our distinctive oak flooring. It is capable of making a very beautiful and distinctive floor—actually clear, all heartwood, selected for color and grain and perfectly matched.

All heartwood oak flooring is highly desirable for making a floor that is to be finished in the natural color or for uniform staining and other finishing treatments, and makes it possible to get a harmonious blending of pieces in the finished floor.

Selecting for similar grain makes a floor that will take finish uniformly with the minimum of effort and cost, and will contribute to a harmonious blending with its surroundings.

Seasoned the D. M. Rose way, genuine Appalachian oak flooring will endure a long time, it will stand hard wear, and with proper use will maintain the particular state it was in at the time it was made.

These special features and our individual grading rules bring together corresponding pieces of flooring which are classified into groups of harmonizing pieces that blend in the finished floor.

A floor made of genuine Appalachian oak flooring having all of our special features, properly installed and finished, will appeal to the desire for beauty and distinctiveness and border upon perfection of mechanical detail.

Data on Sizes, Grades, Grains, etc.

Sizes—$\frac{13}{16}$x2¼ in.; $\frac{13}{16}$x1½ in.; ⅜x1½ in.

Grade and Grain—
Extra clear all heart shaded—45° quartered.
Extra clear all heart shaded—quartered large figure.
Extra clear all heart shaded—quartered medium figure.
Extra clear all heart shaded—plain line grain.
Extra clear all heart shaded—plain flat grain.

Species—Genuine Appalachian kiln dried red or white oak.

Milling and Matching—Side and end matched, square ends, corners intact, face width uniform and tongue to fit the groove tightly as manufactured by D. M. Rose & Company.

Other Requirements—Flooring seasoned and kiln dried to approximately 6% moisture content and stored in a heated warehouse from the time it is manufactured until it is sent to the job. It shall not be delivered to the job during damp or rainy weather and not until all the plaster is dry and the building heated and ventilated.

Typical Specification

$\frac{13}{16}$x2¼ in. extra clear all heart shaded 45° quartered genuine Appalachian kiln dried red oak flooring, side and end matched, square ends, corners intact, face width uniform and tongue to fit the groove tightly as manufactured by D. M. Rose & Company.

Plank Type Flooring

Our plank flooring is made $\frac{13}{16}$x4 in. to 9 in. x 3 ft. and longer, random width and length, of 100% genuine Appalachian red or white oak, with sides parallel and straight, tongue and groove on sides, not end matched, grooved on back and the side face edges beveled.

Grades—

Clear quartered white.	Clear plain white or red.
Select quartered white.	Select plain white or red.
Common quartered white.	Common plain white or red.

Identification

Only genuine Appalachian oak is used for making our oak flooring and D. M. Rose & Company, Knoxville, Tennessee, is stamped on the back of our flooring and each bundle is labeled showing the kind, grade and quantity.

Additional Data

Ask for a copy of our illustrated booklet "A Different Oak Flooring and Specification Data."

This booklet contains detailed information, specifications, cuts and pictures of grain patterns and grades.

CUSHION FLOORS

PRODUCED AND INSTALLED BY
STORM LUMBER CO.
2500 PARK Avenue, NEW YORK, N. Y.
FACTORY: JOHNSON CITY, TENN.

Description and Advantages

CUSHION FLOORS are a *new* type of insulated, resilient, non-resonant floor laid (without nails) in hot mastic over concrete, steel, or wood subfloors. They are not subject to decay, settling or vermin. As shown in the accompanying detail, this flooring consists of standard hardwood flooring to the back of which has been securely attached a heavy Cushion of Celotex insulation.

The full-floating construction of CUSHION FLOORS interposes a thick mat of insulation between the hardwood floor and the bearing surface, effectively blocking direct transmission of vibration (sound). CUSHION FLOORS do not echo or resound—due, first, to muffling effect of the close back-nailing; second, to small size of the sections of insulation; and third, to uniform contact made by the Cushion with supporting surface.

In laying CUSHION FLOORS the backs of the sections are individually dipped into our special Cushion Mastic which coats and waterproofs all exposed surfaces of the insulation and makes a permanently secure bond.

When laid over the usual screeded surfaces of concrete arches, the resilient Cushion absorbs the slight roughness and insures a perfect contact.

The nails used to attach insulation are driven and countersunk during manufacture. Not coming in contact with hard supporting surfaces, they do not transmit sound—hence the full insulating value of the Cushion is developed.

Patterns

CUSHION FLOORS are obtainable in all parquet patterns, but the "herringbone" design is recommended for fine work and the "brick" design where economy is a factor. Borders may be used if desired. *Ask for our booklet of unique floor layouts, "Floors in Mastic".*

Materials

CUSHION FLOORS are produced principally in oak, but may be had in walnut, maple, etc. They are manufactured in the following sizes:

Thickness—1-1/16 in. (not including mastic which is approximately 1/16 in.). Also in 15/16 in. and 1⅜ in. on special orders.

Width of face—2¼ in.

Lengths—9, 11¼, 13½, 15¾ and 18 in.



Method of Laying Cushion Floors

The Following Jobs Indicate Diversity of Use

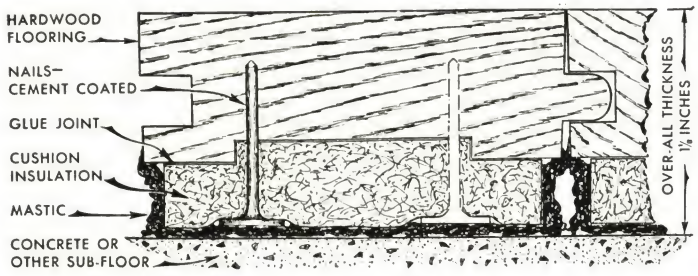
Ball Room—Ritz Tower, Park Avenue at 57th Street, New York, N. Y.

Auditorium — Gymnasium — Huguenot Church House, Pelham Manor, N. Y., Allen & Collens, Boston, Mass., Architects. Wm. L. Crow Construction Co., New York, N. Y., Builders.

Class Rooms—Same job as above.

Apartment House—138-142 E. 40th Street, New York, N. Y.—Bien & Prince and Frank S. Parker, Associated, Architects, New York, N. Y.—G. Richard Davis & Co., New York, N. Y., Builders.

Pent House—910 Park Avenue, New York, N. Y. —Harry Fischel, Park Avenue and 80th Street Corp., New York, N. Y., Builders.



Full Size Cross Sectional Detail

Estimates

We are prepared to submit estimates for complete installations, or furnish the material only with job supervision to insure proper installation.

Cushion Floors reduce building costs and expedite construction.

Specifications

Preparation—On short span cinder arches, structural slab shall be broom clean and given a wash of neat portland cement grout, well broomed in. Cement surfacing shall be placed immediately thereafter, and shall be a mortar composed of 1 part portland cement and 3 parts of sand, packed and floated to 1⅛ in. of finished floor level, and struck off to a true surface using screeds spaced not over 8 ft. apart.

On long span slag block, terra cotta block, or stone concrete arches, the cement finish should be applied monolithically and screeded as above.

Wood subfloors to be of tongued and grooved material, well nailed and level.

Priming—On concrete, steel, tile, terrazzo and all other surfaces, except wood, surfaces shall be broom cleaned and a thin coat of Cushion Primer applied and well brushed in.

Flooring—Install where indicated on plans CUSHION FLOORS of selected size, grade and pattern. On all sides of rooms provide expansion spaces equal to $\frac{1}{32}$ in. per foot of room width or length. Floor moulds and door saddles (set by trim contractor) must be nailed so as to permit floor to expand and contract freely.

Mastic—Cushion Mastic shall be used, melted in "Storm King" electric heaters. Dip all pieces to a depth equal to floating level. Wooden splines to be used at all non-tongued joints. The last two outside courses around all rooms shall be glued together.

Scraping—CUSHION FLOORS shall not be scraped (if possible) for at least a week after laying to permit the mastic to reach a permanent set. Sand by machine, using first No. 60, then No. 80, and finally No. 100 paper. (Or preferably, scrape by hand.)

Finish—Stain to color desired, using only an oil stain, (or other prepared oil and wax finish). Follow when dry with white shellac, varnish and/or wax in usual manner. Avoid fillers or finishes containing benzine, naptha, or other solvents of Cushion Mastic.

Guarantee—Manufacturer shall guarantee CUSHION FLOORS against defects in material or workmanship (damage resulting from building dampness, floods and exposure to chemical action excepted) for a period of two years from date of installation.

JOHN T. SWANSON COMPANY

INCORPORATED

Wood Flooring Contractors
Material—Installation—Finishing
101 Park Avenue, NEW YORK, N. Y.

Specialists in Wood Flooring

The officials of this company have had long experience and are experts in the installation and finishing of new wood floors and in the renovation and repair of old ones. The skill and knowledge resulting from this experience are available to any who can profitably use them. We suggest to architects and their clients that they bring their floor problems to us as early as possible, as by so doing many costly and untimely errors can possibly be avoided.

Quality in Flooring

The quality of a finished floor is ordinarily more dependent upon the character of the organization making the installation than upon the specifications. The number and size of defects and blemishes allowed in the material from which a wood floor is fabricated is covered in standard specifications. But the quality of the raw material, its treatment prior to manufacture, the accuracy of its manufacture, its storage and shipment and the feature of installation and finish which cannot easily be described, play a far more important part in the quality of a finished floor than upon those features usually covered in the specifications.

Quality in a finished floor can readily be assured by employing the JOHN T. SWANSON COMPANY or another organization with an equally high character to execute the wood flooring contract.

Material

The connections of this company with mills of highest reputation assure an exceedingly high quality of material. Execution of intricate patterns in walnut, teak, mahogany, oak, cherry, and other domestic and imported woods has always been one of our major activities.

Methods of Laying

The JOHN T. SWANSON COMPANY is prepared to execute contracts for the laying of wood floors in mastic or by nailing to underfloors of either wood or nailing concrete. In order that responsibility for the quality of the floor work shall not be divided they are also prepared to include in their work the laying of sleepers and underfloors in either plain or fireproofed wood.

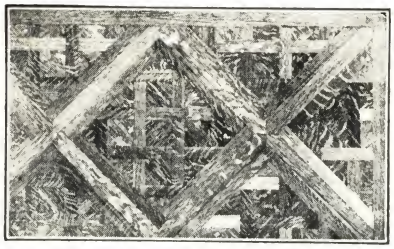
Typical Designs

While architects in the immediate past have shown a tendency toward plain strip flooring and simple pattern designs the current tendency is towards very elaborate and intricate ones requiring special manufacturing facilities. Floors of this character predominate in the new Waldorf Astoria Hotel. We are prepared to execute contracts for any kind or type design. We shall consider it a privilege to assist architects in selecting or originating a suitable pattern for any wood floor.

Satisfied Customers

We have executed hundreds of contracts for the installation and refinishing of wood floors, and have co-operated with most of the prominent architects and builders in New York in securing floors meeting their desires. Work has been executed in the finest hotels, residences, stores, institutions and apartment houses in the eastern part of the United States.

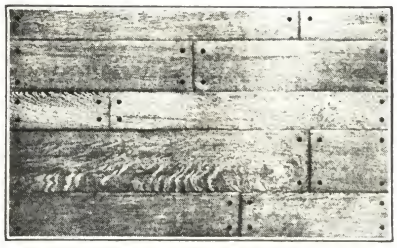
We have recently installed and finished all of the wood floors in the New Waldorf Astoria Hotel, New York. We are prepared to contract for work in any part of the United States.



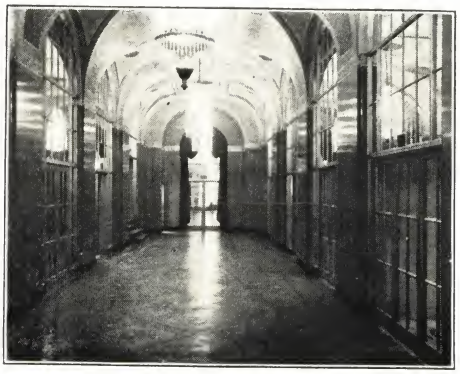
Quartered Oak Parquet Floor



The New Waldorf Astoria Hotel
SCHULZE AND WEAVER, Architects



Oak Plank Floor



Entrance Hall to Ball Room
New Waldorf Astoria Hotel



Walnut Parquet Floor



The Jade Room
New Waldorf Astoria Hotel

ESTABLISHED 1883

WOOD-MOSAIC COMPANY, INCORPORATED

Hardwood Flooring

GENERAL OFFICES, SAWMILLS, VENEER MILL AND CORE PLANT

LOUISVILLE, KY.

NEW YORK WAREHOUSE, 315 Vanderbilt Avenue, Brooklyn, N. Y.
PHILADELPHIA WAREHOUSE, Second and Tioga Streets

Display of Finished Samples at Architects' Sample Corporation Rooms, 101 Park Avenue, New York, N. Y.

Products

PERIOD FLOOR DESIGNS; WOOD FLOORING for Fireproof Buildings (Mastic Wood Blocks); PARQUETRY; STANDARD STRIPS, SQUARES and HERRINGBONE; THIN SQUARE-EDGE, and $\frac{13}{16}$-in. TONGUED-AND-GROOVED.

Service

Exclusive parquetry floor-laying firms handle and install our flooring specialties in most principal cities. Through them we can work with architects, submitting photographs and samples of classic period flooring. Our long experience enables us to execute even the most intricate designs carrying out the architect's original ideas. In cities where we have no regular representatives we shall be glad to correspond directly with architects and decorators.

Period Floors of High Grade Woods

For nearly half a century this company has manufactured period flooring of both foreign and domestic woods. During this time, Wood-Mosaic Flooring has been installed in hundreds of prominent buildings and fine homes, in patterns ranging from 17th Century French and English to most modern "l'Art Moderne" designs.

Fontainebleau

This lovely pattern appears in the Fontainebleau palace and in other famous buildings at Versailles, Petit Trianon, Chateau de Compiegne, etc. In these historic structures the Fontainebleau design is laid in oak.

In a modern building, the Fontainebleau design is just as often carried out in other woods to match paneling, etc. Walnut is the most popular, but it is also made in Teak, Brown Gothic Oak and other woods.

Herringbone

Regular herringbone is the French design most frequently desired by architects and decorators. Reversed, mitred, herringbone as seen in the foyer of the Opera House in Paris is very handsome and applicable to large rooms.



The Fontainebleau Design in Quartered White Oak, as Seen in the Fontainebleau Palace Just Outside Paris

Colonial or Plank Floors

During the past twenty-five years the vogue of wide-board effects, as seen in many of the old manor houses and castles in England, has been growing along with the revival of early-English architecture. Our own colonial residences show these same wide boards. White oak is used in most of these floors. Rangoon teak is also very popular, as is walnut. Australian lacy oak is something new and beautiful. Koko is much in demand.

Most people demand a smooth, non-curling surface. To get this result we build wide-plank decking of three-ply, laminated wood—as fine desks, doors and panels are constructed—using the waterproof glue evolved for the Navy hydroplanes during the war.

Gothic Oak Decking

Our Gothic Oak plank (or decking) is a product to which we draw particular attention. It is a quartered oak artificially aged to the mellow brown of old carvings and early-English chests. Unlike fuming, this aging process penetrates the wood through and through. Beautiful when first laid, a few months mellow the tints so that the older the floor the more beautiful it becomes. Occasionally Gothic Oak is made up clear. Usually it is supplied with some of the boards showing wormholes and minor defects in the wood which simulate age in a most intriguing fashion.

Squares

In some cases the layout of individual rooms or entire buildings demands the use of square patterns or "Squares."

Many old English residences of the Elizabethan Period were floored in oak squares. Hatfield House in Hertfordshire, Wentworth castle, Yorkshire, and many more famous old buildings were floored with 8 to 24-in. oak squares, laid either in one shade or in alternate dark and light sections according to the old English tradition.

These squares can be made up by Wood-Mosaic in quartered oak or in alternate squares of oak and Gothic oak, oak and walnut, oak and teak, and sometimes in white maple and walnut.

Early Parquetry

Parquetry flooring has a distinguished history. In the famous Mellbury House in Dorset and in Castle Howard —which Latham describes as "the greatest of the classic mansions in Yorkshire and one of the greatest in England"—parquetry flooring, showing a decided Renaissance influence, is found.

The first parquetry floors recorded in America were installed by Thomas Jefferson at Monticello.

During the past few years we have furnished this same Monticello pattern in burl and striped walnut, in curly oak and rift-sawn oak and other combinations, for some of the finest buildings in the country.

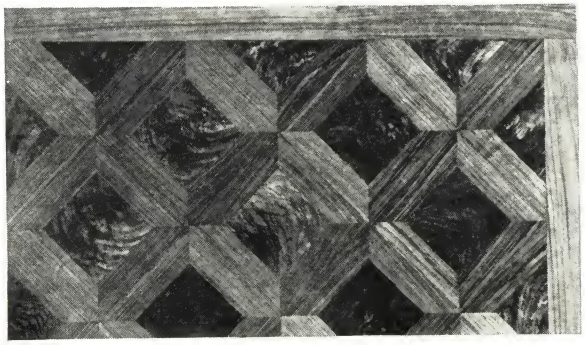
Tile effects in wood for Spanish and Italian residences can also be worked out from our array of varicolored lumber. L'Art Nouveau or Moderne effects are frequently made up by us from architects' drawings.

Sources of Supplies

Because of its superior texture and color as compared with Southern oak, Northern white oak is used in Wood-Mosaic Flooring.

The teak used in W-M Flooring is the same as that imported from Burma by the United States Navy for use in American battleships.

As one of the largest producers of American walnut, we are also well equipped to supply the finest quality of walnut in Wood-Mosaic Flooring.



Wood-Mosaic Monticello Pattern in Striped and Burl Walnut
A true Georgian design, exactly as laid by Thomas Jefferson in his Virginia mansion

Large stocks of rosewood, ebony, koko, green mahajua, red and white mahogany, Australian lacy oak, Oriental Wood, satinwood and numerous other foreign and domestic woods enable us to meet fully the fancy of decorators and architects.

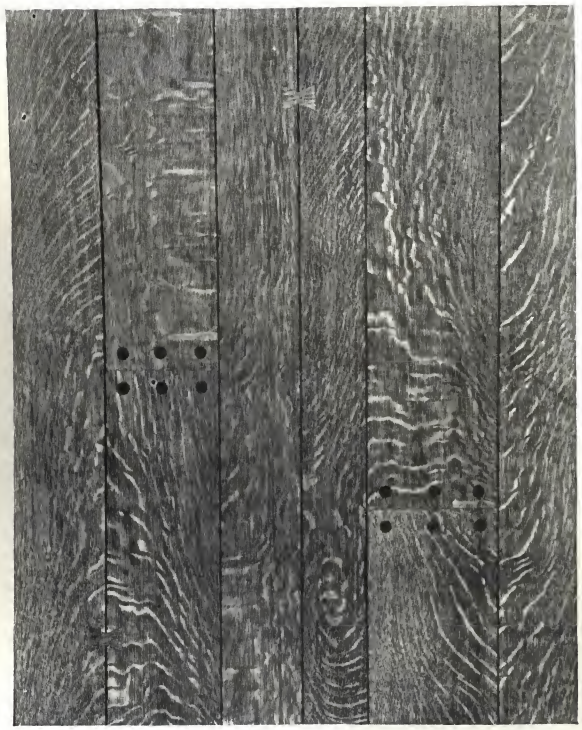
Specifications for Period Floors

General—Flooring to be manufactured by the Wood-Mosaic Company, Incorporated, Louisville, Ky.
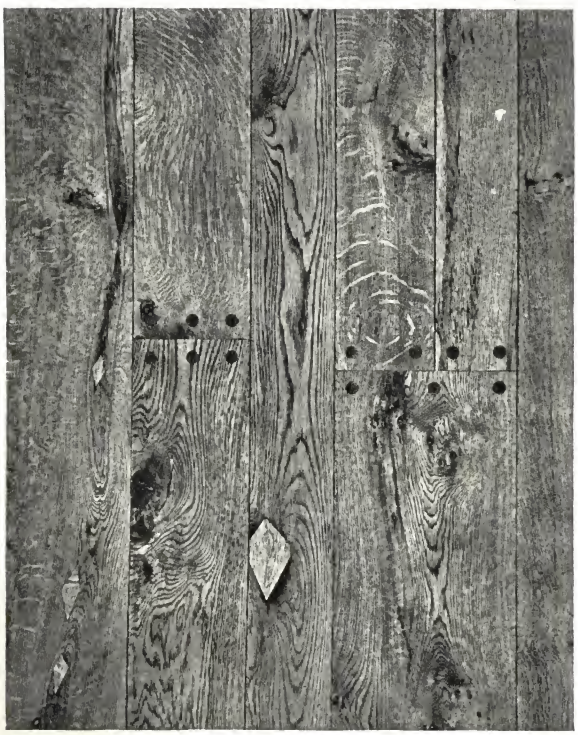
Where possible, add: to be installed by Wood-Mosaic Company's floor-laying agents.

Plank Floor $\frac{13}{16}$-in. Colonial Flooring Laminated—Finished flooring (kind of wood here) shall be Colonial or Plank Flooring, manufactured by Wood-Mosaic Company, Louisville, Ky., and to be laid, scraped and finished in a workmanlike manner. Flooring to be $\frac{13}{16}$ in. in thickness, random lengths and also random widths, 4 to 8 ins. wide. (Special widths over 8 ins. can be supplied at special prices.) To be laid with plugs, at butt joints, of same wood as floor (also dovetails and crack lines if desired). The boards to be of laminated construction, made three-ply with cross core, with veneers top and bottom which shall run lengthwise of the piece; finished face $\frac{3}{16}$ in. thick. (Where solid boards are desired, they are to be specified.) Boards to be grooved, edges and ends, and laid with slip tongues or splines.

The foregoing is a concise specification which will save time and trouble and result in a satisfactory



Laminated (Three-ply) Colonial Flooring of Random 4 to 8-in. Widths Quartered White Oak Boards
Showing artificial crack lines, plugs and keys



Solid English Decking Boards (Rough Cast) of Random Widths
Showing natural variations and knots, also patches as found in Queen Elizabeth Banquet Hall in the Castle at Carnarvonshire, Wales

floor. Following are alternate paragraphs applying to Old English Solid Decking and to the Fontainebleau design.

Old English Solid $\frac{13}{16}$-in. Decking—Finished flooring to be Old English Solid $\frac{13}{16}$-in. Decking prepared by WOOD-MOSAIC COMPANY'S tempering process. To show patches, wormholes, and varied grain of woods, with sound knots.

Fontainebleau $\frac{13}{16}$-in. Design—Finished flooring to be Fontainebleau $\frac{13}{16}$-in. Design as made by WOOD-MOSAIC COMPANY, INCORPORATED. Pattern to be supplied in separate pieces, tongued-and-grooved and grooved for slip tongues.

Mastic Wood Block Flooring to Be Laid Direct on Concrete

Mastic wood block flooring is not new. It has been used for over a century in Europe. The principle of mastic flooring is that the smooth, concrete base floor is covered by flat-backed, wood blocks laid in a film of mastic so prepared as to retain a certain resiliency or suction.

Two pieces of smooth, wet glass can not be easily pulled apart, and this attraction is the theory of the mastic floor.

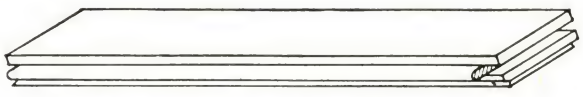
For many years this company has manufactured mastic wood block flooring, made according to the time-tested principles that have proven so completely successful both in this country and in Europe.

Wood-Mosaic Mastic Blocks are made with perfectly flat backs to insure the most intimate contact and permanent bond with the concrete. They are also tongued-and-grooved on all four edges and have mastic grooving around all four lower edges to take up surplus mastic.

These blocks have proved their reliability beyond all question of doubt and have been ordered and re-ordered for some of the finest buildings in America.

Mastic wood blocks are usually laid in the herring-bone pattern which, because of its interlocking design and varied direction of grain, withstands wear and abuse much better than do ordinary squares, etc.

This company has prepared a comprehensive, illustrated book on mastic wood block flooring. It will prove a valuable and probably an enlightening addition for your files. Your copy will be gladly sent you on request.



Detail of Wood-Mosaic Mastic Wood Block
Notice the interlocking tongue and groove with the mastic groove below

For Good, Permanent Floors

Anything made of wood is more or less sensitive to atmospheric changes. Some woods are more easily affected than others. Years of experience have taught us the best methods of counteracting these tendencies. Wherever fine cabinet work, interior woodwork in pianos, etc., is required to "stay put," the lumber is quarter sawed. Not only does quarter sawed oak remain straight as compared with plain sawed, but its swelling and shrinking take place mainly in the thickness of the board, whereas in plain sawed they take place laterally, causing cracks under extreme conditions.

Ordinary tongued-and-grooved flooring is undercut at the joints so that only at the surface of the floor is there a point of contact. During exposure to dampness the strips push up at these joints and an unpleasant washboard effect becomes more or less evident. Wood-Mosaic *cabinet-joint,* tongued-and-grooved flooring is center-matched and has a close joint at the bottom as well as at the surface of the floor. It makes as perfect a joint as is found in a solid table. It can be laid either side up without showing openings. It is quite obvious that this eliminates tendency to buckle. This cabinet-joint flooring is used in all our high grade herringbone, squares, rhombs or other high grade designs.

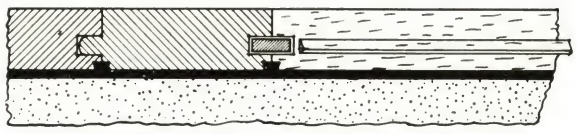
The wood which we can recommend as being the most impervious to moisture is the brown, quartered, Gothic Oak mentioned earlier. It positively moves less than any wood we know of. Teak is probably the next in line of woods which are least likely to move under alternating damp and dry conditions.

Three-ply, wide boards (decking) are especially designed to resist atmospheric changes and still remain flat owing to reversal of grain of wood in the laminations. (See illustration of laminated Colonial Flooring.)

In solid decking (wide boards) 4 to 8-in. standard, we have been very successful in eliminating swelling and buckling in country houses, etc., by a special method of tempering and curing the wood. Our solid rough-cast floors are being laid all over the country most successfully. (See illustration of Solid English Decking.)

Standard Floors

We carry in stock, standard $\frac{5}{16}$ and $\frac{13}{16}$-in. flooring in strips and squares, also $\frac{5}{16}$-in. parquetry and $\frac{13}{16}$-in. decking. We can give prompt service in supplying $\frac{13}{16}$-in. and $1\frac{1}{16}$-in. parquetry, strips, squares, herring-bone, decking and mastic blocks. Send for colored catalogue, Colonial Decking pamphlet, and an exhaustive treatise on Mastic Wood Block Flooring.



Detail of Wood-Mosaic Mastic Wood Block Floor
Showing the concrete, the mastic grooving, and the interlocking tongue-and-groove construction. The black line indicates the adhesive mastic

UNITED PLYWOOD SALES CORPORATION

SUBSIDIARY OF UNITED PLYWOOD CORPORATION

MAIN OFFICES

NEW ALBANY, INDIANA

FLOORING DIVISION: PORTSMOUTH, OHIO

WAREHOUSED BY PRINCIPAL LUMBER DEALERS THROUGHOUT THE UNITED STATES

UPLYCO PLYWOOD FLOORING

In Strip, Plank and Parquet Designs
Made from White Oak, Red Oak, Rock Maple and Other Selected Hardwoods

Parquetry

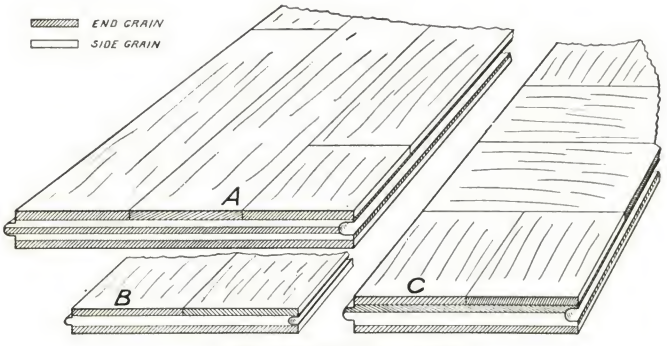
Rectangular faces are made of close textured Appalachian white oak, as well as of walnut, mahogany and maple. This plywood flooring is built into standard size boards with alternate squares cross-laid. This type of parquetry flooring in boards of long multiple blocks is unique, affording an opportunity to utilize the artistry of parquet floors without materially exceeding the installation cost of strip flooring.

Strip Plank

This is made of red and white oak and hard maple and conforms in general to the usual standard of hardwood flooring. But instead of being 2¼, 2 or 1½ in. in width, it is glued up of three 2-in. strips into standard size boards revealing the more beautiful variations in color and grain. Segmental faces, width-wise in strips with random butted ends, neutralize the natural tendency of long wide wood to twist.

Overlay Strip

Especially designed for remodeling and reflooring. Made only in one size and type but equal in quality to standard Uplyco grades.



Uplyco Flooring Construction
(A) Strip plank (B) Overlay strip (C) Parquetry

Random Plank

Plank flooring is of random widths and lengths made with whole faces selected from the best cuts of the log. The wide and narrow boards are often alternated and two narrow boards are frequently laid endwise against the end of one wide board, producing colonial and period effects in a wide variety of combinations. It may be blindnailed through the tongue and also screwed and plugged through the face, as well as connected together by butterfly inserts. Plank flooring is also supplied (on order) in rectangular parquetry squares. Due to installation variations, plank flooring is usually finished after laying.

Pound for Pound Stronger Than Steel

Tests made at the U. S. Forest Products Laboratory demonstrate that, pound for pound, well designed plywood is stronger than steel. Hence plywood construction brings to Uplyco both maximum strength and minimum size variations under most exacting conditions of utilization.

The grain of the face and back is in the direction that solid lumber would ordinarily be used, with each intermediate layer at right angles to both adjacent layers. The cross layers prevent shrinking and swelling and the proper balancing of layers eliminates warping and twisting.

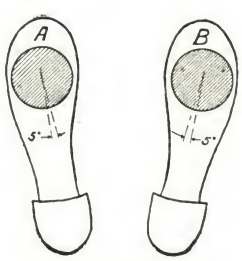
Water resistant glue, as specified for government airplanes, makes a sturdy floor.

Standardized tongues and grooves are cut on all plywood edges and ends and are much stronger than when cut in solid wood, since the adjacent plies prevent splitting.

Prefinished if Desired

Prefinished Uplyco flooring, with a four-coat face finish (stain, filler, lacquer-varnish and wax) and an aluminum back coat, is far superior in quality to the usual "construction" finish, since standard formulas, mechanical application, and controlled drying conditions mean a uniform and durable finish scientifically applied. Prefinished Uplyco flooring reduces the time of installation to a minimum and requires only one group of tradesmen, i.e., carpenters.

The durability of all finishes is actually tested by a "walking machine," shown below, in which the pressure on each pad is equivalent to that exerted by the human foot, and each pad is turned at every step through an angle of 5° to 6°. Parallel or twin pads may be tested simultaneously, giving actual comparative durabilities of any two selected types of finish.



Walking Machine

In the case of overlaid floors in occupied buildings, the dust and dirt, as well as the unpleasant and unhealthful odors of scraping and of brush applied finishes, are entirely eliminated.

PARQUETRY FLOORS

Parquetry floors can be laid on the "all over" plan without any border or panel effects, with squares at the sides of the room directly under the baseboard or shoe moulding. This is the simplest form of parquetry, and gives a harmonious and uniform appearance, but some do not like the uneven block exposure at sides and ends of rooms. This arrangement is not shown in the illustrations.

In order to accommodate a wide range of combination between strip and parquetry flooring standards, widths of 4 and 6 in. in parquetry squares and 6 in. in strips have been adopted. All parquet and strip flooring is 5/8-in. thick with intermatching standard tongue and groove on both ends and sides for both strip and parquetry. While parquet flooring is regularly made in 6-ft. lengths containing twelve 6-in. squares or eighteen 4-in. squares, it can also be supplied, on request, in fractional lengths of three and four 6-in. squares and three, four and six 4-in. squares, tongued and grooved on ends and edges.

In some locations a parquetry floor is considered more pleasing and more beautiful when it is framed or surrounded by a plain border to emphasize and individualize the beauty of the parquetry blocks. Such strip borders may be of the same figure as the parquetry or of a plainer figure as desired. Borders should usually be 9 in. or more in width, and the "field" or center must be of dimensions divisible by 4 or 6 in. depending on the size of parquetry used. It is frequently possible to accentuate such symmetrical effects by varying the widths of the strip borders, using two or more strips and extending the raw cut edges under the baseboard or shoe moulding. Two such arrangements are shown in Diagrams A and B, using 6 and 4-in. parquetry, respectively, with 12-in. borders.

This border arrangement may be carried still further by using an outside 12-in. strip border, as shown on Diagram C, followed by an inner border or frame of parquetry squares and utilizing a plain strip field. This is considerably less expensive than all parquetry and is suitable for rooms where large rugs are to be used. Still another combination, for large rooms, is shown in Diagram D with a double strip border, with parquetry border between and a parquetry field.

In addition to the border and frame effects, still more attractive parquetry arrangements may be obtained by paneling into large squares of nine, sixteen or thirty-six individual blocks. When using 4-in. parquetry, this results in 12, 16 or 24-in. panels; and with 6-in. parquetry, the panels would be 18, 24 or 36 in. square. Plain strips are used to separate the panels and may be of the lengths of the parquetry strips as shown in Diagrams E, F, and G, or a basket weave effect may be developed as shown in Diagram H. In the case of the basket weave, a careful schedule must be made of all strip lengths and end grooving.

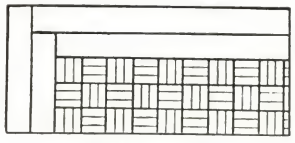


Diagram A
Bordered Parquet
6-in. parquetry field; 12-in. border, made of 6-in. strips

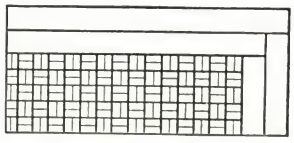


Diagram B
Bordered Parquet
4-in. parquetry field; 12-in. border, made of 6-in. strips

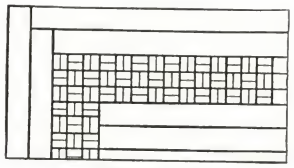


Diagram C
Parquet Frame
Strip flooring field; triple 4-in. parquetry frame; 12-in. border, made of 6-in. strips

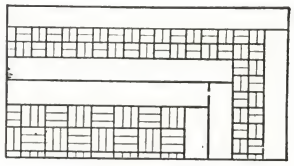


Diagram D
Parquet Frame and Field
6-in. parquetry field; double 4-in. parquetry frame; 12-in. border and frame, each made of 6-in. strips

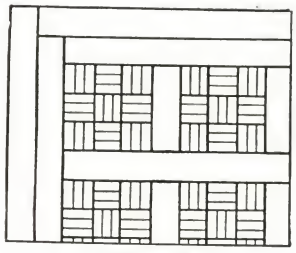


Diagram E
Parquetry Panels
18-in. panels, made of 6-in. parquet; 6-in. division strips; 12-in. border, made of 6-in. division strips

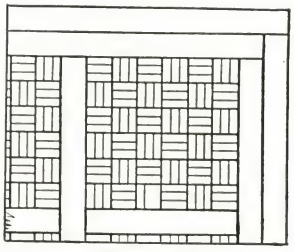


Diagram F
Parquetry Panels
36-in. panels, made of 6-in. parquet; 6-in. division strips; 12-in. border, made of 6-in. strips

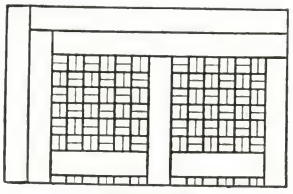


Diagram G
Parquetry Panels
24-in. panels, made of 4-in. parquet; 6-in. division strips; 12-in. border, made of 6-in. strips

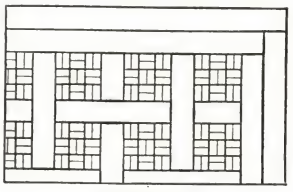


Diagram H
Parquetry Panels
12-in. panels, made of 4-in. parquet; 6-in. division strips, basket weave; 12-in. border, made of 6-in. strips

STRIP PLANK FLOORING

Strip Flooring can be laid in the random style as shown in Diagram I. The carpenter starts at any selected corner with a full 80-in. strip 6 in. wide, completing the entire first row before starting the second. The last strip of the first row is cut, leaving the raw end under the baseboard or shoe moulding. The second row is started with the fractional piece remaining and proceeding similarly with the second strip and so on. In this way, all raw ends are concealed under the moulding and all face joints are tongued and grooved. This is the most convenient procedure in ordinary types of Flooring.

Prefinished UPLYCO Flooring, however, permits a number of other methods of laying with figured or herringbone corners, one type of which is shown in Diagram J. In this case, use of a rug or piece of furniture in the center of the room will give a frame or border effect similar to that resulting from the parquetry figures previously described. In the design shown in Diagram J, the workman should plan to have the raw ends in the body of the floor and not under the mouldings. In order to accomplish this most advantageously, strip flooring is supplied in fractional lengths at intervals of even feet and half feet.

The use of mitered corners is not advised since more pleasing effects can be obtained by the step corners indicated and an unsupported mitered end is to be avoided wherever possible. Some authorities call step corners "log cabin style."

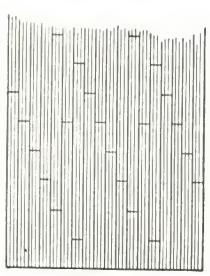


Diagram I
Strip Plank Flooring
Laid with random joints

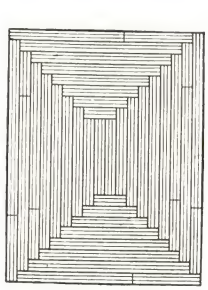


Diagram J
Strip Plank Flooring
Laid with step corners

INSTRUCTIONS FOR ORDERING

Parquetry

If "all over" pattern is wanted, measure the room; reduce measurements to square feet; allow 3 to 5 per cent for end waste (no edgeways allowance necessary as UPLYCO is calculated on net covering width); choose the character of oak figure desired.

If "border" arrangements, or "panel patterns" are wanted, sketch the room to scale, select the arrangement desired from those shown and draw it on the sketch to prove that the arrangement will fit. Note that strip flooring for borders can be cut on the job to any lengths or widths required to permit symmetrical parquetry paneling in the center of "field." Then schedule the material, designating length and widths indicating whether the grain of the right-hand block, as laid on the floor ready to nail, is lengthwise or crosswise. All adjacent blocks should have grain at right angles to each other.

Strip Plank

If "all over," rather than strip border is wanted; measure the room, reduce the measurements to square feet; allow 3 to 5 per cent for waste (no edgewise allowance necessary as UPLYCO is calculated on net covering width); choose the character of oak figure desired. All strip flooring is standard in 6-in. widths and 80 in. lengths and the end sawn for laying can always be placed under baseboard or shoe moulding.

Strip and Parquet Combinations

If strip flooring is required for outside or inside borders (see all diagrams for outside borders, and Diagram D for inside borders), measure the distance around the room; i.e., twice the length plus twice the width, and allow the lesser inside strip length to compensate for waste.

If strip flooring is required for parquetry paneling, it will be necessary to make a plan to scale as described under parquetry and carefully measure or calculate the length of the intermediate division strips. All must be calculated on a 6-in. standard width basis. In such patterns as shown in Diagrams E, F and G, the division strips will be the same length as the parquetry strips; but in the basket weave pattern of Diagram H, some of the division strips are of the length of the parquetry strips and others will be twice that length plus 6 in.

Strip flooring used for borders and divisions in general should be of a plainer character than the parquetry in order to better display the figure and colors of the parquetry.

UPLYCO Flooring is packed in standard sized cartons, banded with steel strips, protected on all exposed edges and clearly labeled.

Random Plank

Instead of presenting a schedule of available plank widths and sizes, it is more advantageous to have prospective purchasers of UPLYCO Plank Flooring submit a sketch of the areas to be floored with locations of doorways, columns and other building features. These sketches should also suggest the direction and method of laying the floor. Such sketches will have most careful consideration in the UPLYCO Architectural Department and will be constructively criticized and scheduled for estimating and manufacturing.

SCHEDULE OF "UPLYCO" GRADES

Stock No.	Lgth., in.	Wdth., in.	Thick., in.	Face wood	Figure
6-in. Parquetry					
Pq-726-5/8-OP	72	6	5/8	White oak	Plain
Pq-726-5/8-OQ	72	6	5/8	White oak	Quartered
*Pq-726-5/8-W	72	6	5/8	Walnut	
*Pq-726-5/8-M	72	6	5/8	Mahogany	
Pq-726-5/8-WO	72	6	5/8	Walnut and white oak	
*Pq-726-5/8-WM	72	6	5/8	Walnut and mahogany	
4-in. Parquetry					
Pq-724-5/8-OP	72	4	5/8	White oak	Plain
Pq-724-5/8-OQ	72	4	5/8	White oak	Quartered
*Pq-724-5/8-W	72	4	5/8	Walnut	
*Pq-724-5/8-M	72	4	5/8	Mahogany	
Pq-724-5/8-WO	72	4	5/8	Walnut and white oak	
*Pq-724-5/8-WM	72	4	5/8	Walnut and mahogany	
*Pq-724-5/8—WMap	72	4	5/8	Walnut and maple	
6-in. Strip Plank					
St-806-5/8-OP	80	6	5/8	White oak	Plain
St-806-5/8-OQU	80	6	5/8	White oak	Qtd. unfig.
St-806-5/8-OQF	80	6	5/8	White oak	Qtd. fig.
St-806-5/8-RO	80	6	5/8	Red oak	Plain
*†St-806-5/8-Map	80	6	5/8	Maple	Unselected
4-in. Overlay Strip					
Ov-804-3/4-OP	80	4	3/4	White oak	Plain
Random Plank					
†Modern (No V)	72-168	4- 8	13/16	White oak	Plain
†Modern (No V)	72-168	4- 8	13/16	White oak	Quartered
†Period (V-edge)	72-168	4-12	13/16	White oak	Plain
†Period (V-edge)	72-168	4- 8	13/16	White oak	Quartered
†Homestead (V-edge)	72-168	4-12	13/16	White oak	Knotty

Random plank lengths vary by 6-in. intervals and widths by even inch intervals.
*Not warehoused, shipments from factory.
†Unfinished, or "in the white."

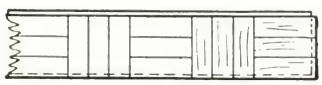
Standard Construction

The following illustrations indicate the designations and method of providing tongues and grooves. Note that all horizontal boards require R. G. (right hand groove) and all vertical boards, at right angles to the horizontal boards, require R. T. (right hand tongue).

STRIP PLANK **PARQUETRY**



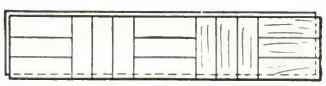
Standard strip, full length, with right hand groove (R. G.)



Standard board, full length, with right hand groove (R. G.) and right hand block lengthwise grain (L.)



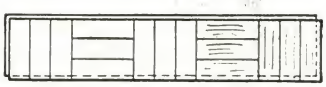
Standard strip, short length, with right hand groove (R. G.) used for horizontal parquetry divisions



Standard board, short length with right hand groove (R. G.) and right hand block lengthwise grain (L.)



Special strip, short length, with right hand tongue (R. T.), used for vertical parquetry divisions



Special board, short length with right hand groove (R. G.) and right hand block crosswise grain (C.)

Standard Tongue and Groove Construction

GENERAL LAYING INSTRUCTIONS

Prefinished UPLYCO Flooring can be installed wherever any other hardwood floor can be used, since it exceeds the solid flooring in strength, is wider than the usual flooring, reduces the normal shrinkage to a minimum; has a plywood tongue that cannot be split when nailed through, and is prefinished.

The best type of subfloor is pine or fir plywood in sheets, which can be firmly nailed to joists. The surfaces of this subfloor must be thoroughly leveled on the joists beneath.

If necessary to use an existing subfloor of lumber, a layer of sisalkraft or equivalent with lapped and cemented joints should be laid over the subfloor. If the subfloor (or old floor to be overlaid) is uneven, a layer of ⅛-in. builders' felt should be used, with extra patches over the low spots. All grades of UPLYCO Flooring can be advantageously laid in mastic.

It is important that all nailheads be *set* below the top of the tongue to avoid pressing up the face on the adjacent groove. Use special UPLYCO high carbon nails provided, driving them not over 12 in. apart. Face nailing is unnecessary except when tongue has been cut off.

The installation of flooring should not be started until all measurements have been laid out from center lines on the subfloor, and all border widths accurately determined. Flooring should then be laid from one side and one end, making the corner complete as the laying progresses.

After laying, the surface of all floors should be rubbed and polished, retouching all raw wood edges if any have been exposed or damaged in cutting or laying.

SPECIFICATIONS FOR PARQUET AND STRIP PLANK FLOORS

Wood Flooring

The flooring in all rooms so designated shall be Prefinished UPLYCO Flooring, manufactured by the UNITED PLYWOOD SALES CORPORATION, of New Albany, Indiana.

Subfloor—Plywood

The top of this subfloor shall be ⅝ in. below the final floor top, and shall be made of pine or fir plywood, ⅝ in. thick, 5-ply, laid directly on joists spaced not over 24 in. apart on centers. This subfloor shall be leveled up to a true top surface and firmly nailed to joists. Joints shall be over joists and laid ¼ in. open.

Subfloor (Alternates)—See Below

(These alternates shall not be used for parquetry pattern floors.)

Overlaid on Existing Floors

All surfaces on which it is proposed to lay Prefinished UPLYCO Flooring must be firm and well nailed, without low or uneven spots. Any irregularities must be repaired before attempting to lay final floor. It is recommended that all such floors be covered with one layer of best quality builders' felt (1½ lb. to the sq. yd. or approximately ⅛ in. thick) with butted joints. The felt should be laid crosswise to the finished floor strips, and tacked to hold it in place. Small additional patches may be laid and tacked in low or worn spots.

Nailing

All nails used on prefinished UPLYCO Flooring shall be 1¾-in. (5d) 12½-gauge, high carbon steel, cement coated, casing nails. These nails may be supplied with the flooring and are especially designed to eliminate bending and give maximum holding power. Nails shall not be more than 12 in. apart, except when laid direct on joists, and shall be set below the tongue surface to permit tight joints between adjacent strips of flooring. Nails to be driven at approximately a 45° angle.

Tight Joints

Before and during nailing, all flooring strips shall be driven to tight joints by placing a companionate grooved piece against tongue and never pounding direct on exposed tongue.

Pattern Flooring

The center of all parquetry patterns should be carefully marked out on subfloor before top flooring is nailed down, and when so marked with proper measurements, all laying and nailing shall begin from two adjacent sides at one corner of the room, with special care to equalizing width of border strips, if any, on neighboring and opposite sides.

Final Finishing

All Prefinished UPLYCO Flooring, after laying, shall be rubbed and polished, rewaxing wherever any wax may have been worn off in laying.

Exposed Corners and Edges

If exposed or freshly sawn joints are laid in the floor, they shall be slightly rounded and finished with a combination retoucher supplied with UPLYCO Flooring.

SPECIFICATIONS FOR RANDOM PLANK FLOOR

Wood Flooring

The flooring in all rooms so designated shall be UPLYCO Plank Flooring, manufactured by the UNITED PLYWOOD SALES CORPORATION of New Albany, Indiana.

Subfloor—Plywood

The top of this subfloor shall be ⅛ in. below the final floor top, and shall be made of pine or fir plywood, ⅝ in. thick, 5-ply, laid directly on joists spaced not over 24 in. apart on centers. This subfloor shall be leveled up to a true top surface and firmly nailed to joists. Joints shall be over joists and laid ¼ in. open.

Subfloor—Lumber

This may be made of 6-in. shiplap, S2S, dried to 10 per cent moisture content, firmly nailed to joists; with even and level top surface. This lumber subfloor shall be covered with wide sheets of sisalkraft (or equal) as manufactured by the Sisalcraft Company of Chicago, Illinois, with 6-in. cemented laps and 6-in. continuous extension up all sidewalls or partitions. If lumber subfloor is uneven, it shall be covered with one layer of best quality builders' felt (1½ lb. to the sq. yd. or approximately ⅛ in. thick) with butted joints. The felt should be laid crosswise to the finished floor strips, and tacked to hold it in place. (This alternate shall not be used for parquetry pattern floors.)

Subfloor—Concrete

Screeds—These shall be 2 in. square satisfactorily anchored to concrete. Masonry shall be thoroughly painted with waterproof paint, or covered with sisalkraft (or its equivalent) as specified above. Then proceed with plywood subfloor as above. Air space between screeds in basement floors shall have adequate ventilation.

Mastic—UPLYCO shall be laid in an approved hot or cold mastic, applied on concrete according to manufacturers' directions, all uneven or low spots having been brought to a smooth level surface. The mastic shall be subject to the approval of the architect, and guarantee for its adhesive quality and durability shall be furnished by the makers of the mastic.

Anchoring—UPLYCO shall be blind nailed into ¾-in. square kiln dried walnut plugs, driven endwise into ⅞-in. round holes made in seasoned concrete by an electric or pneumatic star drill. Plugs shall be spaced 16 in. apart parallel to flooring and width of board apart crosswise. UPLYCO nails (elsewhere described) shall be driven into plugs, through flooring tongues, at an angle of approximately 45°.

Attaching Floor to Subfloor

Plank flooring shall be blindnailed with 1¾-in. (5d) 12½-gauge, high carbon steel, cement coated, casing nails. In addition, screws shall be inserted as shown in attached sketch, and neatly plugged with wood plugs. Butterfly connectors may also be installed as designated by the architect and shown in the sketch.

Finishing

All UPLYCO Plank Floor is sanded smooth, requiring only resanding at plugs and butterflies, and shall be stained, filled, varnished, rubbed and waxed as may be provided elsewhere in these specifications.

CARTER BLOXONEND FLOORING CO.

TELEPHONE
Victor 4809

GENERAL OFFICES
902 Walnut Street, KANSAS CITY, MO.

SALES OFFICES

NEW YORK, N. Y., 501 Fifth Avenue—Telephone, MUrray Hill 2-0558
CHICAGO, ILL., 332 South Michigan Avenue—Telephone, Harrison 6491
WASHINGTON, D. C., 906 Chandler Building—Telephone, District 1854
BOSTON, MASS., 250 Stuart Street—Telephone, Hancock 0883
DETROIT, MICH., 2526 First National Bank Building—Telephone, Cadillac 6693

AGENCIES IN PRINCIPAL CITIES

MILL: KENSETT, ARK.

Bloxonend—"Built-up" Wood Block Flooring

Bloxonend Flooring is not loose blocks but is a perfectly matched wood flooring strip that presents an end grain wearing surface.

Uses—For factories, post offices, freight houses, baggage and express cars, bakeries, gymnasiums and hand ball courts (especially selected stock), school shops, publishing plants, loading docks and all locations subjected to trucking (hand or power) or concentrated footwear—where practically everlasting smoothness is the desideratum.

Advantages—An installation of Bloxonend convinces the user that it costs less per square foot, per year, than ordinary floorings. Its use insures a durable, quiet, resilient, non-slip floor which practically eliminates repair costs, speeds up trucking and increases operating efficiency in general. Bloxonend absorbs vibration, insulates and affords a soft bed for tools or materials dropped. It is slow wearing because the tough fiber ends are presented to wear; smooth wearing for the same reason and because the entire floor is formed into a compact, composite unit with no loose blocks to kick out or break the regularity of the surface. Bloxonend is clean, attractive, sliver-and-splinter-proof, and is adaptable to any type of construction—whether steel, concrete or wood, new or old.

Construction—Built up at our plant (Kensett, Ark.) in flooring strips approximately 8 ft. long (Fig. 1). Kiln-dried blocks of Selected Yellow Pine, on end, are dovetaled to horizontal baseboards, presenting end of grain to wear, forming flooring sections which are milled to uniform height and grooved in the sides for heavy splines. Splines are used to break joints and to keep flooring sections in alignment thus securing smooth surface.

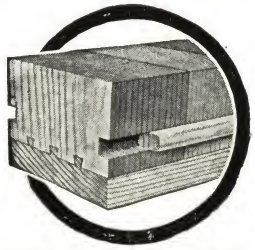


Fig. 1. End View of 8-ft. Bloxonend Section

Size—Standard sections measure $2\frac{9}{16}$ in. thick by 3½-in. face, in lengths averaging over 7 ft. 6 in.

Application—Factory Service, School Shops, etc.

(1) Over Concrete, Lateral Nailing, Standard (Fig. 2)—For laying over concrete (old or new) without nailing strips or wood subfloor, Bloxonend sections are furnished with special nails positioned in countersunk bores. On the job, positioned nails are driven home, drawing sections together laterally into a compact, smooth surface. Concrete base must have been straightedged and floated to a true level surface, $2\frac{9}{16}$ in. below finished floor level. On all ground floor slabs, except where integral waterproofing is specified, a standard waterproofer shall be applied before Bloxonend is laid. Cork or other approved expansion joints of approximately 1 in. shall be applied at walls and columns for sealing, expansion and equalization. No end joints of Bloxonend or of splines shall coincide. Spacing blocks used for proper alignment of any openings must be removed when laying is completed.

(2) *Over Concrete, Alternate—For Exposed Locations*—For locations exposed to extreme weather conditions where swelling must be restrained, Bloxonend shall be laid at right angles on and toe-nailed with 10d coated casing or flooring nails, into 2x4-in. embedded creosoted beveled sleepers on 12-in. centers. Fill between sleepers to be of fine aggregate screeded smooth and flush with tops. 1 in. or more of cork (or other approved expansion joint) shall be applied at walls and obstructions for sealing, expansion and equalization. No end joints of Bloxonend sections or of splines shall coincide.

Gymnasium Service

(3) Over Wood Structure—Bloxonend may be toe-nailed to wood subfloor like ordinary tongued and grooved flooring.

Specifications Over Concrete, Standard (Fig. 3)—Gymnasium shall be floored with clear-face Bloxonend Flooring manufactured and laid by CARTER BLOXONEND FLOORING CO., Kansas City, Mo. Flooring shall be laid over and toe-nailed to 1x4-in. S2S yellow pine strips placed on 12-in. centers on smooth wood floated slab furnished by general contractor. Slab shall be left 3⅜ in. below finished floor line. Expansion joints at walls and other obstructions shall be filled with corkboard and covered with wood moulding (or with angle iron wall protector furnished and installed by general contractor) securely attached to wall. Flooring shall be sanded smooth and finished with two coats of Bloxonend Finish Filler by this Flooring Contractor. General Contractor must protect finished floor from damage until put into gymnasium service.

Treatment

For dry locations, Bloxonend is treated with our standard dampproofer which is odorless and does not discolor the wood. *For wet locations,* we recommend our treatment with a highly refined creosote oil of great toxic value, yet clean enough to be used in many places where ordinary creosote would be objectionable.

Special Information

Write for detailed information advising areas to be covered, use of floors, and nature of subfloor.



Fig. 2. Laying Bloxonend Directly Over Concrete Slab by Lateral Nailing

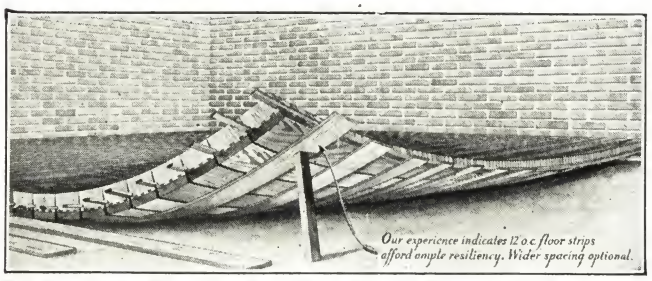


Fig. 3. Laying Bloxonend Over Floor Strip to Secure Added Resilience in Gymnasium Service

THE COMPRESSED WOOD PRESERVING COMPANY

CINCINNATI, OHIO

Products

Compresco Creosoted Wood Block Floors.

Also Subflooring, Roofing, Timbers, Lumber, and Wood Preservatives.

Compresco Wood Block Floors

Compresco Wood Block Floors are ideal for factories, machine shops, warehouses, platforms, and places where hard usage exists because they are:

Durable—Wear like iron.

Smooth—Make trucking easy—do not wear irregularly.

Quiet—Help to eliminate factory noises.

Dustless—Important where delicate machines are made or tested.

Sanitary—Creosote is a germicide, disinfectant and deodorizer.

Resilient—Less chance of damage when tools or other articles are accidentally dropped.

Comfortable for Workmen—Easy to walk and stand on because of their resiliency—warm under foot.

Clean—Easily cleaned and cost practically nil for maintenance.

Skillfully Installed—Installed by experienced mechanics.

Sizes

2, 2½, 3, 3½ and 4 ins. deep, either 3 or 4 ins. wide, and from 6 to 8 ins. long.

Specifications



S-T Groove Block

The blocks shall be made from dense southern yellow pine, thoroughly air seasoned and only first class timber shall be used in their manufacture. They shall be sawed true to size with a tolerance of $\frac{1}{16}$ in. in the depth and $\frac{1}{8}$ in. in the width. In order to obtain uniformity, the blocks shall be dressed on two sides and one edge.

Note: For interior floors, the S-T groove or "V" groove block is recommended, although a plain rectangular block can be used if the groove style is not desirable.

For platforms, driveways and other exterior or semi-exterior places, or for floors subjected to moist conditions, the lug block may be used.

Treatment shall be 6 lbs. for interior (dry) floors or 12 lbs. for exterior paving or wet floors.

The creosote oil shall be a product of coal tar and of a standard quality.

The process of treatment shall be a standard empty cell process for interior blocks and a vacuum pressure process for exterior block.

Installation—The concrete base shall be float-finished smooth, swept clean and given a priming coat of coal tar primer, after which it shall be given a coat of coal tar pitch of a melting point of 140° F. Upon this the block shall be laid in straight parallel courses at right angle to the line of traffic, with the grain vertical. To insure tightness, they shall be rammed in both directions every four courses, and well batted in at the walls or other protruding objects in the floor. The block surface shall be inspected for smoothness as the laying progresses. This shall be followed by a final sweeping, then a coat of coal tar filler applied hot, by a squeegee machine to insure proper filling of joints. This filler is to have a melting point of not less than 140° F.

Note: This last application shall be followed by a thin layer of fine sand. If not found to be objectionable to the purchaser, and if permitted, should be allowed to remain for about one week before removal.



"V" Groove Block



A Typical Installation, Safe Cabinet Co., Marietta, Ohio

THE JENNISON-WRIGHT COMPANY

Manufacturers of Kreolite Wood Block Floors

2480 Broadway, TOLEDO, OHIO

TREATING PLANTS: TOLEDO, OHIO, and GRANITE CITY, ILL.

BRANCH OFFICES

BOSTON, MASS. DETROIT, MICH. PHILADELPHIA, PA. PITTSBURGH, PA. CHICAGO, ILL. ST. LOUIS, MO.
NEW YORK, N. Y. ALBANY, N. Y. CLEVELAND, OHIO WINDSOR, ONT.

Products and Services

KREOLITE WOOD BLOCK FLOORS and PAVEMENTS.

SPECIALISTS IN WOOD PRESERVING.

(Distillers of Creosote Oil, Road Oil, Paving and Roofing Pitch.)

Creosoted Timbers, Cross Ties, Piling, Creosote Oil, Coal Tar Pitch, etc.

KREOLITE INSULATING KOATING.

THE JENNISON-WRIGHT COMPANY maintains a Construction Department to handle the installation of Kreolite Wood Block Floors complete; or, if preferred, they can furnish expert superintendents to instruct purchasers how to install the floors or to supervise the installation.

Kreolite Wood Block Floors

Kreolite Floors are constructed of various varieties of wood blocks which provide a specific type of floor for each service condition encountered.

These woods and the method of treatment are as follows:

Kreolite Southern Yellow Pine Blocks, treated with Kreolite Creosote Oil and Kreolite Odorless Oil.

Kreolite Mountain Oak Blocks, treated with Kreolite Creosote Oil and Kreolite Odorless Oil.

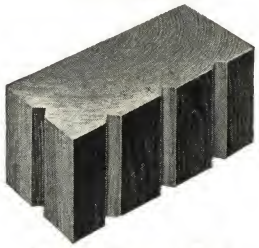
Kreolite Natural Lite-Color Yellow Pine Blocks, impregnated with Kreolite Colorless and Odorless Preservative and Waterproofing Oil that does not stain the wood.

Kreolite Redwood Blocks, untreated and retaining their original color.

Co-operative Service

Our engineering department will furnish information as to how Kreolite Wood Block Floors can be used to advantage in your factory; how they will reduce maintenance and repair bills, increase the efficiency of workmen, and cut production costs. Inform us as to the requirements. *Detailed specifications sent on request.*

KREOLITE
TRADE-MARK



Kreolite Grooved Block
For dry heated conditions



Kreolite Kountersunk Lug Block
For use under wet conditions where the factor of expansion is to be encountered; also to offset slipperiness on grades



Kreolite Join-Tite Blocks
Note slots running at right angles to grain of the wood, which prevent formation of air pockets when the bituminous filler is applied, and provide for maximum penetration of bituminous filler

Kreolite Southern Yellow Pine Block Floors

Kreolite Southern Yellow Pine Block Floors are used in factories, machine-shops, printing plants, warerooms, loading platforms, annealing rooms, foundries, pickling rooms, dyerooms, glass factories, paper mills, rubber tire plants, garages, stables, etc.

They are also used on bridge floors and streets.

General Description of Kreolite Southern Yellow Pine Blocks

Manufactured in special designs (see illustrations) to meet dry or wet conditions. They are rectangular in shape, surfaced on both sides and one end to a uniform size, either 3 or 4 ins. in width and from 2 to 4 ins. in depth, depending on the severity of service.

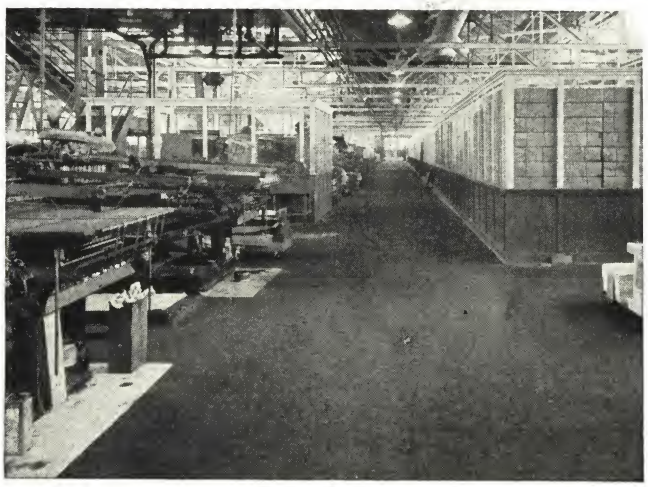
All blocks are furnished of the same width and depth for any one job. (A variation of $\frac{1}{16}$ in. in the depth and $\frac{1}{8}$ in. in the width to be allowed.)

Material—All blocks are manufactured from carefully selected Southern yellow pine, thoroughly air seasoned and free from bark, loose or rotten knots or other injurious defects.

Treatment—All blocks for interior floors are treated in airtight cylinders by the Kreolite Pressure and Vacuum Process; the quantity of preservative injected per cubic foot of timber depends on the service and conditions the floor must withstand, but in no case leaving less than 6 lbs. of oil per cubic foot of timber.

Blocks that are to be used for exterior purposes—such as driveways, loading platforms and court pavements, or that are subjected to considerable moisture—are treated by the Kreolite "two-stage" process which consists of a second application of hot Kreolite Oil injected to insure a more thorough waterproofing of the blocks.

A pure grade of Kreolite Creosote Oil is used.



View of Kreolite Wood Block Flooring in Building No. 21, National Cash Register Co., Dayton, Ohio

Specifications for Installing Kreolite Southern Yellow Pine Block Floors

Blocks—Kreolite Join-Tite Grooved Wood Blocks shall be used wherever floors are subjected to dry conditions, and Kreolite Kountersunk Lug Wood Blocks where conditions are wet, or considerable moisture is encountered. They shall be ... ins. in depth, approximately 3 or 4 ins. in width, and may vary from 4 to 8 ins. in length.

They shall be manufactured by THE JENNISON-WRIGHT COMPANY of Toledo, Ohio, and laid according to the following specifications, under the direction of the manufacturer's superintendent.

They shall be manufactured from thoroughly air seasoned, carefully selected, Southern yellow pine, and shall be treated in accordance with the Kreolite Pressure and Vacuum Process, with not less than 6 lbs. of Kreolite Oil per cubic foot of timber.

Concrete Foundation—The blocks shall be installed on a concrete base, which shall be floated or troweled to a smooth, level and uniform surface equal to a sidewalk finish, exactly the depth of the blocks below the finished floor level. Care must be taken to see that there are no ridges or projections in the concrete that will form an uneven bearing for the blocks.

Kreolite Concrete Coating—After the concrete has thoroughly dried out, it shall be swept clean and given a thin, even coating of Kreolite Bitumen, not exceeding ⅛ in. in thickness. Coating shall be allowed to harden before laying blocks and shall not be applied over 20 ft. in advance of the block laying.

Laying the Blocks—Upon the base, as above prepared, the blocks shall be laid tightly together, with the grain vertical; the courses of the blocks shall be kept straight and parallel, starting from one side of the building and carried through to the other side; all joints shall be broken by a lap of at least 2 ins. In truckways, and whenever possible, blocks shall be laid with their length at right angles with line of traffic.

Expansion Joints—Against the walls on all sides of the floor, as well as around all columns and other obstructions, a bituminous expansion joint 1 in. in width shall be formed.

Application of Kreolite Bituminous Filler—After the blocks have been laid in place and brought to as true and level a surface as possible, the joints between the blocks shall be filled with Kreolite Bituminous Filler applied at a temperature of not less than 350° F.

The filler shall be applied by flushing over the surface of the floor, using a rubber-edged squeegee to force it into the joints. Care must be taken to see that the filler penetrates the full depth of the blocks and that the joints are completely filled at the time of application.

Kreolite Mountain Oak Block Floors

Recommended for extremely heavy traffic aisleways and floors subject to abnormal abuse, Kreolite Mountain Oak Blocks are treated and laid in accordance with the above specifications.

Kreolite Odorless Wood Block Floors

These floors may be manufactured from either Southern yellow pine or mountain oak. They are treated with Kreolite High Boiling Odorless Antiseptic Oil, and installed, as above outlined with Kreolite *Hercules* Concrete Coating and Kreolite Bituminous Filler.

Kreolite Natural Lite-Color Yellow Pine Block Floors

Kreolite Natural Lite-Color Block Floors are manufactured from carefully selected, kiln dried, Southern yellow pine. They are thoroughly impregnated with Kreolite Colorless and Odorless Preservative and Waterproofing Oil, and laid on a smoothly finished concrete foundation in a bed of Kreolite *Hercules* Concrete Coating. After laying, the floor is surfaced with an electric sanding machine and treated with Kreolite Sealkoating, presenting a smooth, clean finish in the natural color of the wood. This floor is particularly suited for operations requiring a clean, light-colored surface. Write for detailed specifications.

Kreolite Redwood Block Floors

Kreolite Redwood Block Floors are manufactured from untreated, thoroughly seasoned California redwood and finished with the end grain up, in the natural color of the wood. They are laid on a concrete foundation in a bed of Kreolite Hercules Concrete Coating and may be sanded smooth and varnished and polished.

Kreolite Jet-Brite Wood Block Floors

These floors are manufactured from Southern yellow pine, treated with Kreolite Odorless Oil, laid on Kreolite *Hercules* Concrete Coating, sanded smooth and finished with Kreolite Plastic Grout Filler and Kreolite Sealkoating. This is the ideal, clean, heavy duty Kreolite Wood Block Floor.

Kreolite Insulating Koating

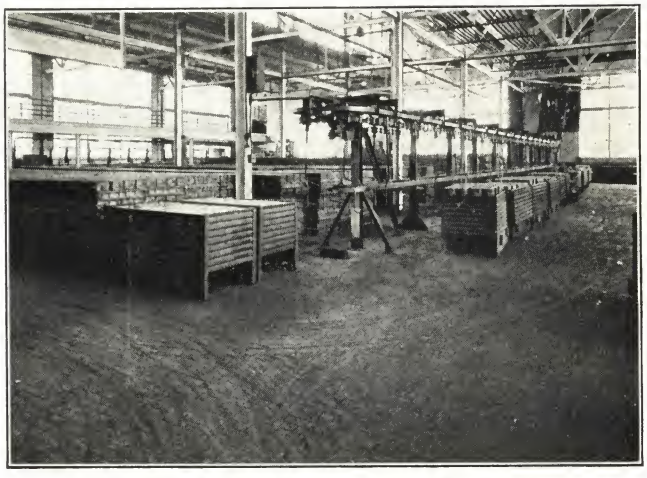
Produced in four colors: aluminum, orange, green and red.

Ideal for marking aisleways in any institution having creosoted wood block floors.

Also applicable to the coating or painting of creosoted roofing timbers, posts, etc.



Kreolite Wood Block Floor in A. T. & S. F. Ry. Shops, Albuquerque, N. M.



Creolite Wood Block Floor in Castings Cleaning Room, Buick Motor Co., Flint, Mich.

PORTLAND SPAR COMPANY

Manufacturers of Wood Block Flooring

302 Lumbermen's Building

PORTLAND, ORE.

DISTRIBUTED BY RESPONSIBLE REPRESENTATIVES THROUGHOUT THE UNITED STATES

EVERLEVEL BLOCK FLOORING FABRICATED OF END GRAIN WOOD BLOCKS



Section of Floor Construction

To meet the demand for a wood block flooring that would be practically everlasting, clean in service, smooth, resilient, quiet and easy on worker's feet, we offer Everlevel Block Flooring. This composite or built-up end grain block flooring presents an entire floor completely secured into a single unit. In practical application, this flooring proves itself in the long run to be a remarkably economical installation for a wide range of uses.

Trucking, light or heavy, is accomplished with less power, with greater safety and at greater speed.

Labor and handling costs are materially reduced and work is lightened in moving heavy loads over such floors.

The insulating effect of Everlevel blocks reduces shop noises and confusion and increases operating efficiency. The cushioning effect on machinery set on this wood block flooring reduces strain and vibration, thereby minimizing wear and tear on the plant, greatly reducing, at the same time, depreciation of the building.

Most important perhaps is the remarkable floor comfort to those who work and walk continuously on these floors.

It is due to the above mentioned facts that architects and owners are investigating the merits of, and installing, Everlevel Block Flooring in buildings everywhere.

Refer to the illustration at the top center of this page which shows the Everlevel construction that prevents any possible displacement, either of individual blocks or of the flooring strip, and guarantees a level floor of permanent smoothness.

Where Everlevel Block Flooring Is Used

Among the many uses to which Everlevel Block Flooring is particularly adapted may be enumerated:

Work room floors in post offices, printing plants, bakeries and manual training shops.

Manufacturing plant floors in practically any line, such as machine shops, foundries, packing plants, refineries or textile mills in entire floors or trucking aisles.

Warehouse floors, loading docks, shipping rooms.

Railroad property floors, as baggage, express and mail cars, depots, freight houses, express rooms, station platforms.

Recreational or athletic floors, as in armories, gymnasiums, billiard rooms and squash courts.

Available in Various Woods

Port Orford cedar combines outstanding physical characteristics which make it highly advantageous as a flooring material. Its own natural preservative oils with which it is thoroughly impregnated give it the long rotting life of the cedars and serve to resist action of moisture in causing swelling or distortion of flooring.

Douglas fir, often called Oregon pine, is well known to the trade. In Everlevel Block Flooring it is used in the fine grained yellow fir species, making a floor with a permanently smooth and durable working surface, as well as one of great hardness.

West Coast hemlock in our fine grained selection is comparable with fir in durability and service with the advantage of greater whiteness. Western hemlock is widely recognized as a hard, smooth, long wearing flooring material. On account of its light color it is frequently recommended where the greatest possible light is desired.

Dampproofing

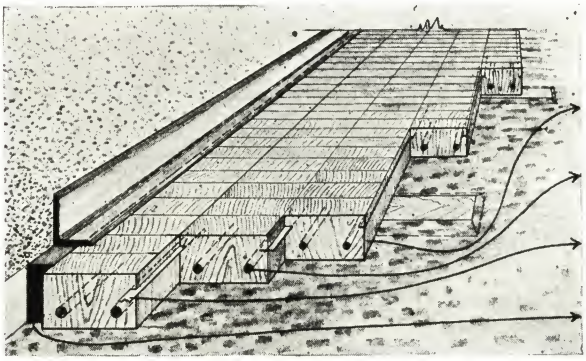
Everlevel Block Flooring in the fabricated lengths is effectively dampproofed to protect the material from moisture absorption in transit. This treatment likewise acts as a primer and filler for the final floor finish.

Size

Everlevel Block Flooring is built up in sections ranging up to 8 ft. in length by 2⅝ in. thick with 3½-in. face.

Information

Send your blue prints and specifications to our nearest representative or to the Portland office. The best efforts of our Consulting Engineer will be gladly and without cost directed to your own flooring plans, specifications or problems.



Full height end grain wood blocks bearing directly on concrete slab, wood sub-floor, or furring strips.

Doweled securely with full length dowels into strips up to 8 ft. in length.

Laterally firmly secured to adjoining strip by tight fitting galvanized steel splines laid in continuous strip entire length of floor.

Cork or firtex expansion strip.

Details of Everlevel Wood Block Floor Construction

SOUTHERN WOOD PRESERVING COMPANY

ATLANTA, GA.

SALES OFFICES

NEW YORK, N. Y., 10 East 43rd Street
DETROIT, MICH., 726 Buhl Building
TOLEDO, OHIO, 25 No. Ontario Street
PITTSBURGH, PA., Dollar Savings & Trust Building
PHILADELPHIA, PA., Land Title Building
CHARLOTTE, N. C., 405 Builders Building

TREATING PLANTS: EAST POINT, GA. and CHATTANOOGA, TENN.

Products

CREO-PINE WOOD BLOCK FLOORS.

Also Creo-pine Subflooring, Wood Conduit, Cross Arms, Fence Posts and Poles.

Creo-pine
TRADE NAME
Registered

Uses of Creo-pine Wood Block Floors

Creo-pine floors are used in factories, machine-shops, warehouses, loading platforms and other establishments where durability is an essential factor, and comfort to workmen and consequent increased human efficiency are items of consideration.

Qualifications of a Good Floor

(1) It should withstand surface wear and afford a smooth surface. (2) It should be resilient, free from vibration, non-conductive of heat and non-slippery. (3) It should not dust or crumble. (4) It should be sanitary and easy to clean. (5) It should adapt itself readily to repairs, not only to the surface but to subfloor work. (6) It should be impervious to decay and the action of oils, acids, etc.

Determining Factors of a Good Floor

(1) Blocks shall be made of select Southern yellow pine. (2) They shall be manufactured with mechanical precision to the proper size for service required. (3) They shall be impregnated with creosote oil in accordance with standard specifications. (4) They shall be correctly installed.

Creo-pine Floors Conform to the Ideal

Creo-pine floors meet the above qualifications, as the foregoing determining factors are embodied in each finished floor. The lumber used is the best obtainable Southern yellow pine, thoroughly air seasoned.

Blocks are carefully manufactured to correct size for service required and impregnated with creosote oil by use of the most modern wood preserving equipment. Creosote used is obtained wholly from pure coal tar and is in accordance with standard specifications. The installation is handled by experienced superintendents.

Further information and estimates gladly furnished.

Specifications for Creo-pine Floors

Timber—Timber shall be air seasoned Southern Yellow Pine, square edged and sound, free from bark, loose or rotten knots, wormholes, shakes, check, or other defects detrimental to its strength or durability. It shall average not less than 6 annular rings to the inch measured radially and beginning 2 in. from the heart center.

Size—Blocks shall be truly rectangular, 2½ to 4 in. wide, 5½ to 9 in. long, and 2, 2½ or 3 in. deep (parallel to the fiber). A variation of $\frac{1}{16}$ in. shall be allowed in depth, and ⅛ in. in width.

Only one width of blocks shall be used on any single floor.

Preservative—Creosote must be a pure coal tar product obtained entirely from coal gas or coke oven tar and must not contain any admixture of tar oils, petroleum or any other products. It shall be completely liquid at 38° C. and not more than 3% of the water-free oil shall be insoluble in chloroform or benzol. Specific gravity shall not be less than 1.05 and shall not exceed 1.14. When 100 grams of the creosote are placed in a retort and subjected to a distilling test as described in Bulletin No. 96 of the American Railway Engineering and Maintenance of Way Association, amount of distillation shall not exceed the following:

Up to 200° C., no distillate.
Up to 210° C., less than 5%.
Up to 235° C., not more than 25%.
Up to 315° C., not more than 50%.
The oil shall not contain more than 2% of water.

Treatment—Blocks shall be properly treated by pressure-vacuum-empty cell process by a creosoting plant properly equipped for such work, injecting not less than 16 lb. of oil per cu. ft. into blocks with a final retention of 6 to 8 lb.

Foundation—A concrete foundation shall be prepared from 4 to 6 in. thick, depending upon loads to which floor will be subjected, consisting of 1 part cement, 3 parts sand and 6 parts crushed stone or gravel, and brought to a smooth finish sufficiently below grade of floor to provide for depth of blocks.

Concrete must be brought to a smooth and true surface, allowing no coarse aggregate to show, as any unevenness will be apparent in the finished floor.

Bituminous Paint Coat—Upon the thoroughly cleaned and dried concrete base apply a coat of bitumen, spreading same smoothly with squeegees to a uniform thickness of not more than ⅛ in.

Laying Blocks—Blocks shall be laid on the paint coat in straight parallel lines (at right angles to line of traffic) breaking joints not less than 2 in. and using only whole blocks, except to start and finish courses. Blocks shall be driven tightly together both on sides and ends.

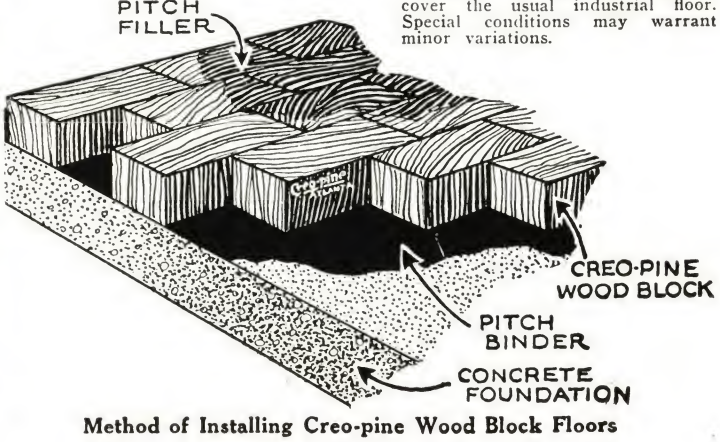
Top Dressing—After blocks have been laid, a top coat of bitumen shall be squeegeed over top of the blocks and well into interstices between the blocks.

Sand Covering—The entire floor shall be covered with a thin coat of fine clean sand which shall be allowed to remain for several weeks.

Note: Above specifications cover the usual industrial floor. Special conditions may warrant minor variations.



Plant of Illinois Glass Co., Bridgeton, N. J.



Method of Installing Creo-pine Wood Block Floors

THE PRESSTITE ENGINEERING COMPANY

Asphaltic Cements
4067 Park Avenue, ST. LOUIS, MO.

Products

ADHERITE, Cold Asphaltic Floor Mastic.

Also manufacturers of Enamelite, asphaltic enamel; Kalktite, asphaltic sewer joint; Presstite, precast asphaltic sewer joint; Duct-tite, joints for clay conduit; Presstico, asphalt paints and roof coatings.

ADHERITE, COLD ASPHALTIC FLOOR MASTIC

A pure asphaltic mastic especially recommended for use in laying wood block and parquetry floors *direct to concrete*. It consists of an asphaltic powder and a liquid asphalt that are mixed on the job as used to a consistency that is easily troweled on the subfloor, the flooring then laid in this mastic. The material requires no heating, no priming of the concrete, has high adhesive strength and will rebond readily if for any reason the bond should become broken.

More detailed information on Adherite and our other products will be gladly furnished on request.



Laying Oak Block Flooring in Gymnasium of St. Liborius School, St. Louis, Mo.

HENRY DREISOERNER, Architect
MISSOURI FLOOR CO., Floor Contractor
Six thousand feet of blocks laid in Adherite Mastic



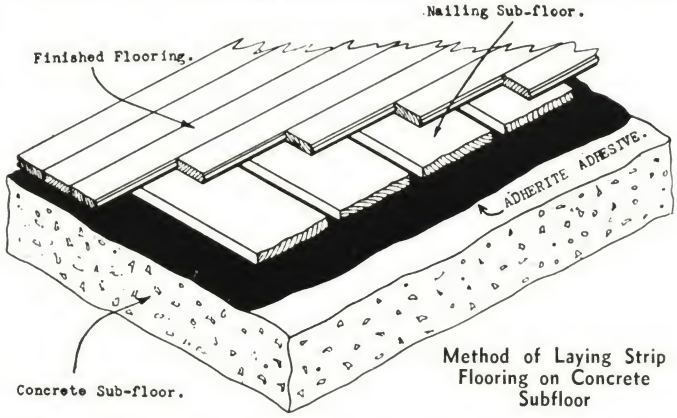
Park Plaza Hotel, St. Louis, Mo.

L. D. SCHOPP and E. J. BAUMAN, Associate Architects
THE KOPLAR CO., Builders

Specifications

Following is extract from specifications for mastic for unit block flooring issued by Treasury Department, Office of Supervising Architect, Washington, D. C., July 1931.

"Unit block flooring shall be laid in a mastic of asphalt or Venetian Pitch of troweling consistency. The mastic shall be tough and elastic when 'set' and shall have a tensile (adhesive) strength when used with wood blocks on concrete of not less



Method of Laying Strip Flooring on Concrete Subfloor

than 40 pounds per square inch at a temperature of 77 degrees F. and of not less than 20 pounds per square inch at a temperature of 100 degrees F. Asphalt Emulsion of the soap type will not be acceptable.

"Asphalt mastic shall be free from coal tar products and shall show a loss in weight of less than 5 per cent when held at a temperature of 200 degrees F. for seven hours, and a loss in weight of less than 10 per cent when held in a temperature of 325 degrees F. for seven hours. All tests shall be made in accordance with the methods of the United States Bureau of Standards.

"The concrete shall be given a coat of primer that is most suitable for the type of mastic furnished, using at least one gallon of primer per 100 square feet. The mastic shall be applied to the primed surface, using 4 gallons per 100 square feet and spreading with a trowel or similar means to prevent blisters or air pockets and to cause perfect adhesion to the concrete.

"Laying generally shall be done in accordance with the printed directions of the manufacturer and in a manner that will prevent any settling or displacement of the blocks or sections of blocks. Flooring shall be protected against use for at least 48 hours after laying."



Ladies Lounge, Park Plaza Hotel, St. Louis, Mo.

Oak flooring laid in Adherite Mastic, Herringbone Design

ATLANTIC GYPSUM PRODUCTS COMPANY, INC.

Manufacturers of Gypsum and Related Building Products

40 Central Street, BOSTON, MASS.

For Mines, Plants and Branch Offices, see Our Plaster Section
For Our Other Products, see Manufacturers' Index

ROCKWALL GYPSUM WALL BOARD

TRADE-MARKS

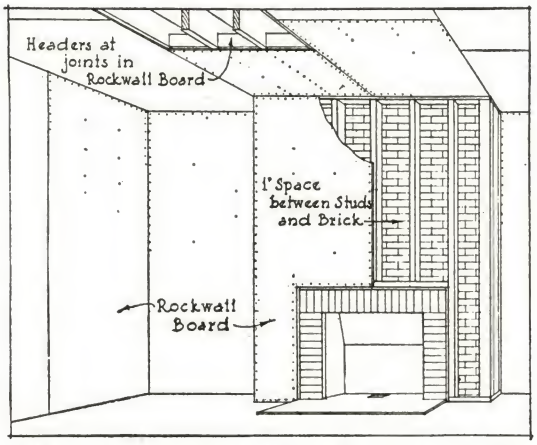
A Modern Gypsum Wall Board

Rockwall offers in one product the many improvements which have been made in gypsum wall boards. The following features show why Rockwall is popular with architect, workman, owner and dealer:

Cream Color Cover—Rockwall has a smooth, light colored surface attractive in itself without further decoration. It is particularly well suited for covering with the light shades of paint so popular today. Special treatment has made the cover hard and practically scuff-proof. Paint spreads easily on the smooth non-absorbent surface and covers exceptionally well. Rockwall is an ideal wall board where looks are an important consideration.

Improved Core—Rockwall has an improved core of purest Nova Scotia gypsum, strong and rigid, yet light enough for easy handling. It eliminates unnecessary weight.

Reinforced Covered Edges—The tough fibre cover is lapped into the gypsum core a full inch to give the greatest possible strength to the nailing edge. Three thicknesses of fibre grip the nail firmly and keep the core from cracking or splitting (see illustration). Edges are square and of identical thickness for easy fitting.



Method of Applying Rockwall Gypsum Wall Board to Walls, Ceiling and Chimney Breast

Reversible—Both Sides Alike—There are no markings on either face of Rockwall to be covered up. Both sides have the same tough, specially treated surfacing. If one side should become accidentally damaged, the board is simply turned and faced the other way.

This Rockwall feature saves time, labor and stock and assures uniform finish.



Full Size Section Through Edge of Rockwall Gypsum Wall Board

Showing the reinforced edge and identification

Fire-resistant—The use of Rockwall reduces fire hazard to a minimum. Underwriters' tests prove the incombustibility of Rockwall and make it an ideal wall board to use when fire safety is a consideration. Rockwall is also a poor conductor of heat.

Permanence—The improved gypsum core, reinforced covered nailing edges and tough cover give Rockwall unusual resistance to wear and tear. Its strength and rigidity are notable.

Identification—Rockwall Gypsum Wall Board can be identified by the name "Rockwall" imprinted on the edge of each sheet. (See illustration.) No markings mar either surface of Rockwall.

Sizes—Rockwall is made in sheets 48 in. wide, and in lengths of 6, 7, 8, 9, 10, and 12 ft. All sizes are 3/8 in. thick.

Application of Rockwall Gypsum Wall Board

Support for Edges—It is important that all edges be supported both longitudinally and crosswise of the framing. This means that blocking (headers) must be used where a joint is necessary.

Application Over Old Plaster—First locate all studs and joists carefully. If plaster surface is fairly straight and solid, Rockwall Board may be applied directly.

For plaster in poor condition, cut the plaster along studs and insert furring strips, bringing the face of these strips slightly behind surface of old plaster. Make furring strips plumb and straight, shimming where necessary.

Old ceilings can best be handled by nailing ordinary 1x2 furring across joists with 8d nails.

Be sure nails are long enough to get a good grip on stud or joist. Usually 6d nails will be sufficient.

Application Over Brick and Masonry—Brick and Masonry walls should be furred with 1x2-in. strips placed 16 in. on centers. Anchor strips by plugging old walls, or on new work insert anchors or ties in the mortar joints. Be sure the furring is solidly anchored and evened up. Nail Rockwall directly to strips, placing headers to support all edges.

Finishing and Decorating—After Rockwall boards are in place, fill the joints and spot nail heads before decoration is applied. (Where paneling strips are to be used joints may be left unfilled.)

Use Rockwall Joint Filler or Fabric Joint Sealer for filling and reinforcing the joints. Directions for application are contained in each package.

Painting—Be sure surface is smooth, clean and dry (including joints and nail heads) sandpapering where necessary. Before sizing entire surface, apply coat of primer over joints and nail heads only. When dry apply a sizing coat or primer over entire surface, using equal parts of good grade varnish size and ready mixed paint of desired color. Allow this to dry 24 hours. Touch up flat spots, if any, and, when dry, paint with desired color.

Calcimine—Treat joints and nail heads as for paint. Apply a single varnish size, then calcimine.

Paneling—Use wood panel strips from 2 to 3 in. wide and 1/16 to 1/8 in. thick. Decorate before nailing on the panels. Use 6d finishing nails, spacing about 9 in. apart. Stagger the nails.

Paper—Sandpaper joints as for paint and size as for calcimine. Then apply paper.

Craftex—Be sure joints are filled carefully and reinforced with fabric. Size the taped joints with oil or varnish size. Apply and texture Craftex following standard directions of the Craftex Company, being careful not to bear too heavily with brush or texturing tool when going over the taped joints.



Filling Joint



Applying Fabric Over Joint



Smoothing Fabric into Joint Filler

CERTAIN-TEED PRODUCTS CORPORATION

GYPSUM DIVISION

Manufacturers of Gypsum Wall Board

GENERAL OFFICES
100 East 42nd Street
NEW YORK, N. Y.

For Sales Offices, see Gypsum Plaster Pages
For Our Other Products, see Manufacturers' Index

CERTAIN-TEED AND BESTWALL GYPSUM WALL BOARDS

Certain-teed and *Bestwall* gypsum wall boards are made of smooth, solid sheets of gypsum, moulded between sheets of heavy, long fibered paper, and supplied in the following sizes: ¼ in., ⅜ in. and ½ in. thick x 32 in. and 36 in. wide x 6 to 12 ft. long.

They are used for walls, ceilings and partitions in new construction, and for remodeling and repairing. They will not warp or buckle, and are unaffected by moisture or climatic conditions. Millions of tiny air cells, embedded in the gypsum base by an exclusive process, provide extra and valuable insulating properties.

TRADE-MARKS

They produce smooth walls that will take any form of decoration. The use of wood mouldings to form panels in order to cover the joints is unnecessary. If panels are desired, they need not be placed over the joints, as these are filled and leveled to the surface by the use of *Certain-teed* or *Bestwall* Joint Filler. The boards may be sawed and nailed like lumber and may be applied directly to studs and joists or over old construction.

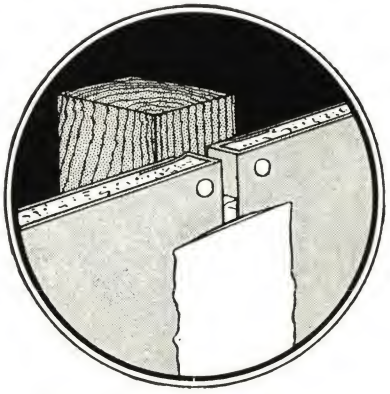
Both *Certain-teed* and *Bestwall* boards are standard in every respect and will meet all the usual tests for determining the quality and strength of this type of board.

Certain-teed board is surfaced with a smooth non-scuffing paper of unusual strength, ivory tinted on one side of the board, gray on the other. *Bestwall* board is surfaced with buff colored paper on one side and gray paper on the reverse side, of equal strength and fine texture.

Both *Certain-teed* and *Bestwall* boards are known as closed edge boards. This means that the heavy fibre paper, finishing the two main surfaces, also covers the edges. The enclosed edges give added protection to the boards.

Fire Resistant

Certain-teed and *Bestwall* boards are extremely fire resistant. In tests, they have withstood for fifteen minutes the heat of a Meeker burner (1200° to 1500° F.) with only slight damage to the surface. Due to the exceptional fire resistant qualities they are excellently suited for partitions in fireproof buildings.

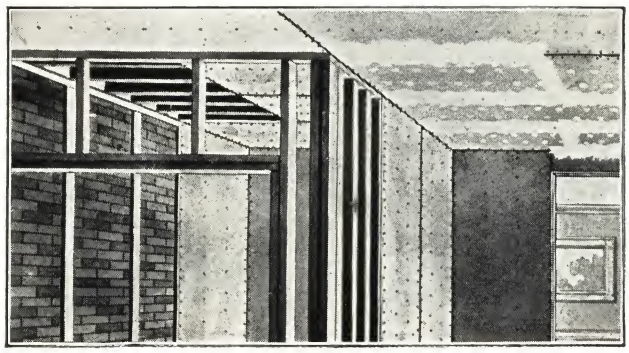


Square Open Edges at Joints

Application

Certain-teed and *Bestwall* boards are merely nailed to the studs and joists or wood furring strips, joints filled with *Certain-teed* or *Bestwall* Joint Filler and painted, kalsomined, or papered. They are easily cut by scoring and breaking, or by sawing.

Boards are nailed on all edges, headers being provided in the framing for the ends, with 3d flat head nails placed at intervals of about 7 inches. They are nailed to the center supports with 3d flat head nails placed about every 10 inches. *Certain-teed* or *Bestwall* Joint Filler is used to fill joints and cover all nailheads. Boards are then ready for decoration.



Successive Steps



Application

FILLING THE JOINTS—GYPSUM WALL BOARD

A most important item in applying "Certain-teed" and "Bestwall" Gypsum Wall Boards

Joints and nail heads properly filled and covered do not show after decorating with paint, kalsomine or paper. They are not difficult to fill but careful work is necessary to assure smooth, perfect walls and ceilings. All joints are filled in the same manner, with the two operations of roughing-in and finishing.

Preparing the Joint Filler

Certain-teed or Bestwall Joint Filler should be mixed in small batches in a clean, square pan. Put some clean water into the pan, sprinkle the filler into it and mix to the consistency of ordinary plaster. See instructions on our Joint Filler Container. In applying filler there are two operations—roughing-in and finishing.

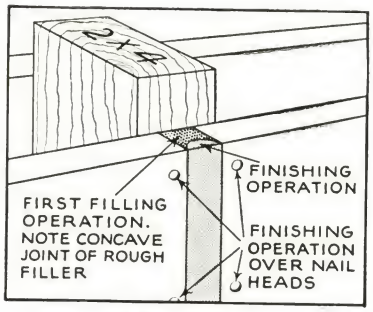
Roughing-in the Joints

Use a 12x12 mortar hock and 11-in. plasterer's trowel.

To put on first coat, little ribbons of filler should be cut from the hock the full length of the trowel and forced firmly into the joints.

The surface of the joint should be kept below the surface of the wall and surplus material should be struck off.

To make joint concave and to rough it up for receiving the finish coat, the trowel should be tipped on end and drawn down the length of the joint, or wash down with water and a kalsomine brush. Then allow to harden before finishing.



Sidewall Joist

Finishing the Joints

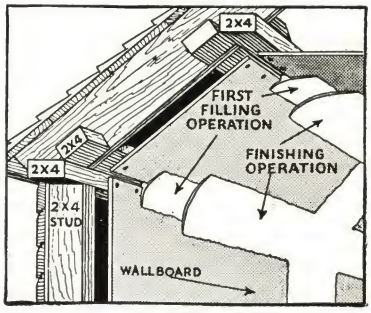
When rough filled joint has set hard, wet the joint and adjacent surface using a paint brush and water. Then mix filler slightly thinner than before and apply to each joint to make an absolutely straight wall, using 11-in. edge of trowel as straightedge across joint. Let set until just about hard, sprinkle again with water and trowel down to a smooth finish.

Finishing Corners and Angles

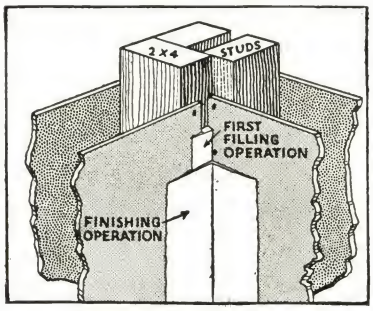
Joints at corners and angles are finished in the same manner as at edges. Where corner beads are not used for external corners, and either slab does not entirely fill out the corner, set a straightedge, or arris, along the face of the board on one side so that it locates the exact position of the finished corner. Fill out the first filling operation with filler flush with the straightedge. When the filler has set sufficiently, remove the straightedge. In the second operation, smooth out to a featheredge as on other joints.

Covering the Nails

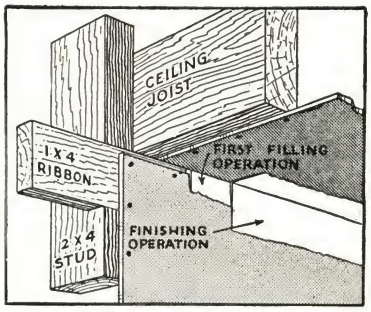
All nails or nailholes should be dampened and spotted with same filler used for joints, leaving surface flush with the board. Nail filling when dry should be sanded to a smooth surface.



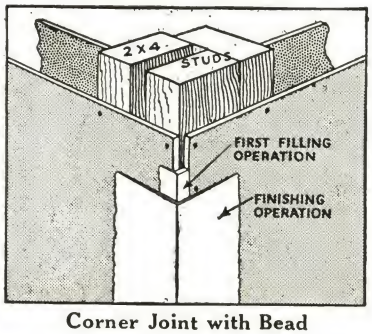
Coved Ceiling Joint



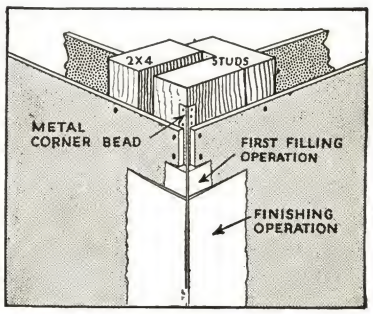
Interior Corner Joint



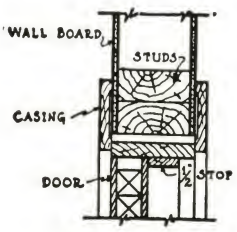
Wall and Ceiling Joint



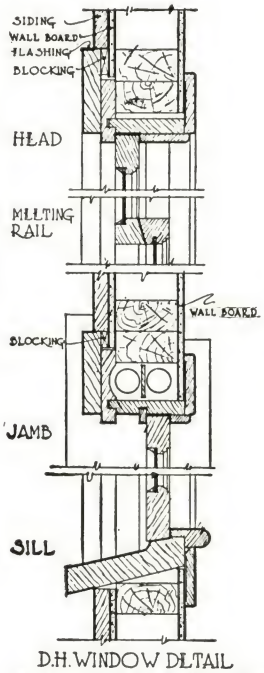
Corner Joint with Bead



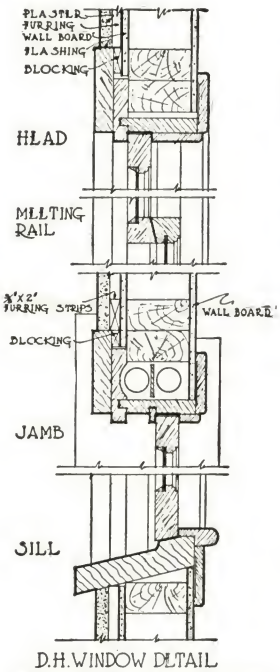
Corner Joint Without Bead



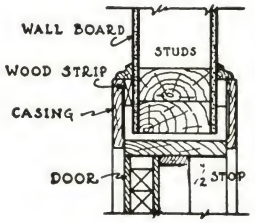
INSIDE DOOR DETAIL
NEW FRAMES



D.H. WINDOW DETAIL
WALL BOARD USED INSIDE & FOR SHEATHING WITH NEW FRAMES - EXT FINISH - SIDING



D.H. WINDOW DETAIL
WALL BOARD USED INSIDE & FOR SHEATHING WITH NEW FRAMES - EXT FINISH - PLASTER



INSIDE DOOR DETAIL
OLD FRAMES

NATIONAL GYPSUM COMPANY

Gold Bond Wall Making Materials

GENERAL OFFICES
409 Jackson Building, BUFFALO, N. Y.

CHICAGO OFFICE, Conway Building

MILLS: CLARENCE CENTER, N. Y., NATIONAL CITY, MICH., LUCKEY, OHIO, CAMDEN, N. J.

Products

GOLD BOND MINERAL WALL BOARD and TILE BOARD; GOLD BOND PLASTER; GOLD BOND WOOD GRAINED WALL BOARD.

Also Gold Bond Finish Lime, Lath, Sheathing Board, Dry Fill Insulation and Color Texture.

For Gold Bond Maftex Insulation Board and Insulation Lath, see Manufacturers' Index.

Gold Bond Wall Board

Gold Bond Mineral Wall Board is made from newly discovered gypsum strata of unsurpassed purity. It has a new, scuffproof cream colored surface which is easier and more economical to decorate. Both edges on the long side of the board are enclosed.

Gold Bond Wall Board is made by a patented process that creates a cellular core, which makes the board both light in weight and materially stronger, as well as resilient and less subject to breakage in handling. It is fireproof, verminproof and sound retarding.

Sizes—Gold Bond Wall Board is made in 48-in. widths and even foot lengths from 6 to 10 ft.; 12-ft. lengths are available on special order.

Application—Gold Bond Wall Board is applied in accordance with standard panel construction. It is nailed direct to studding and joists in new work or over the old walls in reconstruction.

The panel intersections are either filled with Gold Bond Filler or the Gold Bond Tape Joint Method, which covers the joints with a mesh tape embedded in joint cement.

Decoration—Gold Bond Wall Board may be decorated by painting or wallpapering. It is also especially suited for texture finishing by either texture paint or color texture.

Write for Gold Bond texturing specifications.

Gold Bond Wood Grained Wall Board

3 wood finishes—whitewood, gumwood, mahogany.

Built on a base of famous Gold Bond Mineral Board; light, tough, strong, easy to handle; fireproof and permanent. Comes in big panels, easily applied. Can not—will not—warp nor buckle. In remodeling, panel right over old plaster. In new work nail direct to studs.

Gives walls of Gold Bond strength plus something brand new, a beautiful, wood grained surface. All the charm of lovely, expensive whitewood, gumwood or mahogany paneling, 32 in. wide by 8, 9 and 10 ft. long.

Gold Bond Tile Board

Gold Bond Tile Board possesses all of the advantages of Gold Bond Wall Board, plus the marking of the surface with deep indentations or blocks so that when the board is decorated the effects obtained have the appearance and usefulness of ceramic tile.

Write for the new specifications explaining the tone-and-line system for decorating Gold Bond Tile Board.

Gold Bond Plaster

Gold Bond Plaster is made from the superpure gypsum in the recently discovered National gypsum deposits. "The higher the gypsum content, the stronger the resulting plaster," states the United States Bureau of Standards.

Not only is Gold Bond Plaster remarkably high in the purity of its gypsum content, but it is made in modern mills under strict laboratory control, assuring the uniformity and workability of every shipment. As a result of its extreme purity, Gold Bond Plaster goes farther and is therefore more economical—its price being in line with other plasters. It works exceptionally well under the trowel and gives maximum strength in the finished job.

Gold Bond Wall

By producing all the materials entering into standard wall construction under one name, trade-mark and guarantee, the NATIONAL GYPSUM COMPANY is able to guarantee the quality of the material in the completed wall, wherever such walls are built with Gold Bond products. This is in line with the modern concept of the building material business in that "products which are used together, should be made and sold together." There is no divided responsibility, no questions of mutual suitability of material, when walls are built as Gold Bond walls.

UNIVERSAL GYPSUM & LIME CO.

105 West Madison Street, CHICAGO, ILL.

SALES OFFICES

CHICAGO, ILL. | KANSAS CITY, MO. | ATLANTA, GA. | ST. LOUIS, MO. | MINNEAPOLIS, MINN.
NEW YORK, N. Y. | BOSTON, MASS. | DALLAS, TEX. | MILWAUKEE, WIS. | PITTSBURGH, PA.

Gypsum Products

Universal, Plymouth and Iowana Cement Plaster, fibered and unfibered.
Universal Wood Fibered Plaster.
Universal Prepared Sanded Plaster.
Universal Bond Plaster for concrete.
Universal Gauging Plaster for lime putty finishes (common).
Silver White and Higginson's Red Star Gauging Plaster for lime putty finishes (pure white).
Blue Ribbon and Higginson's Blue Star Moulding and Casting Plaster (pure white).
Empire Prepared Trowel Finish.
Universal Prepared Sand Float Finish.
Empire Colored Interior and Exterior Finishes.
Universal Plastic Paint.
Gypsocrete, for floors, roofs and sidewalls.
Best Bros. Keene's Cement.
Gypsolite Wallboard.
Gypsolite Lath.
Gypsolite Sheathing.
Universal Milcor Metal Lath.
Universal Gypsum Block.
Gypsolite Fill (dry insulation).

Lime Products

Universal and Plymouth Rock Hydrated Finishing Lime (high magnesium).
Universal and Palmer Mason's Hydrated Lime.
Universal and Palmer Mason's Lump Lime.
Spred and Kuver Finishing Ground Lime.
Big Yield Mason's Ground Lime.

Quality

UNIVERSAL GYPSUM & LIME CO.'s products are manufactured from carefully selected basic materials, scientifically prepared by experienced men. They pass all the requirements of standard specifications of the American Society for Testing Materials and will give satisfactory results if used in accordance with our specifications.

Universal Gypsum Plasters

Universal Gypsum Plasters of each class listed above are marketed under their various brand names. All brands of each class are of the same high standard of quality.

Frequent testing of Universal Plasters during manufacturing processes insures a product of the highest quality and a finished wall that will be satisfactory in every particular. The Universal trademark on each bag is assurance of the highest quality.



Universal Gypsum Block (Partition Tile)

This gypsum product has an established reputation in the building world through repeated use by architects, contractors and builders. It is fire resisting, heat, cold and sound resisting. Light weight, strong and tough, and erects economically without waste.



It is a recognized material for interior, non-bearing partition, column covering and wall furring. These blocks are made on the latest type of automatic machine.

Sizes—Standard 12x30 in., thickness 2 and 3 in. solid; 3, 4, 5 and 6 in. hollow.

TRADE-MARK

Gypsolite

Description—Gypsolite, a finished wall material, is a patented gypsum rock wall board, machine built into large sturdy boards, pre-dried and ready to nail to studding and joists. The special Gypsolite patent process produces a wall board that is very light in weight and has great strength and rigidity, thus facilitating ease of handling and nailing without breaking. Made in lengths of 6 to 12 ft.; widths 32 or 48 in.; uniform thicknesses, ¼, ⅜ or ½ in.

GYPSOLITE WALLBOARD
TRADE-MARK

Advantages—Being of pure rock formation without sawdust or other substitutes, Gypsolite forms a solid and continuous wall of rock that will not warp, shrink, bulge, or crack. It provides better insulation, due to the patented gypsum core which is filled with minute dead air cells. Gypsolite is fire resisting, heat, cold and sound resisting. Gypsolite has great strength, unusual light weight with minimum breakage, assuring a rigid wall surface for all types of interior construction. Adaptable to new construction as well as for repairing and remodeling.

Gypsolite Finisher—Packed in powdered form in handy 5-lb. cartons, and when mixed with water it forms a putty cement which is used for filling joints, nailheads, etc., to form a smooth surface ready for decoration.

Gypsolite Cement and Fabric—Gypsolite Cement in powder form is packed in a large and small package in proper proportions for mixing and applying by working through weave of Reinforcing Fabric. This insures perfect concealment of board joinings, and a smooth wall.

Universal Gypsolite Lath

Is produced in the same manner as Gypsolite Wallboard having all its advantages. It forms a perfect backing for gypsum plasters.

Sizes and Thicknesses—¼, ⅜ and ½ in. thick; standard sizes, 16x32 and 16x48 in. bundled. Also, 24x32, 32x36 and 32x48 in. unbundled.

Lime Products

Our several brands of Universal and Palmer Hydrated and Lump Limes are well and favorably known among the building trades. These products have the plasticity so necessary for good brickwork, making a mortar that will spread easily and economically insuring well filled joints—both vertical and horizontal. They possess all the other properties so necessary for permanence—adhesion, elasticity, absorption, strength, etc. We will be glad to discuss with architects and contractors, any problem arising in connection with the use of lime.

CERTAIN-TEED PRODUCTS CORPORATION

BEAVER PRODUCTS COMPANY, INC.

Manufacturers of Beaver Wall Board

GENERAL OFFICES
100 East 42nd Street
NEW YORK, N. Y.

PLANTS: FIBRE DIVISION—BUFFALO, N. Y., and THOROLD, ONT., CAN.

For Sales Offices, see Gypsum Plaster pages

For Our Other Products, see Manufacturers' Index

FIBRE BOARD

The Original Fibre Board—The Standard for Quality

Beaver Board is the original wall board and millions of these serviceable panels are used in homes, factories, stores and for a variety of special uses where a sturdy light weight board in convenient sizes is desirable.



Beaver Board Can Be Sawed as Easily as Lumber



Beaver Board Is Tough and Rigid and Nails Securely Into Place

TRADE-MARK

Beaver Board is well known throughout the world for its high standard of quality. It is the original fibre wall board and was introduced to the building world in 1906.

Beaver Fibre Board (4-Ply)

This 4-ply board is made of long, tough interlocked fibre, pebbled surface on one side—smooth on the other. It contains millions of tiny dead air cells and combines not only heat and cold resisting properties but also strength, rigidity and surface qualities. It comes in convenient panels approximately $\frac{3}{16}$ in. thick, 32 and 48 in. wide, in 6, 7, 8, 9, 10, 12, 14 and 16-ft. lengths, packed 10 panels per bundle.

One side of the board is pebbled and the other side is plain, giving two different decorative surfaces. A special sizing seals the surface against moisture or climatic change and reduces paint consumption.

Advantages—The advantages of Beaver Board are its light weight, ease of cutting and application, insulating qualities and attractiveness of the finished job.

Beaver Board may be applied over old papered or painted walls, thus saving the cost of removing the paper or the need of patching plastered walls. It is of even thickness and has no grain. It is tough, rigid and will not crack, chip or sag, and may be sawed to any odd size.



This Special Surface Takes Paint Easily, Gives an Even Finish, Free from Roughness

Jumbo Beaver Fibre Board (5-Ply)

This 5-ply board, known as *Jumbo Board,* is made of the same materials and in the same way as the Standard Beaver Board and is identical with it, except for thickness and weight.

Jumbo Board is recommended for jobs where exceptional strength is desired.

It comes in convenient panels, approximately ¼ in. thick, 32 and 48 in. wide, in 6, 7, 8, 9 and 10-ft. lengths, packed 10 panels per bundle; and in 12, 14 and 16-ft. lengths, packed 8 panels per bundle.



Pleasing Decorative Effects May Be Produced by Paneling the Board Intersections

BEAVER MOROCCO BOARD AND BATTENS

A New Beaver Board Product

A beautiful finished paneling for walls in mahogany, green and chestnut colors. No additional painting or staining is required.

The surface of Morocco Board is highly resistant to usual destructive agents. Tests have proven its ability to resist moisture. It is practical to wash the surface of Morocco Board with soap and water should it become stained at any time.

Morocco Board is similar in construction to, and is applied in the same manner as Beaver Board. It provides ideal paneling for walls in dining rooms, libraries, offices, card and club rooms. Also very satisfactorily used for window display, display booths and card table tops.

Battens are furnished in the same colors and are used for covering joints. Thus no painting, staining or other finishing costs are necessary.

Panels 32 ins. wide only, in all regular wall board lengths from 6 to 16 ft.

Battens 2 ins. wide in all wall board lengths.

THE UPSON COMPANY

Upson Processed Board, Fibre-Tile, Self-clinching Fasteners

10 Upson Point
LOCKPORT, N. Y.

Products

UPSON PROCESSED BOARD, made in thicknesses of $\frac{3}{16}$, ¼ and ⅜ in.

$\frac{3}{16}$-in. Upson Board made in 6, 7, 8, 9, 10, 12, 14 and 16-ft. lengths and in widths of 32, 48 and 64 in.

¼-in. and ⅜-in. Upson Board made in 6, 7, 8, 9, 10, 12, 14 and 16-ft. lengths, and one width only—48 in.

UPSON FIBRE-TILE, Upson Board with a special hard, smooth surface with deep tile indentations—4x4 in.—made in lengths of 6, 7, 8, 9, 10, 12, 14 and 16 ft.—48 in. wide.

UPSON DECORATIVE STRIPS are ¼ in. thick—3, 4, 6, 9 and 12 in. wide—made in lengths of 12, 14 and 16 ft.

UPSON SELF-CLINCHING FASTENERS eliminate unsightly nailholes in the surfaces of panels. The only method of applying wall board without the unsightly nailholes.

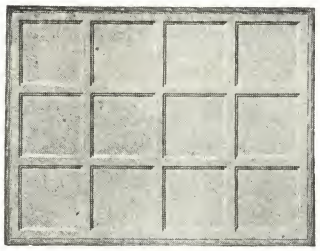
For Upson Blue-Stripe Insulation, see Manufacturers' Index.

Upson Relief Ceilings

A new type of ceiling—a recent Upson achievement—provides the beauty of hand modeled plaster and eliminates many of the objections to paneling hitherto experienced.

Two or more layers of Upson Decorative Strips are superimposed over the edges of the big Upson Board panels so as to create a design. This raises the design in relief against its background resulting in a pleasing contrast of high-light and shadow.

Four popular Upson ceiling designs are shown below. From experience we have found that most people prefer to model their Relief Ceiling after one of these standard designs.



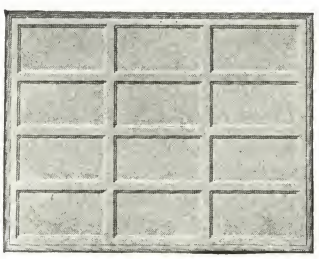
Colonial



Greek



Patrician



Classic

Typical Upson Relief Ceiling Designs Which Will Suggest Many Others to the Thoughtful Architect

While these are adaptable to most types of rooms, every interior of regular or irregular shape can have its own specially and harmoniously designed Upson Relief Ceiling. The Upson Architectural Service Department will be glad to co-operate with architects in planning special designs.

Upson Relief Ceilings add much to the attractiveness of a room, yet are very easily installed. The cost is little more than that of a plain ceiling, but the first cost is also the last as Upson Relief Ceilings give permanent service.

The Upson Studio of Decoration and Color will gladly give suggestions on furnishings and color schemes for any type of room.

Upson Processed Board

Qualities—Made of selected wood fibre. Has the distinctive Upson *super* or "pebbled" surface—the finest painting surface of any wall board.

Looks and handles much like lumber. Has a clean cutting edge. Weighs one-third as much as plaster wall board. One man can easily apply it, even on ceilings.

Saves Paint—Upson Board is *pre*-sized at the factory. One or two coats of paint are sufficient to finish it. This saves from $5 to $25 a room in cost of painting.

Properly Applied, Should Not Warp—Upson Board will not crack, chip or fall. *Properly applied it should not warp or bulge—it should lie flat on the wall. It has a record of less than one complaint to every 8,000,000 ft. sold and used.*

Resists Jars and Blows—Certified tests by impartial laboratories (detailed report of laboratories gladly sent on request) show a panel of Upson Board to withstand from 40% to 150% heavier blows than other fiber and plaster wall boards tested. *Strength,* not thickness, is what counts in a wall and ceiling material.

Waterproofed—Upson Board is adapted for use under practically all climatic conditions. In certified tests, Upson Board, immersed in water for a given length of time, gained only one-half *ounce* to the square foot, whereas samples of plaster wall boards exposed to the same test increased nearly one-half *pound* to the square foot. Other fibre boards tested in the same way were found to absorb nearly twice as much water as Upson Board.

A Good Fire Retardant—Expert building and insurance authorities agree there is no fireproof building material. In justice to contractors and architects, Upson Board, therefore, has never been termed fireproof, although it is a good fire retardant as numerous letters in our files prove—it chars rather than burns. In characterizing this product as a "fire retardant" THE UPSON COMPANY is thus following the recommendation of the National Fire Protection Association.

Uses—Upson Board is used for *walls, ceilings and partitions* in every kind of building; either in new construction (direct to studs) or in repairing or remodeling (over old lath or plaster).

Upson Board is also well suited as an insulator and sound deadener under finished flooring, linoleum or carpets.

It is used *in homes* for built-in closets and storerooms, cupboards and cabinets. In the cellar—for partitioning off the furnace and sealing up floor joists to prevent dust from seeping through the house. Good for fruit closet, workroom and laundry. Good, too, for partitioning off cellar of two-family apartment.

In the factory for walls and ceilings of administrative offices, built-in plant offices, wall and ceiling insulation in shops, factory partitions, and for miscellaneous uses such as lockers, machine guards, cupboards, cabinets and telephone booths.

On the farm it is used for walls and ceilings of farm and tenant houses, lining outbuildings, milk houses, tool houses, garages, chicken coops, and cow barns.

In department stores for walls, ceilings and partitions, built-in offices, special booths, show window backings, display signs, cutouts, counter backings, and counter tops.

Upson Board is widely specified by architects for commercial and public buildings such as hotels, professional offices, shops, churches, schools, restaurants and lunchrooms, public halls, moving picture theaters, and for many other purposes. Also on construction jobs for temporary workhouses, guards and partitions.

Architects also specify Upson Board for remodeling and repairing, but *particularly for ceilings* in new construction. Nothing better for ceilings.

Identification—Identify *genuine* Upson Board by the famous *blue*-center running through the edge of every panel.

Application of Upson Processed Board

In applying Upson Board, your contractors are dealing with a material that is similar to fine interior trim. The quality of the material, therefore, justifies reasonable care in following out the simple specifications.

(1) Preliminary Steps—When the Upson Board is delivered on the job, open each bundle and expose the panels to the air for a few hours.

Lay out your panel scheme before you start work. As with trim, the framework and building should be dry before applying wall board.

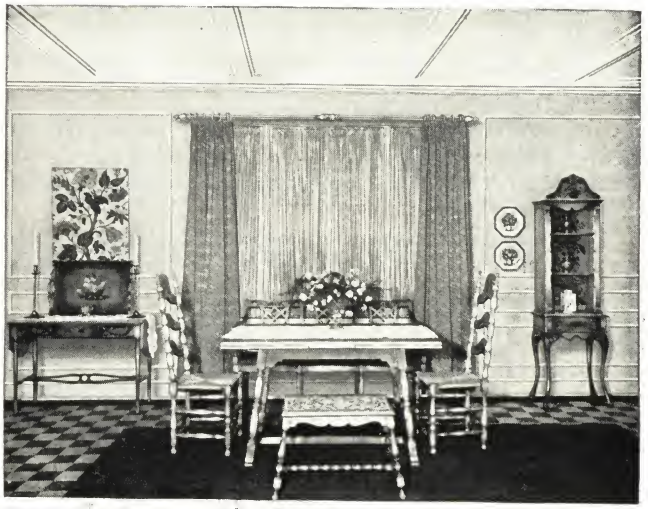
Studs, joists or furring should not be more than 12 to 16 in. between centers for $\frac{3}{16}$-in. Upson Board. For studs on 18 to 24-in. centers, Extra-Thick, Extra-Strong ($\frac{1}{4}$-in.) Upson Board should be used.

(2) Preparation—Level up all joists or studs to afford a flat, smooth nailing surface. The most satisfactory jobs are obtained by furring in order to obtain a level surface.

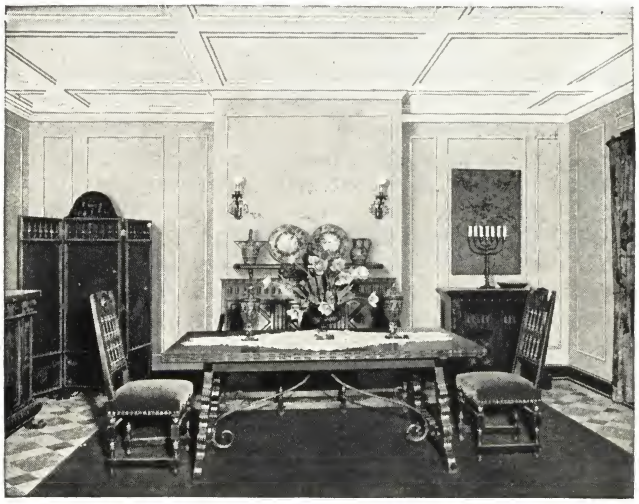
Place headers or nailing pieces at top of baseboard, flush with studs; back of plate rail or picture moulding; and at angle of ceiling. Place extra nailing pieces back



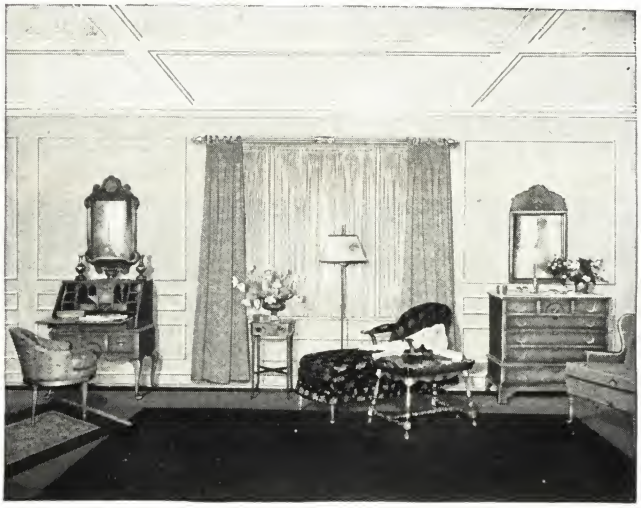
This Colonial Upson Relief Ceiling Adds Just Enough Design to Give Character to the Room As a Whole



The Greek Pattern of Upson Relief Is Suitable for Both Simple and Elaborate Rooms of the House



Modern Furnishing Often Requires the Elaborate Type of Ceiling, As the Patrician



The Classic Pattern of Upson Relief Contributes a Large Part to the Beauty of This Room

of electric fixtures and other objects needing support.

If the house has been built for plaster, the difference between the thickness of plaster—which is ¾ in. thick—and Upson Board, which is $\frac{3}{16}$ in. thick, must be taken care of. This is either done by furring out all studs, or by cutting down the width of window casings and doors, or by inserting strips in space between wall board and trim.

(3) How to Cut Upson Board—Upson Board is best cut with a fine-tooth saw or a sharp jackknife. In sawing, place the side of panel to be painted face up, being careful not to deface it. To cut with a jackknife, simply lay panel on floor or table, cutting half way through. Then snap panel along knife cut.

(4) Application in New Buildings or Unfinished Rooms—It is recommended that Upson Self-clinching Fasteners be used for centers of panels.

To nail edges use 1-in. Upson In-to-Stay Nails or 1-in. No. 16 flat head barbed wire nails placed every 16 in. apart. Be sure to nail at least ½ in. *back from edge.*

Apply ceiling first. Always leave $\frac{3}{16}$ in. *between panels,* and see that edges of panels are near center of stud to provide ample nailing space.

If panel does not cover nearly half of stud, or projects at least ¾ in. on stud, nail strip to side of stud flush with face, thus providing proper nailing surface.

Panels should be cut so that they run from floor to ceiling angle. Fit board tightly around windows and doors to make an airtight job.

(5) Application Over Old Plaster—We recommend that old plaster be furred with ⅞x2-in. wooden strips on 16-in. centers. Low spots should be shimmed or built-up to afford a level nailing surface. Next apply the board to the furring.

Where plaster is level and an inexpensive job is desired, Upson Board can be nailed directly over the old plaster, using 2-in. finishing nails for centers and 2-in. flat head nails for edges of panels.

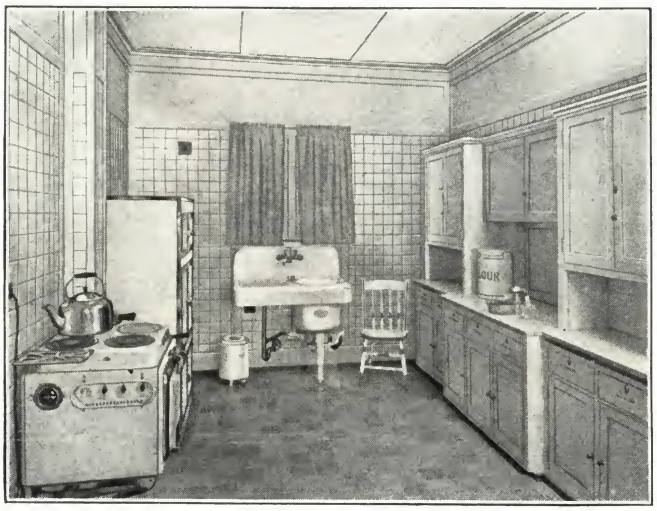
Baseboard should be removed, but if this is impossible, a backband may be run around top of base and around trim. Upson Self-clinching Fasteners can not be used over old plaster unless it is furred.

(6) Application Over Brick or Stone Walls—Walls should first be waterproofed with some protective material like asphaltum. If walls are subject to unusual dampness, paint the back of Upson Board with oil paint.

Walls should be furred with ⅞x2-in. strips on 16-in. centers. The furring should be straight and even, to give a flat, smooth wall when the board is applied.

The use of wallpaper is not recommended, and THE UPSON COMPANY does not assume responsibility for unsatisfactory results where wallpaper is used. For many reasons, such as shrinking of "green" studs or settling of the building, plaster almost invariably cracks, and affects the wall paper.

(7) "Dont's"—(a) Avoid nailholes. Always use Upson Self-clinching Fasteners on intermediate studs or joists—(b) Do not butt panels—leave $\frac{3}{16}$-in. space—(c) Do not use wallpaper—settling may cause cracks at joints—(d) Paint one coat before applying trim and one coat after.



Upson Fibre-Tile Makes Permanent, Crackproof Colorful Walls for Kitchen, Bath and Other Rooms Where Tile Walls Are Desired

Upson Fibre-Tile

Qualities—Has a special hard, smooth surface with permanent tile indentations. Does not crack along the tile indentations, like ordinary tiled-boards. Nor does it crack like "cement tile." Ideally adapted for enameling. Being pre-sized, Upson Fibre-Tile requires fewer coats of enamel than ordinary tile board and saves from $5 to $25 a room in decorating costs.

Upson Fibre-Tile is thoroughly waterproofed and even withstands ordinary leaks. It is finished after application, and can be kept clean with a damp cloth.

Uses—Kitchen, laundry, bath, candy kitchens, restaurants, florist shops, barber shops, and in dozens of other business or professional stores and offices.

Application of Upson Fibre-Tile

Same as with Upson Board. Enamel as follows:

Directions for Enameling—First coat: 8 parts flat white paint, 1 part turpentine. Second coat: equal parts high grade enamel and flat white. Third coat: high grade enamel, flowed on as it comes in the can.

Sandpaper all coats thoroughly before applying the additional coats. Allow ample time to dry between coats.

Upson Self-clinching Fasteners

Apply Upson Board and Upson Fibre-Tile with Upson Fasteners, "patented," which *anchor* panels securely *from the back.* The only device which successfully eliminates unsightly nailheads, a big objection to all other wall boards.

Blue Print Service

The Upson Blue Print Service answers every question regarding the proper application and decoration of Upson Board. It was prepared by some of the best known architects in the country. It is, in truth, a wall board encyclopedia, requiring three years of preparation. Nearly a thousand sketches were drawn and re-drawn, and finally condensed into forty complete blue prints.

Literature

Write to THE UPSON COMPANY, Lockport, N. Y., for latest literature on Upson Board and Upson-Fibre Tile.

ANGIER CORPORATION

Manufacturers of Plain, Resilient and Reinforced Waterproof Building Papers

FRAMINGHAM, MASS. LOS ANGELES, CALIF.

Products

BROWNSKIN, a Resilient, Waterproof and Moistureproof Building Paper.

Also Statite, a reinforced waterproof building paper; Protect-O-Mat, a burlap reinforced waterproof building paper for protecting concrete and other floors.

BROWNSKIN Resilient Building Paper

Brownskin

Brownskin Building Paper incorporates in its construction "A Factor of Safety"—a definite assurance of permanent protection for owner, architect and builder.

Resilient, waterproof, moistureproof, tough—these four features assure complete and permanent protection to walls and frame for the life of the building.

Resilience—Resilience is the factor of safety in Brownskin, which permits it to stretch to absorb building strains caused by wind, weather, settling and shrinkage.

Moistureproof—Brownskin is not only waterproof but is positively moistureproof. Its outer surface is protected to prevent the slightest penetration, hence moisture cannot get through to the inner house, which means protection even for the valued contents of the home. Brownskin forms a complete covering which keeps out all air, dust and moisture.

Tough—Brownskin can be applied to the framework even in the highest wind without tearing or pulling from the nails.

Permanent Insulation and Protection—For exteriors specify Brownskin for use behind stucco, clapboards, siding, brick or shingles and on the interior behind wood or metal lath and the house will be insulated and protected for all time.

Uses of Brownskin

Wall Structure:

(A) For exterior walls between studding or sheathing and exterior finish of stucco, clapboard, siding, brick or shingles.

(B) For interior walls, as a base behind lathing of wood or metal, Brownskin will cause a more complete bond between plaster and lath and saves from 18% to 50% of plaster.

(C) For ceilings as a base above the lathing, whether wood or metal, Brownskin gives same results as (B) above.

(D) Between rough and finished floors, Brownskin keeps out subfloor moisture, prevents buckling and provides a permanent barrier to dust.

Specifications

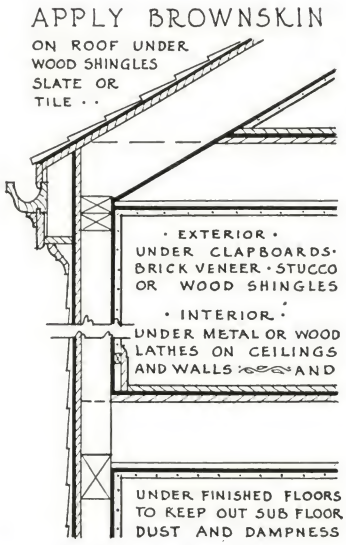
All building paper hereinafter specified for various parts of the construction shall be *Brownskin* as manufactured by ANGIER CORPORATION of Framingham, Mass.

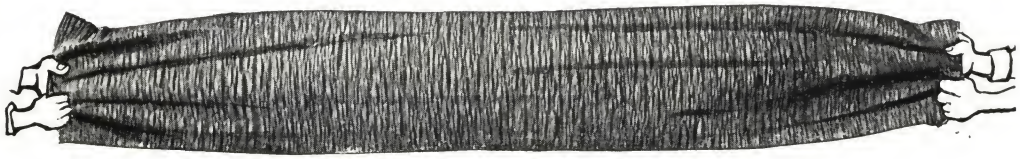
Samples

Samples and further information on Brownskin Building Paper will be sent gladly on request.



California Residence Sheathed in Brownskin Under Stucco Finish





Brownskin Is Resilient, Waterproof, Moistureproof, Pliable, Tough

BIRD & SON, inc.

Manufacturers of Roofings and Building Papers

MILLS AND GENERAL OFFICES
EAST WALPOLE, MASS.

CHICAGO OFFICE AND PLANT: 1472 West 76th Street NEW YORK OFFICE: 295 Fifth Avenue
CANADA: Building Products Ltd., HAMILTON, ONT., MONTREAL, QUE.

Products

NEPONSET BLACK BUILDING PAPER, SATURATED and COATED BUILDING PAPER, REFRIGERATOR INSULATING PAPER, AMERICAN BUILDING PAPER, BIRD REENFORCED WATERPROOF PAPER, SUPER SHEATHING PAPER.

For our pages on Built-up Roofing, Insulating Board and Asphalt Shingles, see Manufacturers' Index.

Neponset Black Building Paper

Neponset Black Building Paper has been known and specified by architects for years as a waterproof building paper of the highest grade. A strong bodied paper thoroughly saturated with asphalt, protected with asphaltic coating on both sides, giving an absolutely waterproof paper. Recommended particularly for use:

(1) Under all kinds of roofing.
(2) Behind clapboards and shingles or stucco on the walls of buildings.
(3) Between floors.
(4) Between double floors that extend over an open porch.
(5) Within walls of house, store or factory in place of backplaster.
(6) For cellar lining.
(7) For cold storage work.

Put up in rolls 36 in. wide containing 500 sq. ft., weighing 50 lbs. per roll.

Specifications for Use of Bird Neponset Black Waterproof Building Paper—***Beneath Clapboards and Shingles***—Underneath the clapboards or shingles shall be applied 1 layer of Bird Neponset Black Waterproof Building Paper, lapped not less than 2 in. and tacked to hold in place.

Beneath Roofing—Underneath the roofing, 1 layer of Bird Neponset Black Waterproof Building Paper shall be applied; paper to be lapped not less than 2 in. and tacked along the seams, sufficient to hold in place.

Back of Stucco—Over the sheathing boards 1 layer of Bird Neponset Black Waterproof Building Paper lapped not less than 2 in. Hold paper in place with furring strips spaced about 16 in. on center. Nail metal lath firmly to furring strips and apply stucco to the lath.

Beneath Double Floors—Between the double floors or underneath the parquetry shall be placed 1 layer of Bird Neponset Black Building Paper. Paper to be lapped not less than 2 in. and tacked sufficiently to hold in place.











Saturated and Coated Building Paper

Can be used in much the same way as Neponset Black Building Paper where a lighter weight paper than Neponset Black will answer the purpose.

Put up in rolls 36 in. wide, containing 500 sq. ft. and weighing 35 lbs. per roll.

Economy Building Paper

An asphalt saturated sheet, smooth, tough, odorless and clean to handle.

Put up in rolls 36 in. wide, containing 500 sq. ft. and weighing 25 lbs. per roll.

Bird Reenforced Waterproof Paper

Bird Reenforced Waterproof Paper is built to last. The heavy outer sheets of Bird Paper are waterproof and stuck together with hot asphalt. It is further reenforced by an interlaced net work of jute twine which makes it non-tearing. For use wherever a high grade building paper is needed.

Recommended particularly for use:

(1) Back of clapboards, shingles or stucco on the walls of buildings.
(2) Under all kinds of roofing.
(3) Between floors.
(4) As a temporary roofing.
(5) For covering concrete or cement.
(6) As a windbreak on scaffolding and on new construction during the winter months. Same specifications for use as Neponset Black Building Paper.

Put up in rolls 36 in. wide, containing 500 sq. ft. and weighing 50 lbs. per roll.

Bird Super Sheathing Paper

A strong, rugged sheathing paper built for wear and service. It has a waterproofed back which acts as a barrier against moisture and dampness.

When used as a sheathing the waterproofed side should be on the outside and the clapboards or shingles nailed directly against it.

When used as a protection to floors, stair treads, etc. the waterproofed side should be up.

Put up in rolls 36 in. wide, containing 500 sq. ft. Two weights: 20 lbs. and 30 lbs. per roll.

CREO-DIPT BUILDING PAPERS

CREO-DIPT COMPANY, INC.

NORTH TONAWANDA, N. Y.

FACTORIES, SALES OFFICES OR WAREHOUSES IN ALL PRINCIPAL CITIES

Other Creo-Dipt Products: Creo-Dipt Mohawk Shingles (Fireproof—made of Cement and Asbestos) Creo-Dipt Fireproof Shingles (Cement and Asbestos); Creo-Dipt White (Double Strength)

See Manufacturers' Index for Information on these Products

Products

Creo-Dipt offers a complete line of BUILDING PAPERS, including the following:

Creo-Dipt Weatherproofed Paper
Creo-Dipt Sandwich Type, Grade A
Creo-Dipt Tearproof Paper
Creo-Dipt Asphalt Felts

Creo-Dipt Weatherproofed Paper

This paper is an entirely new and different kind of sheathing paper. It has a base of 100% pure kraft *infused* with a special compound.

The infusion process is conducted in such a way that the original qualities of the base (kraft) paper are unimpaired—retaining all of kraft paper's resistance to tear and punch, and all its flexible toughness. And the infusion preserves these qualities indefinitely, so that Creo-Dipt Weatherproofed Paper actually improves in all its qualities with age.

Creo-Dipt Weatherproofed Paper is available in three weights—standard, medium and heavy.

Characteristics of Creo-Dipt Weatherproofed Paper

Creo-Dipt Weatherproofed Paper is waterproof and moistureproof; practically airtight. It is proof also against vermin and insects; nothing in it that attracts rats or mice. It cannot develop mildew, will not support spore-growth of any kind, and is absolutely odorless.

It is remarkably free from effect by temperature changes, for it is secure against melting or any breakdown whatever up to 350° F., and withstands intense cold without developing flaws or cracks.

Uses as a Building Paper

The sum total of the qualities noted above characterize Creo-Dipt Weatherproofed Paper as an ideal material for a wide variety of uses. Six outstanding applications will be noted by any one experienced in construction.

(1) For sheathing sidewalls, in either heavy or light forms of construction.

(2) Sheathing roofs of any kind.

(3) Sheathing floors and ceilings, particularly where heat retention is a considerable factor. Creo-Dipt Weatherproofed Paper has a high insulating efficiency.

(4) As a windbreaker around door and window casings. Creo-Dipt Weatherproofed Paper's flexibility scores heavily here.

(5) Many general uses such as covering supplies and equipment on exposed jobs, etc.

(6) Refrigerator Construction—Technical experts are now recommending Creo-Dipt Weatherproofed Paper in refrigerator and cold-storage work.

Other Creo-Dipt Papers

Creo-Dipt Tearproof Paper—Another new type of building paper. It is tearproof, windproof, waterproof, and contains no asphalt compound. Especially adaptable for protecting and seasoning newly laid concrete.

Creo-Dipt Sandwich Type, Grade A—A high quality building paper at a reasonable price. Made from two sheets of high-grade northern kraft with a patented Weatherproofed compound.

Creo-Dipt Asphalt Felts—A complete line of asphalt-saturated felts.

Sold Everywhere by Leading Lumber Dealers

Like other Creo-Dipt products, Creo-Dipt Papers are sold by leading lumber dealers everywhere.

There is a Creo-Dipt representative near you—ask him for further information on these products, or, if you do not find Creo-Dipt listed in your telephone book, write to the Creo-Dipt Company, Inc., North Tonawanda, N. Y.

W. RALSTON & CO., INC.

Manufacturers of Waterproof Building Papers

921 Whirlpool Street
NIAGARA FALLS, N. Y.

Ralston Waterproof Building Papers—Scientifically Constructed

Ralston Waterproof Building Papers consist primarily of two sheets of kraft paper, so securely cemented together by a uniform layer of asphalt that it is impossible to separate the paper from the asphalt. Made plain and creped without reinforcing, and with string reinforcing in S-mesh and ½ and 1-in. square mesh, for general sheathing and wind and moisture insulating purposes.

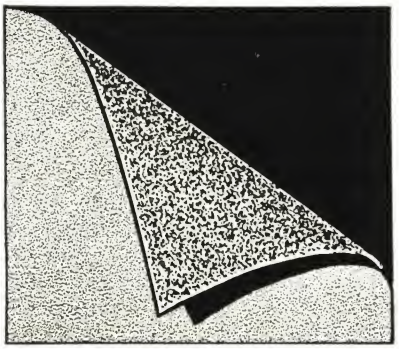
A layer of asphalt is applied to the sheets of kraft paper at a temperature kept absolutely constant by electrical control, so that the asphalt is always of the same consistency. This insures an even layer of asphalt of uniform thickness in all parts of the roll and in all rolls of any type.

The paper then proceeds through a series of rollers, the first of which brings the second layer of paper in contact with the asphalt and presses the two papers together. Too much or too little asphalt is avoided and the finished product is absolutely uniform in thickness.

The paper then passes between cold rollers which immediately chill and set the asphalt so that the oil in the asphalt does not penetrate and discolor the paper causing it eventually to dry out and crack. The oil remaining in the asphalt makes the finished product more ductile, and prevents the paper becoming sticky in the summer or brittle in the winter.

Samples made 20 years ago show absolutely no discoloration and are as pliable as on the day the paper was made.

"Impervious" Building Paper

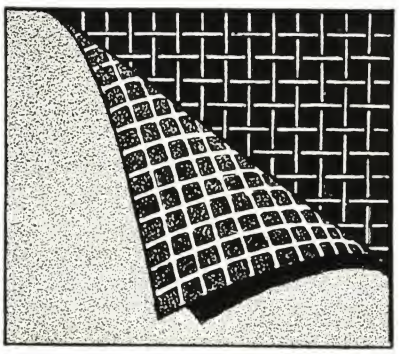


A three-ply paper consisting of two layers of kraft paper and one layer of asphalt. It is water, wind and rot proof, pliable and strong. Furnished in rolls of 500 sq. ft., 20 lbs. per roll, and in widths of 36 to 76 ins.

Wovenkraft Building Paper

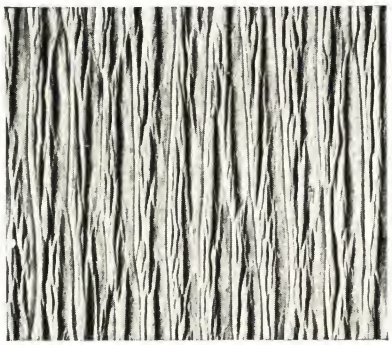
A four-ply paper consisting of two layers of kraft paper, one layer of asphalt and a mesh of woven string embedded in the asphalt.

It is non-tearable, pliable, and water, wind and rot proof. It is stronger than the "Impervious" Paper.



Made in two meshes, ½ and 1 in., and is furnished in rolls of 500 sq. ft., 26 and 30 lbs. per roll, and in widths of 36 to 76 ins.

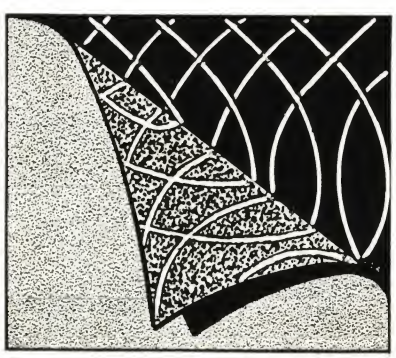
Creped Building Paper



A three-ply paper similar to the "Impervious" Paper, except that it is creped. It is water, wind and rot proof, pliable, strong and will stretch before it will tear. Primarily used for sheathing purposes. Furnished in rolls of 500 sq. ft., 22 lbs. per roll, and widths of 36 to 76 ins.

Raltex Building Paper

A four-ply paper similar to Wovenkraft Paper, except that the mesh is S-shaped instead of in squares. It is water, wind and rot proof, pliable and non-tearable. Furnished in rolls of 500 sq. ft., 30 lbs. per roll, and in widths of 36 to 72 ins.



THE SISALKRAFT CO.

205 West Wacker Drive, CHICAGO, ILL.

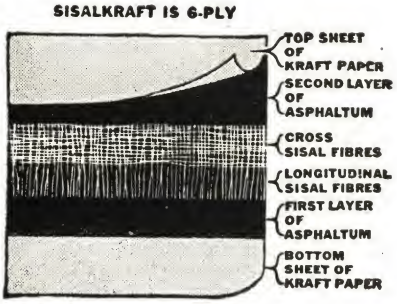
NEW YORK, N. Y., 55 West 42nd Street SAN FRANCISCO, CAL., 55 New Montgomery Street
IN CANADA: ALEXANDER MURRAY & COMPANY, LIMITED—Montreal, Toronto, Saint John, N. B., Halifax, Winnipeg and Vancouver

Product

SISALKRAFT, a WATERPROOF BUILDING PAPER reinforced with non-elastic, untwisted sisal fibres.

SISALKRAFT
REG. U. S. PAT. OFF.

Construction of Sisalkraft



As the cross-section sketch shows, Sisalkraft is composed of crossed layers of untwisted Java sisal fibres, entirely embedded in finest quality asphalt, between covers of heavy kraft paper.

The whole is rolled together while hot, under heavy pressure, to produce a membrane sheet that does not deteriorate under weather conditions.

Since both the sisal fibres and the kraft paper are non-elastic, any strain is uniformly resisted.

Characteristic Advantages

Imperviousness—Air and moisture cannot penetrate it even in a heavy wind.

Strength—It does not tear or puncture in application. No battens are necessary where paper is to be covered promptly as by siding.

Flexibility—It will not crack in cold weather, can be bent and tucked into corners without damage.

Smoothness—It does not bunch or creep during nailing of hardwood floors.

Resilience—The asphalt is always elastic; it grips nailheads, thereby preventing leakage.

Cleanliness—Workmen like to handle it. It will not stain other material with which it comes in contact.

Economy—Its cost is low—in fact lower than paper sometimes specified. And the savings in labor which it effects make its applied cost little, if any, more than for ordinary paper. Due to its strength it is quickly and easily applied even in a high wind without rips or tears.

Distribution—Handled by 14,000 leading lumber dealers throughout the United States and Canada also widely distributed in Europe, Asia, Australia and South America.

Its Architectural Importance

A complete departure from the conventional saturated or sized building paper, Sisalkraft enables the architect to furnish building paper protection that is positive. Building paper is only specified when it is needed for particular cases of excluding air, wind, moisture, dust, smoke, etc. Realizing the importance of these functions architects have been quick to see the advantage of specifying Sisalkraft. It has the strength and permanence to assure the designer that his object will be accomplished.

Residential Applications

Sidewalls—It fills a long-felt need over sheathing since it can be applied without holes, tears, or breaks—accomplishing a positive insulation against the infiltration of air and moisture, one of the primary causes of heat loss. Its cost is one of the smallest items in the building, and the labor savings make it actually less expensive than many inferior papers. The interior is ideally protected by Sisalkraft whether the building is finished with shingles, clapboards, stucco, brick veneer, stone veneer, or solid brick. Sisalkraft applied back of the furring strips in solid brick or solid stone construction covers all of the joints—a difficult and expensive thing to accomplish in any other manner.

Sisalkraft applied vertically between exterior wall studs provides two air spaces, and establishes a permanently effective insulation against undue conduction of heat.

Under Roofs—Its nail-hug and absolutely waterproof qualities give protection against leakage when used as a dry sheet under roofing. It should be applied in step with the roofing.

Under Hardwood Floors—Sisalkraft provides a permanent dust-stop and prevents moisture reaching the finished floor from below—the most common cause of cupping, warping, and creaking.

Protecting Floors—Laid over finished floors during construction or remodeling, Sisalkraft maintains them in beautiful condition, free from abrasions and stains.

In Bathrooms—Sisalkraft over the sleepers and studs prevents the wood from absorbing moisture from the tile floor base coat and the consequent breaking of joints and of tile when the wood dries and shrinks.

Curing and Protecting Concrete Floors

Sisalkraft being waterproof, airtight, and strong enough to stand the abuse of traffic over floors, it is effectively used to cure and protect concrete floors. The curing is automatic. As soon as the floors have set so they may be safely walked upon they are given a light sprinkling of water to restore the moisture that escaped during the settling period. They are then completely blanketed with Sisalkraft, thereby retarding the moisture evaporation until the maximum density and hardness of the concrete has developed. While the cure is going on, the floors at the same time are being protected from dust, scratches, and the usual construction stains, making it possible to deliver floors to the client in presentable condition. Sisalkraft provides the cure and protection at one cost, much lower, according to construction authorities, than the cost of using proper amounts of loose materials, such as sawdust or sand.

Under Terrazzo Floors

Sisalkraft insures a complete breaking of the bond between the concrete slab and the terrazzo. It is pliable and will not tear when installed over pipes and conduits. Its toughness allows workmen to wheel material over it without perforation. The terrazzo fill is thus prevented from reaching the concrete slab beneath and the transmission of cracks from the slab to the finished terrazzo is minimized.

Wood Floors Over Concrete Arches

Sisalkraft prevents any moisture in the arches at the time the floor is laid from penetrating to the finished floor. Sisalkraft may be applied either over the sleepers, or over the wooden subfloor, if one is used. English basement floors are similarly protected from moisture in the ground by applying the Sisalkraft directly under the finished flooring.

Schools and Churches

Sisalkraft is specified in some cases for roofs and walls in schools and churches. It is particularly important under large hardwood floors, such as gymnasiums, assembly rooms, etc., to prevent moisture from basements or unexcavated ground from reaching the finished flooring and producing warping, cupping, or buckling. Church organs may be advantageously protected from dampness by lining the walls and floors of the organ compartments.

Alterations

For temporary partitions and other protective purposes, Sisalkraft affords an effective medium for shutting out dampness and dust. In this work it effects a considerable economy due to the rapidity with which it may be installed and to its low cost per square foot in comparison to alternate materials.

Panels

Many architects find it efficient to use Sisalkraft behind wood panels as a moisture stop. As a further precaution they specify that the laps shall be sealed.



Sisalkraft Over Sheathing

Standard Sizes

Sisalkraft is furnished in rolls of various widths as follows:

6 in. wide.....	150 sq. ft
36 in. wide.....	500 sq. ft.
36 in. wide.....	900 sq. ft.
48 in. wide.....	666 sq. ft.
48 in. wide.....	1200 sq. ft.
60 in. wide.....	1500 sq. ft.
72 in. wide.....	1800 sq. ft
84 in. wide.....	2100 sq. ft.

The wider widths are especially recommended where areas are large as they reduce the cost of application.

Samples and Information

File size samples which readily demonstrate the strength, toughness and complete waterproof protection of Sisalkraft will be sent on request.

We shall be glad to promptly answer any inquiry with respect to any contemplated use of Sisalkraft.

New uses are developing through architects all the time.



Dense, Hard Concrete Cured Under Sisalkraft

HOW ARCHITECTS ARE SPECIFYING SISALKRAFT

Residential

Outside Walls—All sheathing shall be covered with a layer of Sisalkraft (as manufactured by the Sisalkraft Co.). The paper shall be applied horizontally, using large-head galvanized nails, with weather laps of at least four (4) inches. (Where shingles are specified it shall be applied directly to the sheathing and not between shingles.) It shall be carried over the studs, sills, heads and jambs of all openings. It shall be carried around all corner posts a distance of not less than nine (9) inches each way. (Note: Stained shingles, wherever specified, must be thoroughly dry before they are applied.)

All exposed brick walls are to be damproofed with a layer of Sisalkraft applied vertically in the 48 in. width, the paper to be lapped 2 in. and carried out over the subfloor a distance of one foot. Thereafter apply the furring strips for lathing on 16 in. centres.

Hardwood or Parquet Floors—Over all subfloors, Sisalkraft (as manufactured by the Sisalkraft Co.) is to be applied in the widest widths practicable. It shall be applied to run at right angles to the direction of the finish strips and is to be lapped not less than four (4) inches. Sisalkraft shall be bent up at the base boards at least four (4) inches and the base boards brought down over it to provide a cold air stop.

Roof Decks—Over all roof decks (wood) Sisalkraft (as manufactured by the Sisalkraft Co.) is to be applied at the same time as the roofing and preferably in the 36 in. width. It is to be applied horizontally using large-head galvanized roofing nails. All laps are to be weather laps of not less than four (4) inches. Carry the Sisalkraft over all hips and ridges. Carry it down to the bottom of all roof valleys and up for a distance of at least eighteen (18) inches on each side of these valleys. (Note: Wherever stained shingles are specified they must be thoroughly dry before application.)

Basements, Porches, Garage Walks, and Driveways—As soon as the concrete has hardened sufficiently to be safely walked upon, it shall immediately thereafter be completely covered with Sisalkraft (as manufactured by the Sisalkraft Co.). The Sisalkraft is to be applied in the widest widths practicable and given at least a four inch (4") lap which is to be sealed in accordance with the advice of the manufacturer, and the entire covering is to be left on basement and other floors until the completion of the building, and on outside work for at least 10 days.

Special Specifications

Concrete Floors, Roofs and Paving—Curing and Protecting—As soon as the floors may be safely walked upon, and before any traffic is allowed or work done over them, they shall be covered with one layer of Sisalkraft. This paper shall be applied in the widest practicable widths; to be lapped at least four (4) inches and sealed with a waterproof cement as directed by the manufacturer of the paper.

All cement floors, roofs and paving, both indoors and out, are to be protected and cured as above noted.

On floors specified to receive linoleum, the paper shall remain in place until all danger from construction dirt and spill is past. On outside work, the paper shall remain in place for not less than ten (10) days. On cement finish floors, the paper is to be maintained in good condition upon the floors until the building is ready for the final inspection.

Terrazzo—Sand Cushion—Spread over the concrete foundation a bed of dry sand screeded to a uniform thickness of ¼ inch and cover this sand with a layer of Sisalkraft applied in the widest practicable width lapped at least four (4) inches. Over the paper lay the underbed and proceed under the general terrazzo specification.

Terrazzo—Curing and Protecting—Terrazzo is to cure at least six days before grinding. During this period it shall be covered with one layer of Sisalkraft, using the widest practicable width, lapping the joints at least four (4) inches and sealing with a waterproof cement as directed by the manufacturer of the paper. After the grinding and polishing relay the paper and maintain it upon the terrazzo until the building is ready for the final inspection.

Hardwood and Parquet Floors — Moisture Stopping — Where floors are specified to be laid over concrete, apply one layer of Sisalkraft over the sleepers using the widest practicable width. Apply the paper lengthwise of the sleepers and loosely so that it is in contact with the concrete. All joints are to lap at least 2 in. at a sleeper and not in between.

Brick Walls—Damproofing—All exposed brick walls are to be damproofed with a layer of Sisalkraft applied vertically in the 36 in. width, the paper to be lapped 2 in. and carried out over the sub-floor a distance of one foot. Thereafter apply the furring strips for lathing on 16 in. centres.

Spandrel Waterproofing—All spandrel beams and all floor and roof arches resting on exposed exterior walls shall be waterproofed from the bottom of the beam (or arch) to six inches above the arch. The waterproofing shall extend horizontally, from one inch inside the outer face of the wall, to the inside face of the wall. Where stone lintels, or brick arches, interfere with the location of the spandrel waterproofing, as above noted, the spandrel waterproofing shall be installed at the level of the top of such lintels, or brick arches.

Spandrel waterproofing shall consist of a heavy troweled coat of plastic Elaterite into which is rolled a layer of Sisalkraft building paper. The paper shall be turned up six inches on the inside of the wall, where it shall be bedded in (and coated with) plastic Elaterite.

FLOOR ACCESSORIES CO., INC.

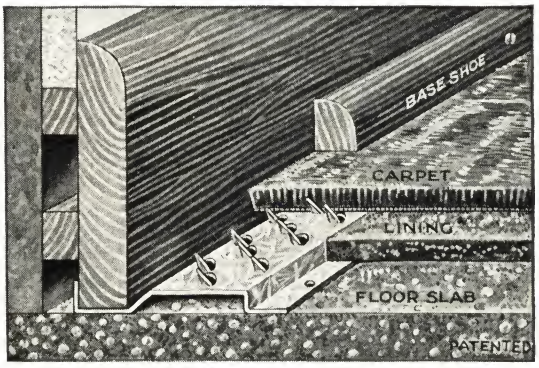
GENERAL OFFICE
KANSAS CITY, MO.
AGENTS IN PRINCIPAL CITIES

For Ankortite Floor Joiners and Brass Thresholds, Shelf Angle Fixtures and Masonry Slots, Recessed Floor Bar and Terrazzo Dividing Bars, see Manufacturers' Index

TACKLESS CARPET STRIPS

Description

By eliminating tacks, the Tackless Carpet Strip produces a smooth carpet installation—free from exposed tack heads or depressions. The smoothness and beauty of carpeted floors, together with the simplicity and economy of the strip, makes it a most practical and satisfactory method of carpet fastening.



Design No. 1
Fits Under and Locks Behind the Baseboard
This design is installed when the baseboard is being attached

The Tackless Carpet Strip is made of copper clad non-corrosive metal with three rows of upturned teeth for holding the carpet. It contains 36 teeth per lineal foot, which take a firm grip in the base of the carpet and hold more securely than a single row of tacks in wood or composition strips, or plugs. The strip is used both in new buildings and in carpeting rooms or offices where the baseboard is already in place.

Application

As the baseboard is put on the Tackless Carpet Strip is laid under it with the baseboard resting in the channel of the strip. The baseboard, when attached, locks and holds the strip in place, but the strip may also be nailed to the floor at intervals if additional security is desired. Special case-hardened nails for driving into concrete floors are furnished for this purpose. The installation of the strip, therefore, is quick and economical. When the strip is in place the carpets are laid by the same methods as where tacking is used, except that the carpet is pressed over the teeth on the strip by running a hammer or other tool over it instead of driving tacks into a nailing strip. After the carpet is laid, the base shoe is attached to the baseboard as usual.

At Doorways

The Tackless Carpet Strip is placed along the baseboard only. At doorways or other openings and around hearths where there is no baseboard, the carpets are fastened in the manner ordinarily used at such places.

Advantages

Produces a smooth, workmanlike and beautiful carpet installation, free from tack heads or depressions.

Is simple, quick and economical to attach.

Eliminates tacking. Facilitates laying. Lasts the life of the building.

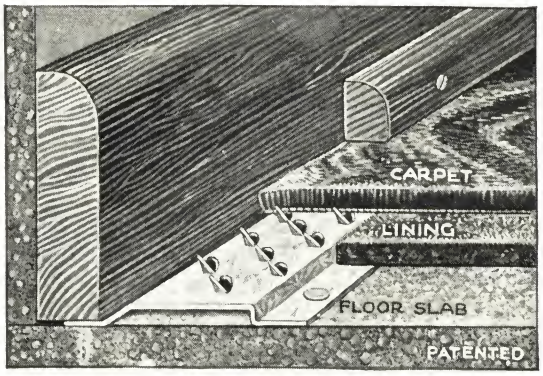
Holds stronger than tacking; is more durable and dependable.

Permits easy removal of carpet for cleaning or replacement without injury to carpet or strip. Shows same economy in relaying as in original installation.

With concrete floors it eliminates the cost of material and labor to provide a tacking strip since it is necessary only to float the structural concrete to a level surface.

Eliminates the burying of wood grounds in concrete floor slab prior to determining the exact location of partitions as well as the uncertainty of finding the grounds.

Installation of the strip requires but one operation, the cost of which is easily determined, and is far more economical than methods that require several scattered operations that are hard to compute individually but nevertheless have an excessive combined cost.



Design No. 2
Used Where Baseboard Is Already in Place
This style is slid under the baseboard slightly and nailed through holes provided in the opposite flange. Special nails for driving into concrete are furnished with this design also

Prices

Design No. 1.....5¢ lin. ft.
Design No. 2.....5¢ lin. ft.
Concrete nails included and freight allowed. Furnished in standard lengths of 8 ft. and is easily cut on the job to fit any space.

When ordering, please state design desired and thickness of lining to be used under carpet. On orders for No. 1 Design, thickness of baseboard should also be given.

Architect's Specification

(Recommended under carpentry work.)
This contractor shall provide and install at all walls, partitions and other vertical surfaces in rooms shown or specified to be carpeted, the Tackless Carpet Strip manufactured by the Floor Accessories Co., Inc., Kansas City, Mo. This Carpet Strip shall be their Design No. (state here whether No. 1 or No. 2) of the proper height to accommodate the thickness of carpet lining to be used and placed in accordance with manufacturer's directions.

B 2093

LATHING
◆ ◆ ◆
PLASTERING

AMERICAN STEEL & WIRE COMPANY

SUBSIDIARY OF UNITED STATES STEEL CORPORATION

Wire Fabric for Stucco Houses and for Plaster Reinforcement

CHICAGO, ILL.

For List of Sales Offices, see our Electrical Wires and Cables section

Product

TRIANGLE MESH, STYLE U-14, and ELECTRIC WELD GALVANIZED WIRE FABRIC for Stucco Work and Plaster Reinforcement.

For our catalogues on Concrete Reinforcement, Wire Rope, Electrical Wires and Cables, see Manufacturers' Index.

Description and Uses

Triangle Mesh—A woven fabric made of galvanized cold drawn steel wire. The longitudinal wires are No. 12 gauge spaced 4 in. on centers, and the cross wires are No. 14 gauge spaced either 2 or 4 in. on centers.

Style U-14—A woven fabric made of galvanized cold drawn steel wire. The longitudinal wires are No. 14 gauge spaced 1⅜ in. on centers, and the cross wires are No. 17 gauge spaced 2 in. on centers.

Electric Welded Mesh—An electrically welded fabric made of galvanized cold drawn steel wire. Both the longitudinal and cross wires are No. 14 or No. 16 gauge spaced 2 in. on centers.

Perfected Plaster-Stucco Reinforcement, Styles PS-14 and PS-16—A combined wire lath and reinforcement for interior and exterior work. Wire lath and paper back are one unit. Shipped in crates of perfectly flat sheets (one man size), 34x50 in.

Each sheet contains approximately 1.3 sq. yd. and 50 sheets with a total area of 65 sq. yd. are packed in a crate for shipment.

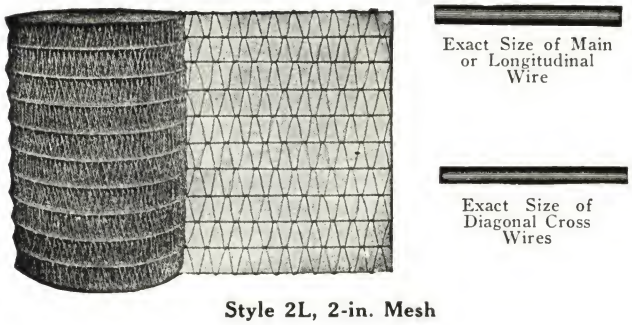
Sufficient galvanized hook head nails for proper application of the fabric are supplied with each crate.

The fabric extends beyond paper to allow proper lapping of adjacent sheets. No. 14 gauge is used for outside stucco reinforcement and No. 16 gauge for inside plaster reinforcement.

Uses—All the above fabrics are used extensively for reinforcing cement, magnesite or gypsum stucco on new buildings or for overcoating old wood, brick or stone structures.

Advantages

Positive reinforcement of the stucco; openings of sufficient size to allow the stucco to be pushed through and completely around the wires; galvanized coating insures a lasting construction; low first and installation costs.



Exact Size of Main or Longitudinal Wire

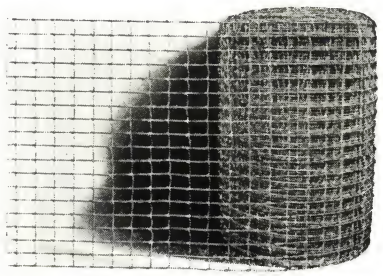
Exact Size of Diagonal Cross Wires

Style 2L, 2-in. Mesh

GALVANIZED TRIANGLE MESH WOVEN WIRE REINFORCEMENT FOR STUCCO

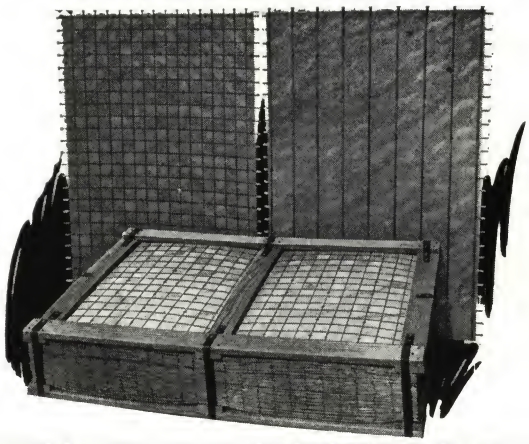
Style No.	Longitudinal wires		Cross wires		Approx. weight, lb., per sq. yd.
	Gauge No.	Spacing, in.	Gauge No.	Spacing, in.	
2L	12	4	14	2	2.84
2M	12	4	14	4	1.94

Made regularly in rolls 150 ft. long and 36 or 48 in. wide. Rolls 150 ft. long, 36 in. wide contain 50 sq. yd. Rolls 150 ft. long, 48 in. wide contain 66⅔ sq. yd.



STYLE NO. U-14 MESH

Style No.	Longitudinal wires		Cross wires		Width of rolls, in.	Length of rolls, ft.
	Gauge No.	Spacing, in.	Gauge No.	Spacing, in.		
U-14	14	1⅜	17	2	24¾	219



PERFECTED PLASTER-STUCCO REINFORCEMENT (PAPER BACK)

Style No.	Wires, face fabric		Back wires		Net weight, lb. per sq. yd.	Gross wt., lb. per sq. yd.
	Gauge No.	Spacing, in.	Gauge No.	Spacing, in.		
PS-14	14	2 x 2	14	4	2.7	3.2
PS-16	16	2 x 2	14	4	2.0	2.5

Note: Gross weight per sq. yd. includes weight of crate and nails.

Economy

The economy of galvanized wire fabric lies in its efficiency, low first cost, low installation cost and long life.

Application

Apply over a suitable backing consisting of the usual board sheathing with a covering of light weight tarred building paper, a manufactured felt, paper, or gypsum board, or any of the other so-called sheathing or plaster boards. (PS14 and PS16 can be applied directly to the board sheath if desired.)

No furring strips or special furring nails are needed with Triangle Mesh or Style U-14 reinforcement because its general construction is such as to insure that the wires are held away from the sheathing.

When applying electric weld fabric galvanized furring nails or pencil rods should be used to insure proper embedment of the fabric in the stucco.

For fastening to wood sheathing use 1-in. or larger galvanized wire poultry netting or metal lath staples, using at least one staple in every square foot of fabric. Special care should be taken to staple the mesh securely at all corners and all openings. Galvanized staples or nails are preferred for all types of stucco and are absolutely necessary when used with any of the magnesite stuccos.

The wire fabric should extend around the corners, no laps being closer than 8 in. from the corner. The laps along the sides of the sheets should be at least 2 in. The cutting of the fabric can be easily done by means of heavy snips.

THE BERGER MANUFACTURING CO.

DIVISION OF REPUBLIC STEEL CORPORATION

Metal Building Materials

CANTON, OHIO

For Branch Offices, see our page on Steel Lockers and Shelving

Products

DIAMOND MESH METAL LATH; TRI-PLEX LATH; SHEET LATH; 3/8-INCH RIBPLEX METAL LATH; 3/4-INCH RIBPLEX REINFORCEMENT.

Also Channels; Corner Bead; Base Bead; Concealed Picture Mould; Studs; Metal Ceilings.

Berloy Metal Lath conforms to Simplified Practice Recommendation R-3-28 of U. S. Department of Commerce Bureau of Standards.

For our page on Lockers and Shelving, see Manufacturers' Index.

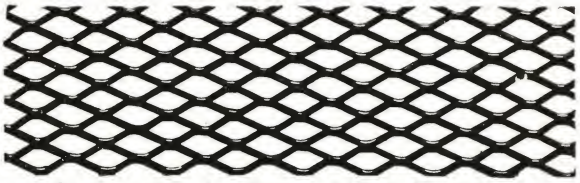
B

BERLOY

TRADE-MARK

Berloy Diamond Mesh Metal Lath

Standard and small mesh diamond mesh lath offers a small, firm mesh with excellent bonding qualities. It is excellent for all lath work when used according to standard specifications, and its superior forming qualities make it ideal for ornamental stucco and all work where bending or forming is required.



Section of Berloy Diamond Mesh Metal Lath

BERLOY DIAMOND MESH METAL LATH

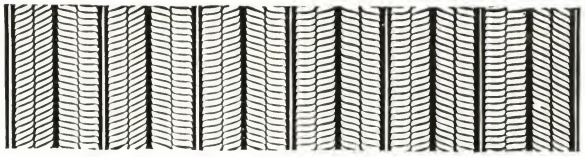
Weight per sq. yd., lb.	Size of sheets, in.	Sq. yd. per sheet	Sq. yd. per bundle
2.2	24x96	1.78	16
2.5	24x96	1.78	16
3.0	24x96	1.78	16
3.4	24x96	1.78	16

The above applies to steel lath, copper bearing steel lath and toncan iron lath in all weights painted black. Lath cut from galvanized sheets is made in the 2.5-lb. and 3.4-lb. weights.

Specifications—Berloy Diamond mesh metal lath conforms in every way to requirements of specifications of the Associated Metal Lath Manufacturers.

Berloy 3/8-in. Ribplex Metal Lath

An expanded metal lath with ribs, used principally for partition and ceiling plaster work, for exterior stucco, overcoating old buildings, and for top slab lath in steel joist construction.



Section Across 3/8-in. Ribplex Sheet

The V-shaped ribs (3/8 in. high) spaced 4 in. apart take the place of separate furring strips and permit wider spacing of support. Ribs nest together at sides and ends to make a rigid splice and a uniform plastering surface. Effective covering width, 24 in. No waste of material in side laps.

Finished work is strong, firm, uniform, permanent and satisfactory in every way.

BERLOY 3/8-IN. RIBPLEX METAL LATH

Weight per sq. yd., lb.	Size of sheets, in.	Sq. yd. per sheet	Sheets per bundle	Sq. yd. per bundle
3.0	24x102	1.89	9	17
3.4	24x102	1.89	9	17
4.0	24x102	1.89	9	17

The above weights apply to painted steel and painted copper bearing steel 3/8-in. Ribplex. Toncan iron 3/8-in. Ribplex is made in only the 3.4-lb. and 4.0-lb. weights.

Erection Specifications—The following is supplementary and conforms to the specifications of the Associated Metal Lath Manufacturers:

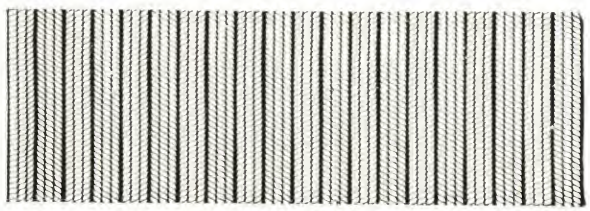
For plastering place ribs against, and mesh away from, supports. Place ribs at right angles to supports. All adjoining sheets are to be interlocked at sides and ends.

Sheets shall be securely wired together with 18 gauge wire once between supports and not over 24 in. apart along ribs at sides and every 4 in. at ends. 3/8-in. Ribplex lath shall be securely wired to channels with 18 gauge wire or stapled to studs with 1 1/4-in. 14 gauge galvanized wire staples at least every 8 in.

When splices are necessary between supports, they shall be at least 2 ft. apart in adjacent rows. Allow 1-in. end lap when splices are at supports. If splices are between supports, allow 8 in. Spacing of supports for 3/8-in. Ribplex shall be according to the Associated Metal Lath Manufacturers' specifications. When used as form reinforcing for concrete slab over steel joists, place the ribs up and mesh down.

Berloy Tri-Plex Lath

Berloy Tri-Plex is the latest development in a flat rib lath. It has been designed especially to provide a sheet stiff and rigid enough for wide joist spacing without waste for lap. It will lie flat without bulging. The most important feature, however, is the fine mesh which practically eliminates all droppage of plaster. This means maximum economy. Especially recommended for walls and ceilings where the spacing of supports does not require Ribplex.



Section Across Tri-Plex Sheet

TRI-PLEX TABLE OF WEIGHTS AND SIZES

Weight per sq. yd., lb.	Size of sheets, in.	Sq. yd. per sheet	Sheets per bundle	Sq. yd. per bundle
2.75	24x96	1.78	9	16
3.0	24x96	1.78	9	16
3.4	24x96	1.78	9	16

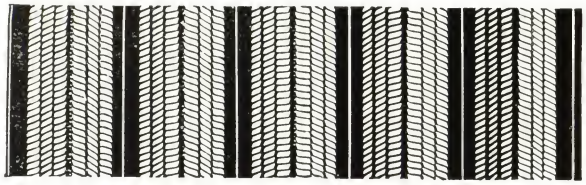
The above weights apply to painted steel and painted copper bearing steel. Painted toncan iron lath and galvanized steel lath are furnished in 3.4 lb. only.

Berloy 3/4-in. Ribplex Reinforcement

Berloy 3/4-in. Ribplex is an effective centering and reinforcement for concrete roofs and floors, and for concrete or plaster partitions and ceilings. It also has a wide range of usefulness in general concrete work.

It is a stiff metal mesh with 3/4-in. ribs spaced 4.8 in. apart, all formed cold from the same sheet of metal.

In addition to the uses described on the following pages, 3/4-in. Ribplex can be used to good advantage in many forms of special work such as column and beam protection, balconies, galleries, bathhouses and other small buildings; fences and walls, ducts, tanks, etc.



Section Across ¾-in. Ribplex Sheet
Ribs are ¾ in. high spaced 4.8 on centers

PAINTED STEEL ¾-IN. RIBPLEX

Gauge No.	Weight per sq. ft., lb.	Total sect. area per ft., sq. ft.	Width of sheets, in.	Length of sheets for all gauges, ft.
28	.50	.1406	24	4, 5, 6, 7, 8, 9, 10, 11, and 12
26	.60	.1688	24	
24	.75	.2250	24	

Roofs of ¾-in. Ribplex—As forms and reinforcement, ¾-in. Ribplex extends the field of concrete to steep pitched roofs, sawtooth roofs, etc. For these types as well as for flat roofs the Ribplex is applied with ribs up. The concrete is applied directly to the Berloy ¾-in. Ribplex and just enough goes through the mesh to embed the metal. The under surface is usually backplastered and in many types of buildings no further ceiling is required. As the table below shows, 2 in. of concrete usually gives ample strength for any concrete roof of Ribplex construction.

Floors of ¾-in. Ribplex— For floors, ¾-in. Ribplex is used in the same way and offers the same advantages as for flat roofs. Slabs, of course, should be thicker, but here, too, the safe load table below shows that a substantial saving can be made in dead weight, materials and supporting structure.

SAFE TOTAL LOADS IN POUNDS PER SQUARE FOOT FOR ¾-IN. RIBPLEX

Thickness of concrete	Gauge No.	Resisting moment per ft. of width	Span in feet							
			3	4	5	6	7	8	9	10
2 in.	28	3140	291	164	104	73	....	....	....	....
Wt. = 24 lb.	26	3720	346	194	124	85	63	....	....	....
per sq. ft.	24	4370	405	228	146	101	74	....	....	....
2½ in.	28	4070	376	211	135	94	69	53	....	....
Wt. = 30 lb.	26	4850	449	253	162	112	82	62	....	....
per sq. ft.	24	6360	588	331	211	147	108	81	....	....
3 in.	28	5030	465	261	168	116	85	65	....	....
Wt. = 36 lb.	26	5930	550	309	198	137	101	77	61	....
per sq. ft.	24	7820	722	406	260	180	133	101	84	....
3½ in.	28	5950	550	310	198	137	101	77	64	....
Wt. = 42 lb.	26	7060	654	368	237	163	120	92	72	....
per sq. ft.	24	9300	861	484	310	214	158	121	96	....
4 in.	28	6910	640	360	230	160	117	90	71	....
Wt. = 48 lb.	26	8160	756	425	272	188	139	106	84	68
per sq. ft.	24	10760	997	561	359	249	183	140	110	90

For safe live loads deduct weight of slab.
Stress in steel 16,000 lb. per sq. in.
Stress in concrete 650 lb. per sq. in.
Ratio on moduli of elasticity = 15.
Distance of center of gravity above bottom of plate = .21 in.
Bending moment $\frac{WL^2}{10}$ for $\frac{WL^2}{12}$ add, 20%; for $\frac{WL^2}{8}$ deduct 20% from above loads.

MAXIMUM SPANS WITH WET CONCRETE

Slab thickness..... in.	2			2½			3			3½			4		
Gauge of ¾-in. Ribplex	28	26	24	28	26	24	28	26	24	28	26	24	28	26	24
Maximum span.. ft.	3 1/4	3 1/2	4	3	3 1/4	3 2/3	2 3/4	3	3 1/2	2 1/2	2 3/4	3	2 1/4	2 1/2	2 3/4

Note: In using ¾-in. Ribplex as centering in concrete roofs and floors no supports are necessary except for long spans or extra thickness. The table above shows limits above which supports should be used until the concrete sets.

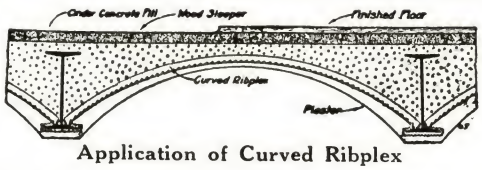
Solid Partitions and Walls of ¾-in. Ribplex—Berloy ¾-in. Ribplex placed with ribs vertical, forms an excellent base for a 2-in. solid wall or partition. Temporary bracing is used until the first coat of plaster, applied on the side opposite the ribs, has set. The bracing is then removed and the Ribplex backplastered; a second coat over the first and the partition is ready for the finish coats. Berloy standard ceiling and floor track or metal lath bent at right angles is used for the attachment of the Ribplex at ceiling and floor.

Hollow Partitions and Walls of ¾-in. Ribplex—Berloy ¾-in. Ribplex is also used extensively for hollow partitions and exterior walls, usually with ribs horizontal and next to supports to act as furring. This use permits spacing of supports from 4 to 6 ft. apart.

Ceiling of ¾-in. Ribplex—In many cases Ribplex roofs or floors are backplastered beneath to form very effective ceilings. ¾-in. Ribplex as a base makes ceilings firm and even and supports may be spaced 4 to 6 ft. apart. ¾-in. Ribplex can also be used to good advantage in suspended ceiling construction with light channel supports. In all cases the ribs remain on the upper side in order to realize their full strength and give a smooth, even plastering surface beneath.

Curved Ribplex

Berloy ¾-in. Ribplex can be supplied curved to any desired radius with ribs on the outside of the curve. For



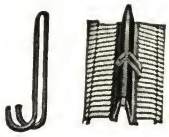
Application of Curved Ribplex

roof and floor construction it is supplied as part of a circle evenly curved or with middle portion flat and ends curved to the desired radius. Curved Ribplex was used to splendid advantage between deep girders in the addition to the R. H. Macy Store, New York City, to save concrete and reduce dead load.

¾-in. Ribplex Clips

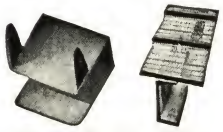
No. 1—Side Clip—Used as shown for fastening side laps together. Not needed for spans up to 3 ft. For longer spans these clips should be used spaced 3 ft. apart or less. Necessary side clips are supplied without extra charge.

The illustration also shows how ribs nest together to form a firm, even joint.



No. 1 Side Clip

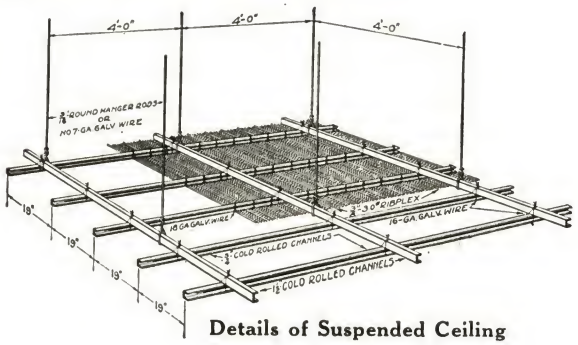
No. 2—Purlin Clip—For fastening ⅜-in. Ribplex to I-beams or channels in floor or roof construction as shown. The clip has a spring grip on the flange of beam which insures a very rigid connection. Clips should be placed at every other rib along the structural member which means one for every 9⅜ in. of length.



No. 2 Purlin Clip

Suspended Ceilings

The hangers recommended are No. 8 galvanized wire, 1x$\frac{3}{16}$-in. flats, or $\frac{7}{32}$-in. round, mild steel rods. Runner channels should be not less than 1½ in.; minimum weight of .442 lb. per lin. ft. Furring channels not less than ¾ in. with a minimum weight of .276 lb. per lin. ft. Metal lath should weigh not less than 3 lb. per sq. yd. and should be attached to furring channels by 18 gauge galvanized lather's wire.



Details of Suspended Ceiling

BARNES CORNING COMPANY

Manufacturers of Henderson Metal Furring Clamp System

GENERAL OFFICES
220 Montgomery Street, SAN FRANCISCO, CALIF.

BRANCH OFFICES
LOS ANGELES, CALIF. PORTLAND, ORE. SEATTLE, WASH.

DISTRIBUTERS IN PRINCIPAL CITIES

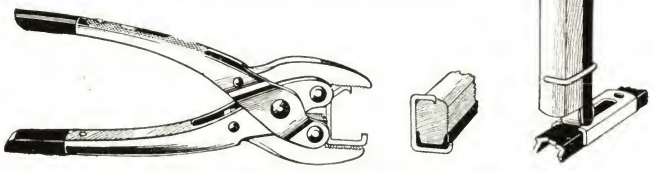
Henderson Metal Furring Clamp System

The devices composing the Henderson System are generally used together as an efficient unit for economy in the installation of fireproof partitions and wall furring. They may be used separately if desired. The products are:

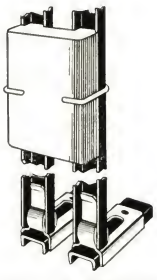
Henderson Nailing Block Clamps (with Wood Nailing Blocks)—These clamps are made of rustproof galvanized wire. They are instantly applied with a specially designed tool, securely locking wood nailing blocks to metal channels. Blocks are made of selected wood for ¾ and 1-in. hot—or cold—rolled channels. Clamping prevents splitting of blocks. Standard lengths of 4 and 8 ins. carried in stock. Special lengths cut to order.

Henderson Stud Shoes for Floor and Ceiling—Made of pressed steel with turned up lugs to receive stock channel studs. Stud shoes are easily fastened over standard ¾-in. channels, where they fit snugly and firmly. These standard channels are nailed to the concrete slab or tied to suspended ceiling construction. Chiseling of concrete is rendered unnecessary. Twisting of vertical channel members is impossible. When Henderson Stud Shoes are used at floor and ceiling the partition may be moved bodily.

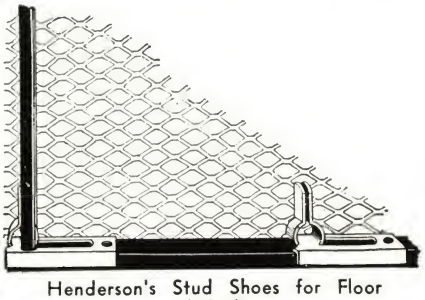
Henderson Double Partition Spaces—Made of Celotex or other composition non-vibratory material. Henderson Spacers are attached with Henderson Clamps to rigidly connect a double row of channels for hollow partitions. There is no metal connection between the two sides of the partition. When used with Henderson Stud Shoes the studs are rigid and cannot twist. These spacers reduce sound transmission and may be used in any standard thickness of partition. Standard 3-in. long spacers placed 3 ft. center to center are used for single air space partitions. Double or triple air space partitions are obtained with continuous spacers designed to hold one or two continuous sheets of composition. These spacers reduce sound transmission.



Application of Wood Nailing Block to Channel



Double Partition Spacers



Henderson's Stud Shoes for Floor and Ceiling

Suggested Specifications

To specify Henderson's Wood Blocks and Clamps for attachment of plaster grounds or trim, add the following to that part of specifications under "Carpenter Work" covering installation of grounds, etc.:

In all places where grounds are required for installing trim to the metal channel partitions or furring, Henderson's Wood Blocks of sufficient length and fitting the groove of the channel, are to be used and held in place with Henderson's Clamps.

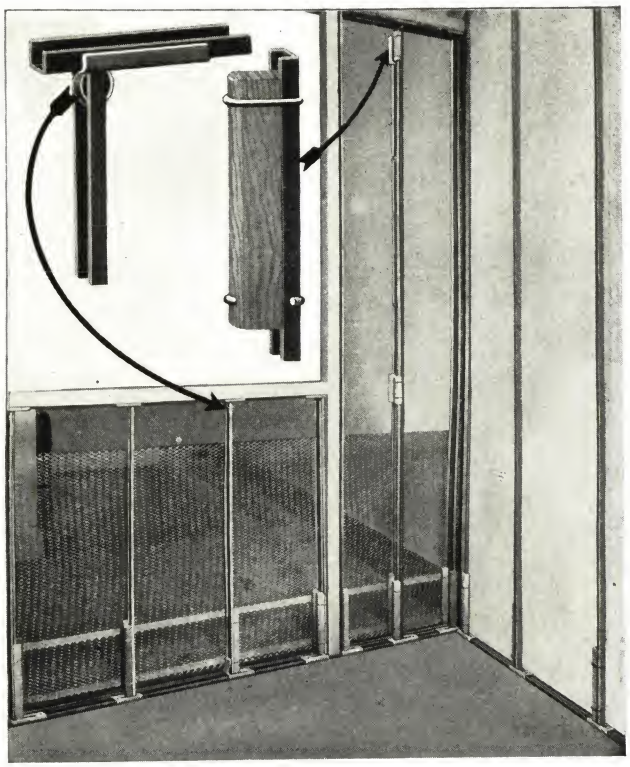
To specify Henderson's Stud Shoes for Floor and Ceiling and/or Double Partition Spacers, add the following paragraph (or paragraphs) to that part of specifications under "Furring, Lathing and Plastering" covering metal wall and furring work:

All standing metal channel wall or partition studs and standing metal furring channels herein specified shall be set top and bottom in Henderson's Stud Shoes for Floor and Ceiling.

All double metal channel wall or partition studs herein specified, shall be set apart as indicated and securely fastened together with Henderson's Double Partition Spacers.

California References

Sir Francis Drake Hotel, San Francisco, Weeks & Day, Architects; Lindgren & Swinnerton, Inc., Builders
Union Oil Building, Los Angeles, Geo. W. Kelham, Architect; The Foundation Company, Builders
Hotel Oakland, Oakland, Bliss & Faville, Architects; P. J. Walker Company, Builders
Canadian Bank of Commerce, San Francisco, Lewis P. Hobart, Architect; Cahill Brothers, Builders
Great Western Power Building, Oakland, Reed & Meyer, Architects; P. J. Walker Co., Builders
Del Monte Hotel, Del Monte, Lewis P. Hobart, Architect; Lindgren & Swinnerton, Inc., Builders
Balfour Building, San Francisco, Geo. W. Kelham, Architect; P. J. Walker Co., Builders
Hunter-Dulin Building, San Francisco, Schultze & Weaver, Architects; Lindgren & Swinnerton, Inc., Builders
Fitzhugh Building, San Francisco, Reid Brothers, Architects; P. J. Walker Co., Builders
The Telephone Building, San Francisco, Miller, Fleuger & Cantin, Architects; Lindgren & Swinnerton, Inc., Builders
Mark Hopkins Hotel, San Francisco, Weeks & Day, Architects; McDonald & Kahn, Builders
Clift Hotel, San Francisco, Schultze & Weaver, Architects; P. J. Walker Co., Builders
Financial Center Building, San Francisco, Frederick H. Meyer, Architect; McDonald & Kahn, Builders
Matson Building, San Francisco, Bliss & Faville, Architects; Lindgren & Swinnerton, Inc., Builders



THE BOSTWICK STEEL LATH CO.

Manufacturers of Metal Lath Continuously Since 1890

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Bell 836, PBX

NILES, OHIO

EASTERN WAREHOUSE: PHILADELPHIA, PA., 2324-28 Callowhill Street—Telephone: Bell, Locust 0956; Keystone, R5566

Bostwick Products Distributed through Building Supplies Dealers in all Principal Cities

Products

A complete line of METAL LATH and LATHING ACCESSORIES, including SUPER-BOSTWICK TRUSS-LOOP LATH, BOS-RIB EXPANDED LATH, BOSTWICK FLAT RIB LATH, BOSTWICK CHANNELFORM LATH, NILES EXPANDED LATH, LOCK CORRUGATED SELF-FURRING LATH, RIB EXPANDED LATHS, BOSTWICK CORNER BEAD (three types), BOSTWICK WALL TIES (straight or "Y" three-way), BOSTWICK WALL PLUGS, BASE BEAD, PICTURE MOULDING, CORNERITE, STEEL CHANNELS, etc.

Distribution

Through responsible building supply dealers.

Super-Bostwick Truss-Loop Lath

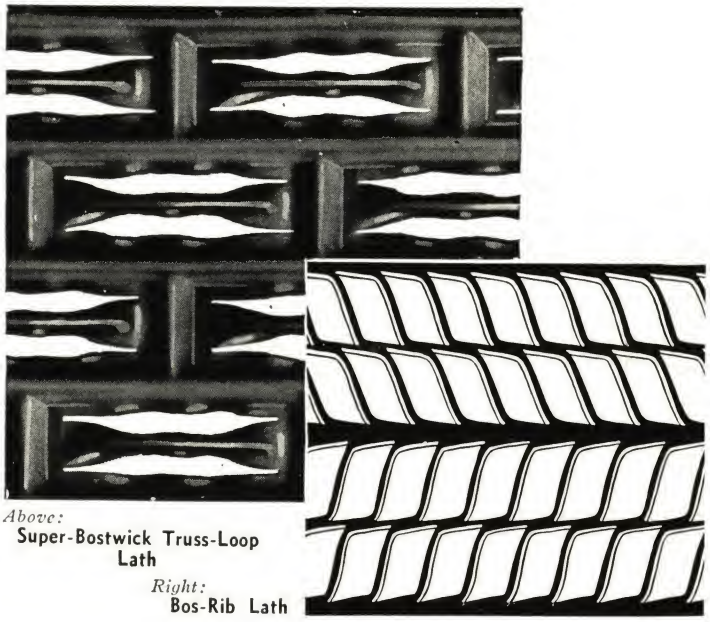
On the preferred list through four decades on account of superior rigidity, effective key and reduction of plaster wastes, as well as installation economies, this pioneer lath has been modified from time to time to increase its characteristic merits, which are as follows: (1) Rigidity under the plasterer's trowel. (2) Permissible wider spacing of supports that saves channels and lathing labor. (3) Dependable key with minimum loss of plaster through the meshes. (4) Facility in doubling back with brown coat over moist scratch coat without expense of moving scaffolds and assuring a better integrated plaster crystal.

The use of this lath in many fine old structures still standing is the best evidence of lasting satisfaction.

Bos-Rib Lath

A high quality rib expanded lath, with double system of ribs inclined to the plane of the sheet.

Remarkably rigid for an expanded lath, its ribs facilitate an even, economical application of plaster, and, on vertical surfaces, act as shelves to prevent moist plaster from running or sagging.



Above: **Super-Bostwick Truss-Loop Lath**

Right: **Bos-Rib Lath**

Bostwick Channelform Lath

A modification of Super-Bostwick Lath, in which alternate longitudinal sections are raised and depressed, giving it the supporting strength of parallel channels. Its development was based upon the successful use of Super-Bostwick as a floor and roof slab reinforcement, Channelform being designed to increase the proved effectiveness in this work of the parent product. Bostwick Channelform gives two to three times the supporting strength between joists of Super-Bostwick or ⅜ Rib Expanded Laths and is especially recommended for wider spacings. Compared with expanded reinforcements, it minimizes leakage of grout and retains the cement to make a stronger slab. It is also valuable as a plaster base for extraordinarily wide spacings.



Bostwick Channelform Lath for Slab Reinforcement

Weights and Dimensions

All Bostwick Laths are made in accordance with United States Department of Commerce recommendation in sheets 24x96 ins. Super-Bostwick 4.5 lbs. per sq. yd.; Bostwick Channelform 4.5, 6.0 and 6.75; Expanded Laths, 2.2, 2.5, 3.0 and 3.4. For special sheet lengths and weights per yard, specifications will be furnished on inquiry. Lath from galvanized or copper alloy sheets also furnished on order.

CONVER STEEL & WIRE CO., INC.

Manufacturers of Wire and Flat Steel Products for Building Construction

TELEPHONE
MOtt Haven 9-1600

621-631 East 132nd Street, NEW YORK, N. Y.

Products

LADDER STUD; CORNER BEAD; BASE BEAD; HANGERS and HAIRPINS for suspended Ceilings.

Also Reinforcing Bar Cutters and Benders, Steel and Galvanized Mortar Boxes, Special Tools, Bridle Irons, Wall Ties and Ashlar Anchors.

For our page on Wire Clip Reinforcement and Form Spacers, see Manufacturers' Index.

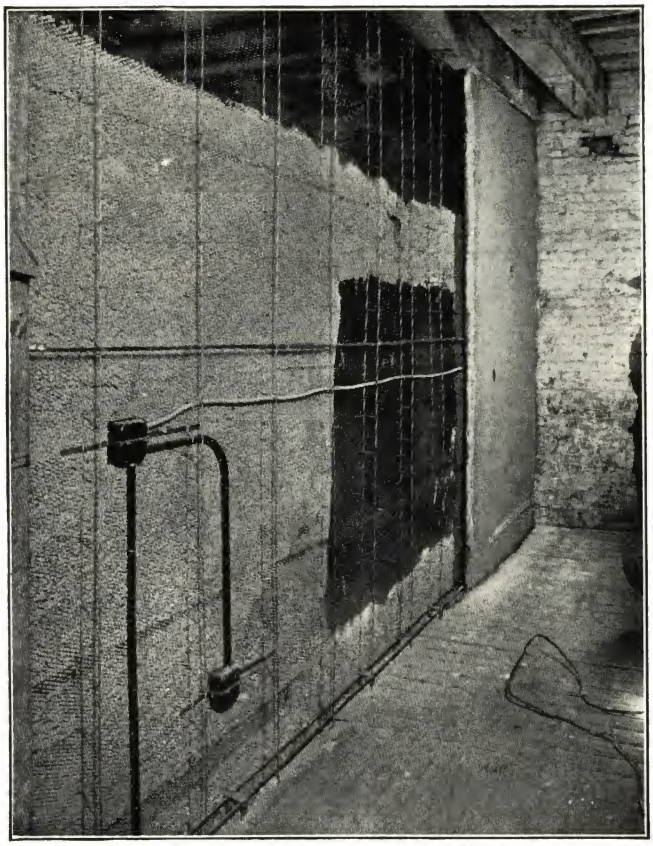
Ladder Stud

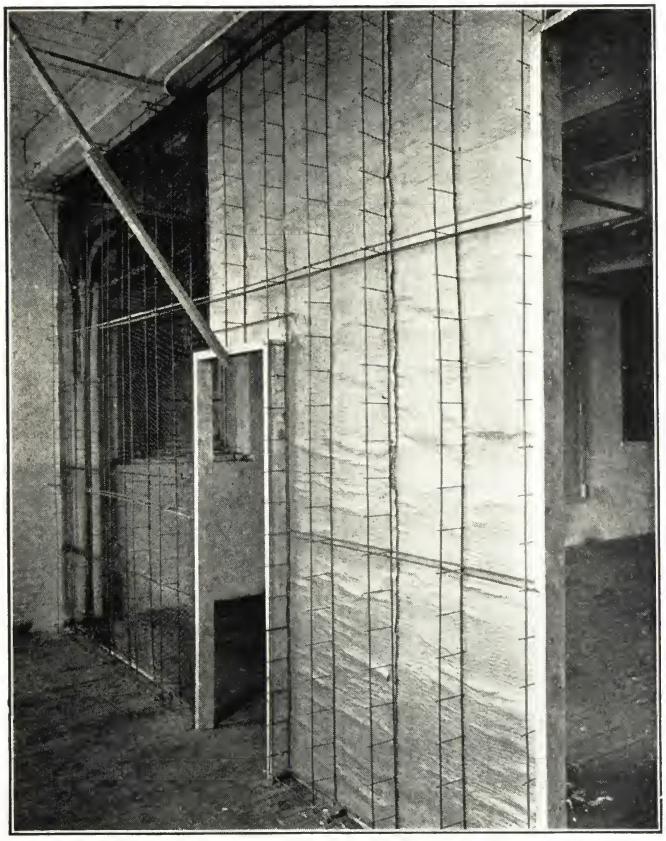
The demand and need for a light fireproof partition has been very great. In addition, a hollow partition permitting telephone wires, electric conduits and pipes is very desirable. All these features are combined in Ladder Stud.

Constructed of heavy longitudinal wires that run from floor to ceiling, welded together at very close intervals with cross wires. These cross wires add stiffness to the partition and act as shelves for wires and pipes. Made in any length or width.

Quick Delivery—Can be supplied inside of 48 hours after receipt of order.

Any Type Metal Lath Can Be Supplied—Even paper back lath can be applied to these studs. The large air space in the center deadens sound. The accompanying illustrations only begin to show some of the possibilities of this stud. For further details, telephone or write us.







Packed 25 pieces per bundle. Weight: 150 lb. per 1000 ft.

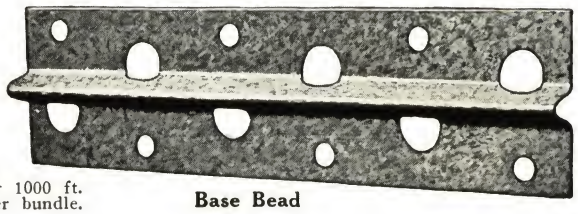
Corner Bead

Conver Rail Type Corner Bead

Made from 22 gauge tight coat galvanized sheets (non-rusting). Clips for nailing furnished—one per foot plus.

Conver Straight Point Base Bead

Made from 22 gauge tight coat galvanized sheets (non-rusting).



Stock length: 10 ft.
Weight: 190 lb. per 1000 ft.
Packed 12 pieces per bundle.

Base Bead

Hung Ceilings

Hung ceiling construction usually calls for ¾ or 1-in. cross furring channels, depending on type of metal lath used. These are fastened to main furring channels or angles by means of hairpins which we manufacture in shapes shown by Figs. 3 and 4. The top bends in Figs. 3 and 4 reduce erection time on the job. Hairpins securely and quickly tie main furring and cross furring together more rigidly than loose wire.

Hangers shown (Figs. 1 and 2—usually called toggle hangers) are the standard type used for suspended ceilings in concrete construction. We manufacture other various type hangers for various types of construction.

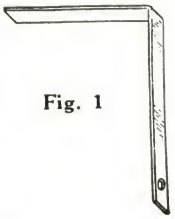


Fig. 1

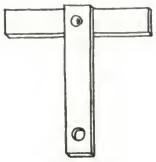


Fig. 2

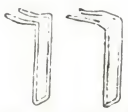


Fig 3 Fig. 4

KE-BOND COMPANY

Manufacturers of Dovetailed Sheet Metal for Bonding Plaster to Concrete

HOME OFFICE
6 Beacon Street, BOSTON, MASS.
SEE TELEPHONE BOOK FOR LOCAL REPRESENTATIVE

Description

KE-BOND is a sheet of metal with dovetailed corrugations. It is placed in the form for concrete where the surface is to be plastered.

When concrete is cast and the form removed there will be a dovetailed surface for keying the plaster.

Qualities

KE-BONDED ceilings do not fall, because they are dovetailed into the concrete. KE-BOND is not an ordinary sheet of corrugated metal, but is formed with sharp angles that insure a positive dovetailed key which securely holds cement mortar or any kind of plaster; KE-BOND actually keys the plaster into the concrete.

Advantages

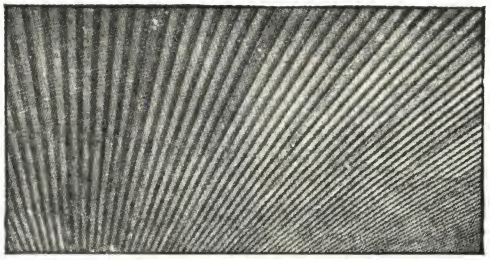
KE-BOND is made primarily for use on the underside of floor slabs and beams, also for columns on which it is desirable to plaster. When the form is down, the surface is ready for plaster; there is no delay or uncertainty of results.

KE-BOND sheets are treated to make them rustproof, but unlike metal lath the plaster bond will not weaken if metal becomes disintegrated by rusting. By the KE-BOND method the plaster is securely interlocked with the concrete.

KE-BOND sheets are placed in form on surface to be plastered and then tack with 1-inch No. 16 brads, the rods laid and slab poured. KE-BOND thus makes practical the use of cheap lumber, unskilled labor and skeleton form construction.

When placed on closed form, KE-BOND has sufficient strength to support the workmen, also the runway, and is not seriously damaged if a wheelbarrow is dumped on it.

KE-BOND can be cut with (slitting) shears to fit any area, or with chisel or torch for inserting tubes or boxes.



Ke-Bond Ceiling Ready for Plaster
Dovetailed surface on bottom of concrete floor slab. A finish coat of plaster is all that is necessary

Other Uses

KE-BOND for waterproofing subway and basement walls insures a positive keyed surface for the waterproof cement. It eliminates cost and uncertainty of "hacked" surface, particularly the overhead or ceiling surface in train subways.

KE-BOND joint is as strong, durable and practical as the concrete and plaster.

KE-BOND makes practical the use of flat slab construction for the small rooms in hospitals, office buildings, apartments, dormitories and hotels.

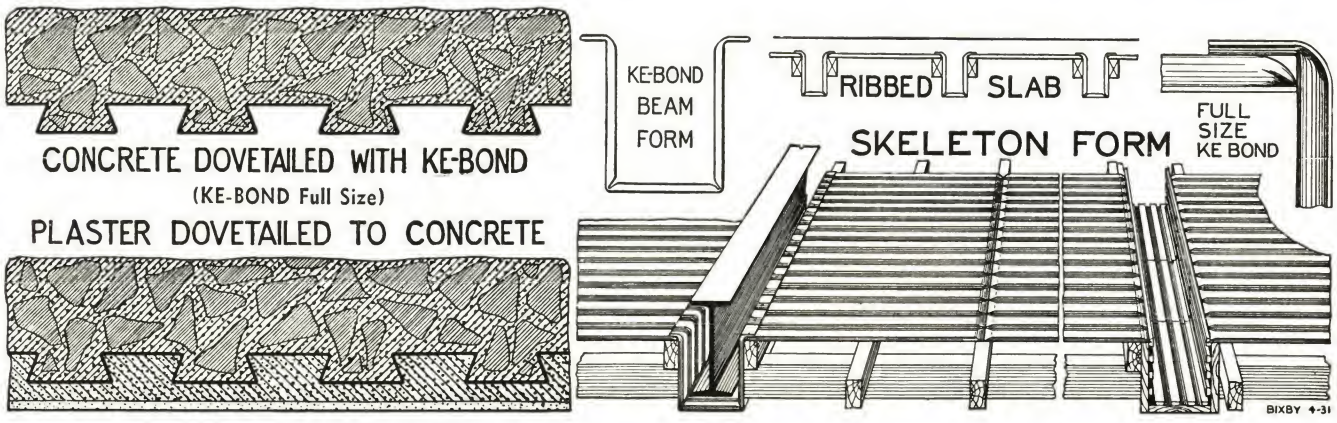
We have competent engineers, also representatives in many of the large cities, who will co-operate, free of charge, in the development, design or method for use of KE-BOND. On request, our representative will assist or instruct architects and builders in the proper use of KE-BOND. A sample sheet will be furnished to any contractor who will try it on a slab.

Sizes

KE-BOND standard sheets are 2½x6 ft., 1.67 sq. yds., but can be furnished in any desired width or length within standard size, or can be cut with tinshears to fit any area. KE-BOND is shipped flat in crates containing 25 sq. yds., with a total weight of about 180 lbs. KE-BOND is stocked only in steel, black or painted, but can be furnished in any metal desired. Sheets will be cut to order, at slight additional cost, but cost of material will be based on standard sheets. KE-BOND is shipped unpainted unless otherwise ordered.

Ke-Bond Specification

General contractor will line the inside surface of all concrete forms, where same is to be plastered, with KE-BOND, as directed by the KE-BOND COMPANY of Boston, or their representative.



KNAPP BROTHERS MANUFACTURING COMPANY

Manufacturers of Metal Building Specialties and Sanitary Metal Trim

TELEPHONE
Haymarket 4994, 4995

605 West Washington Boulevard
CHICAGO, ILL.

SALES REPRESENTATIVES IN ALL PRINCIPAL CITIES

Products

METAL WINDOW TRIM; METAL COVE BASES; METAL WINDOW and DOOR CASINGS; METAL MITRE CASING BRACE and CASING CLIP; METAL CORNER BEADS; METAL BASE GROUNDS and SCREEDS; METAL COVE; METAL PICTURE MOULDS; METAL CHAIR RAIL; DIMENSION DIAGRAM of WINDOW TRIM; DIAGRAM METAL BASE SCREW-HOLE PUNCHING; CHALK TROUGH and BLACKBOARD TRIM; METAL DOOR FRAMES; RADIATOR RECESS and WINDOW TRIM UNIT; QUICK-SET ANCHOR SLOT; WYR-WAY BASE and JUNCTION BOXES; MASTER WYR-WAY; SECTIONS WYR-WAY ADAPTATIONS.

Co-operative Service

We have in our organization an experienced, registered architect and engineers, who will, if requested, assist in the solution of technical problems. We can develop and make anything in the metal specialty line.

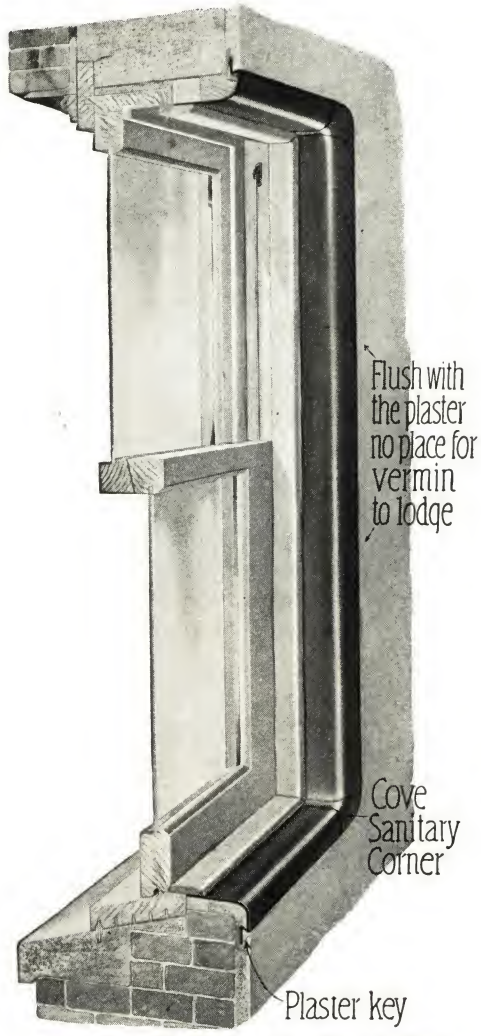
Standard Primer

Knapp products, with some few exceptions, are made of tightcoat galvanized steel, and the surface that will be exposed after plastering is primed with a special galvanic primer at the factory. This primer adheres to the metal and forms the basis of subsequent decorations. When desired stainless steel, aluminum or other white metals can be used.

Sanitary Metal Window Trim and Reveal Lining (Patented)

Style No. 302—Can be used either as a stool only or continued around a window opening to form a complete trim, as shown below.

The cove corner fittings, together with the flush-with-the-plaster feature, constitute an absolutely sanitary trim. This trim is erected before plastering and provides a screed for the plaster.



Style No. 302 Window Trim Used Entirely Around Opening

A One Man Job

For the standard size window we recommend shipping this metal trim assembled. For the larger sizes, the corner fittings are attached to the stool and head members and the four sides are shipped knocked down. The necessary stove bolts are furnished and the assembly at the job is a simple and easy operation.

The outstanding advantages of this type of trim are: sanitation; no shrinking, swelling or warping; flush with plaster; self-grounding; no place for vermin to harbor and multiply; fire retardant; economical; installed cost on a par with average wood trim.



Window Trim, Factory Assembled, Ready to Put in Place

Curvature of the nose can be had in either 1½ or ¾-in. radius.

Styles Nos. 304, 307 and 308—Project slightly beyond the plaster line. These styles are designed as stools only, but are frequently used in connection with Style No. 302 jamb and head trim or with any of the plain or bullnose type of corner beads.

Gauge of Metal Recommended—No. 18 gauge metal is recommended for stools of 4-in. reveal or less. Over 4-in. reveal, 16 gauge or heavier. For jambs and head, 4-in. reveal or less, 20 gauge metal is recommended. Over 4-in. reveal, 18 gauge.

When a No. 16, No. 14 or No. 12 gauge stool is required, the nailing flange is electrically welded to the stool member, making a sharp edge and positive plaster key.

Spot grouting under the stool is very desirable and always recommended. Therefore, a heavy gauge stool is desirable to provide the necessary stiffness to prevent sagging and indentations.

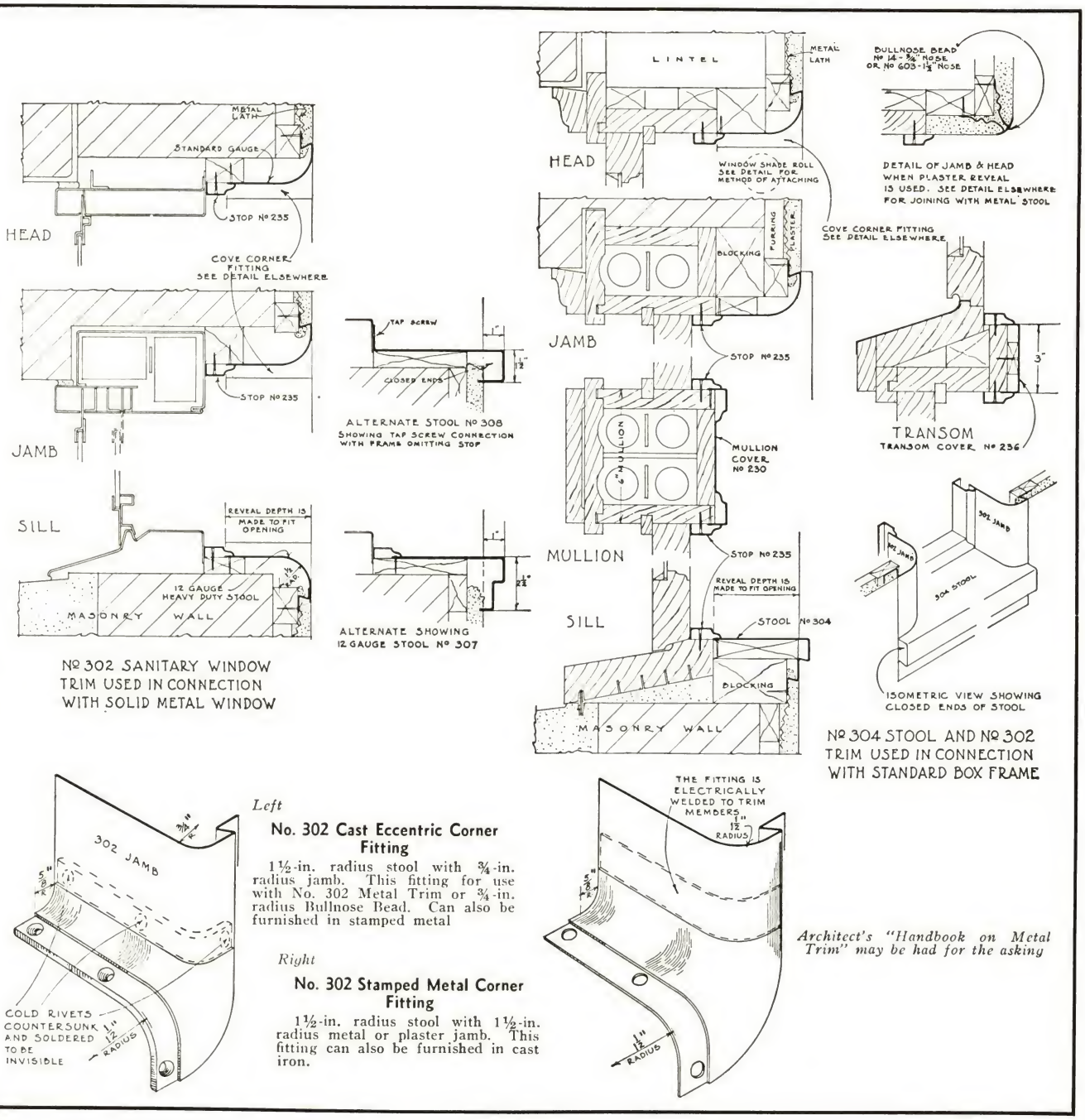
Corner Fittings—In addition to the standard cast corner fittings, stamped metal fittings are available *only* in the 1½-in. face by 1½-in. jamb, and 1½-in. face by ¾-in. jamb at a cost 25% less than the cast corner fittings.

How Furnished—All our window trim is made to order to fit the individual window opening.

We require the contractor to furnish us with exact dimensions, and when this is done, the trim is shipped knocked down, ready to be set in place in the building or in made-up welded units if desired.

Further Details—Write for full set of details showing how trim can be used with casement windows, steel windows, curved head windows and mullioned windows.

The saving feature of No. 302 as a unit trim is worth careful consideration.



Left

No. 302 Cast Eccentric Corner Fitting

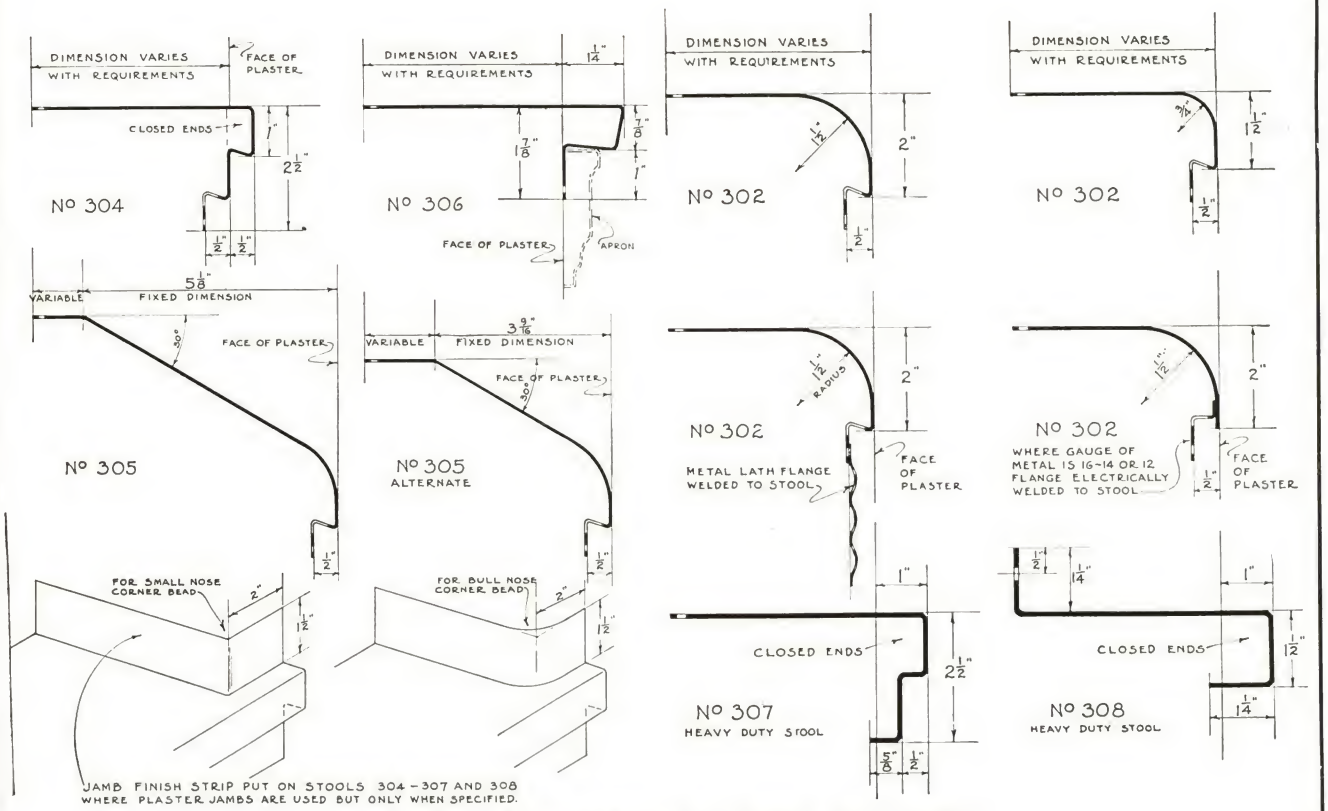
1½-in. radius stool with ¾-in. radius jamb. This fitting for use with No. 302 Metal Trim or ¾-in. radius Bullnose Bead. Can also be furnished in stamped metal

Right

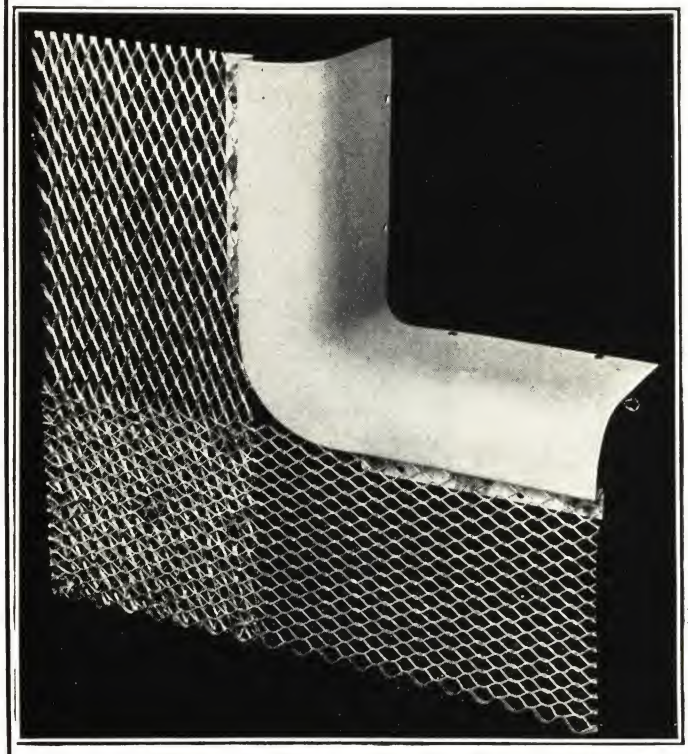
No. 302 Stamped Metal Corner Fitting

1½-in. radius stool with 1½-in. radius metal or plaster jamb. This fitting can also be furnished in cast iron.

Architect's "Handbook on Metal Trim" may be had for the asking



Section Profiles of Standard Knapp Metal Windows, Stools and Trim



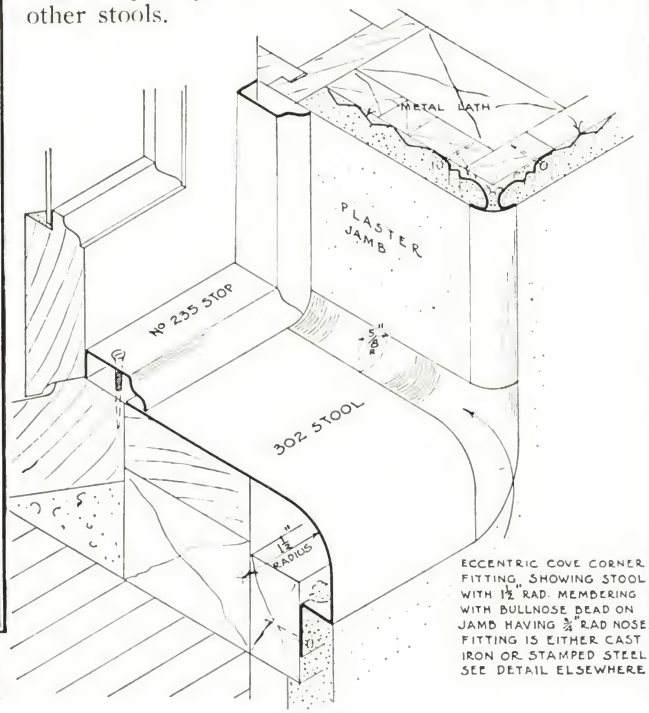
Style No. 302 Window Trim with Lath Strip Welded to Flange

Section of stool and jamb showing sanitary cove corner. The lath strip is welded to flange only where specified and is used only when wood bucks or blocking are not otherwise covered

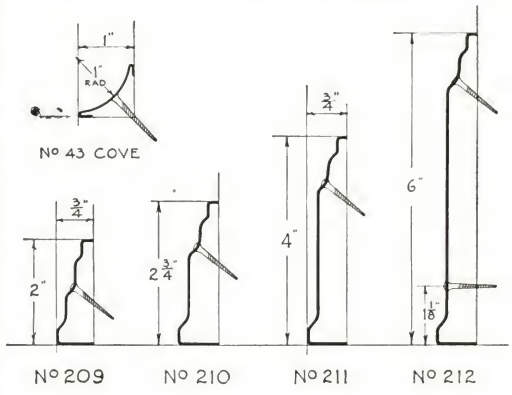
This type of construction is a guarantee against plaster cracking which sometimes occurs, due to the swelling and subsequent shrinking of wood when plaster is applied on wood structure.

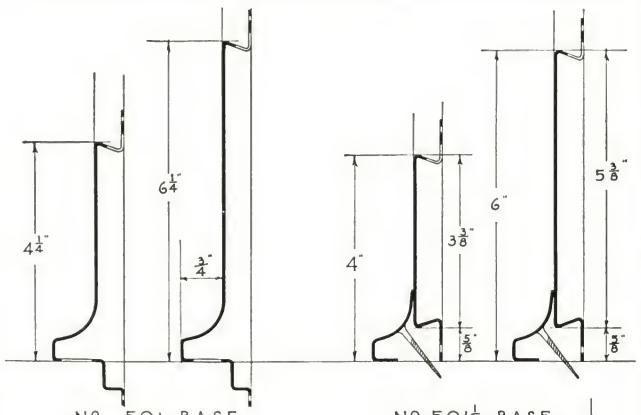
The drawings above illustrate the various standard stool profiles.

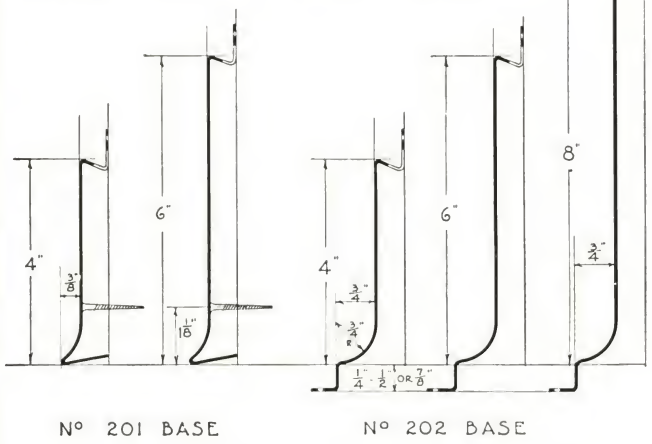
The No. 302 type is also used as a jamb and head trim frequently in combination with any of the other stools.

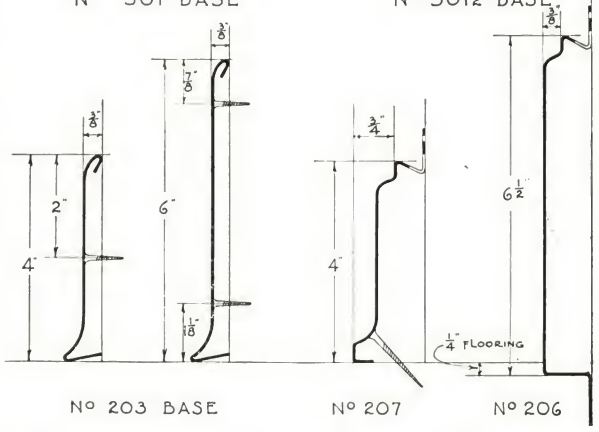


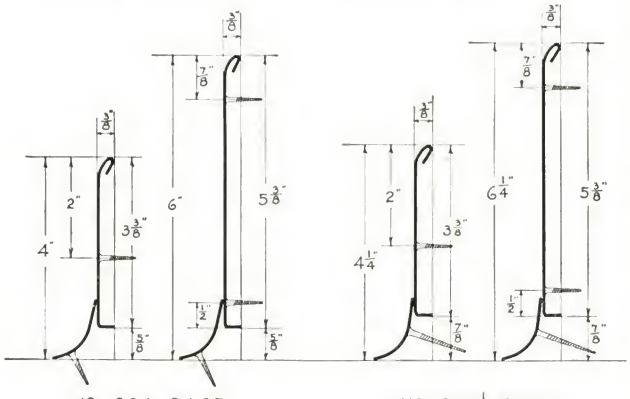
Nº 302 SANITARY STOOL
SHOWING COVE CORNER WITH PLASTER JAMB

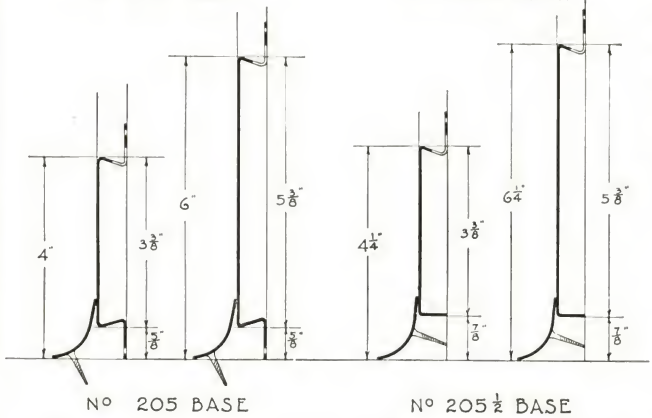


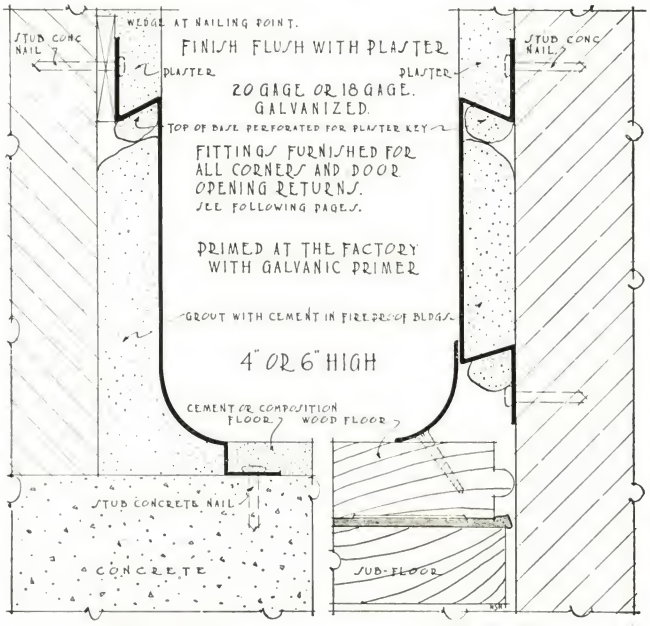










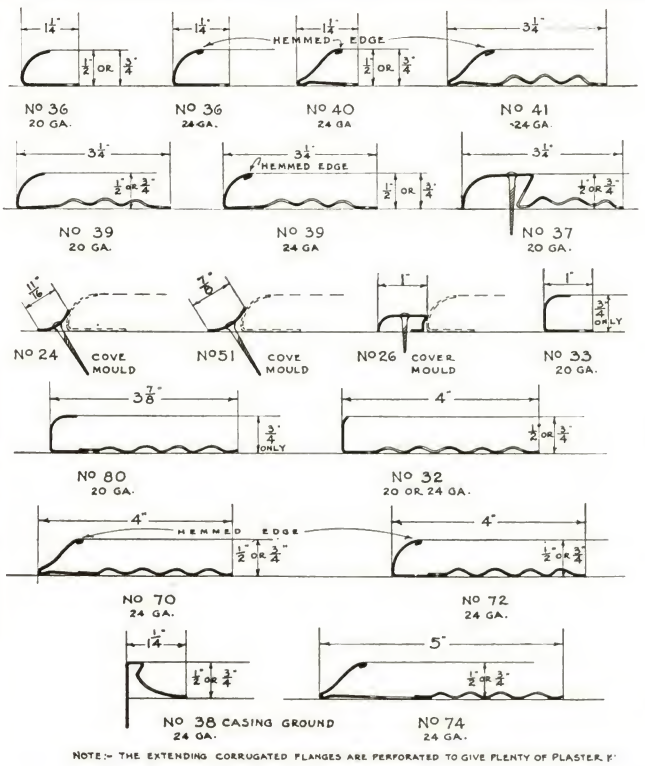


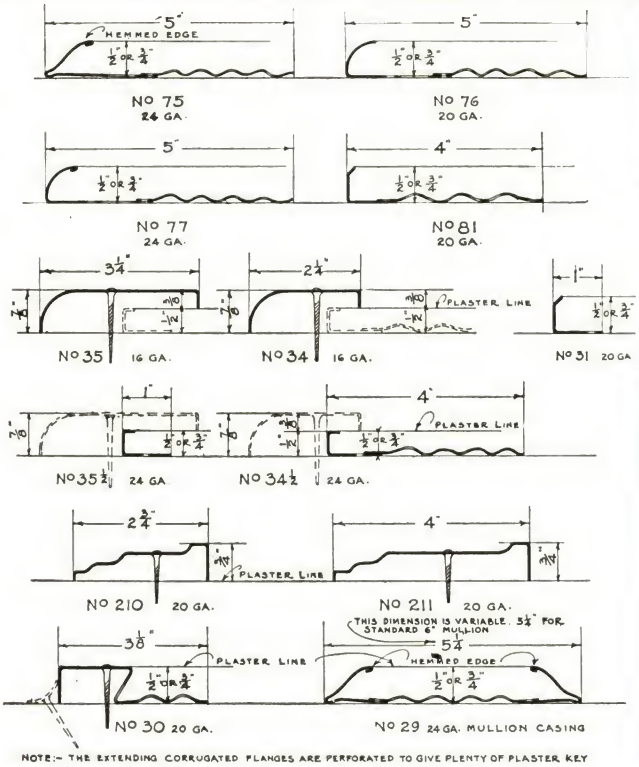
The details on this page show profiles of the various types of Standard Knapp Sanitary Bases. The large detail (lower right) shows typical installation details for the flush types of bases. The following baseboards are made standard in No. 20 gauge steel only; Nos. 209, 210, 211, 212, 203 both 4 in. and 6 in.—207, 204, 204½ both 4 in. and 6 in. All the 6-in. baseboards, with the exceptions just noted, are made of No. 18 gauge only. The 4-in. baseboards with the exceptions of 203, 204, 204½, 211 and 207 can be furnished in both No. 20 gauge and No. 18 gauge.

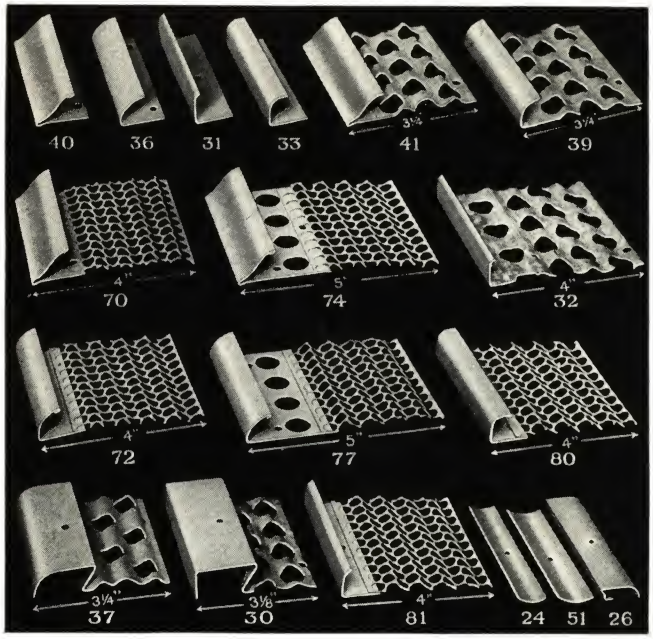
In all "flush-with-plaster" types of metal bases, the grouting is simplified and becomes an easy operation on account of the improved 2½-in. grouting slot now standardized.

A complete line of fittings for corners, plinths, etc., are available. Tools for cutting and punching are loaned by the manufacturer.

All bases furnished in 10-ft. stock lengths, except Nos. 210, 211, 212, which are standardized at 12-ft. lengths.



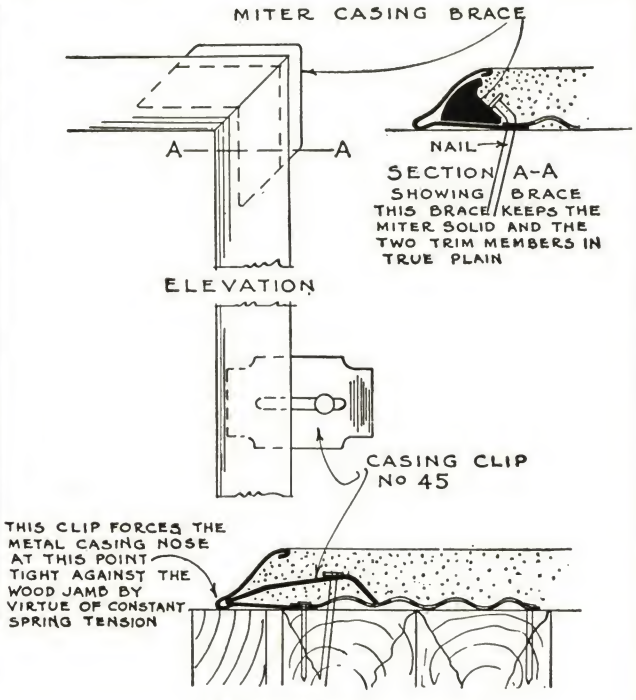




The details and illustrations on this page illustrate the Knapp Standard Metal Casings, mouldings for trimming around doors, windows, cased openings, borrowed lights, vents, grilles, or any other places where trim is required. All of the above designs except Nos. 34, 35, 210, 211 are finished flush with the plaster and are put in place when lathing. Mouldings 24, 51 and 26 are used to cover the shim joint between door jambs and buck. Casings with solid perforated flanges like Nos. 39, 32, 37, 30 and 41 are recommended for use with all openings except doors. For door openings, any of the other styles are recommended.

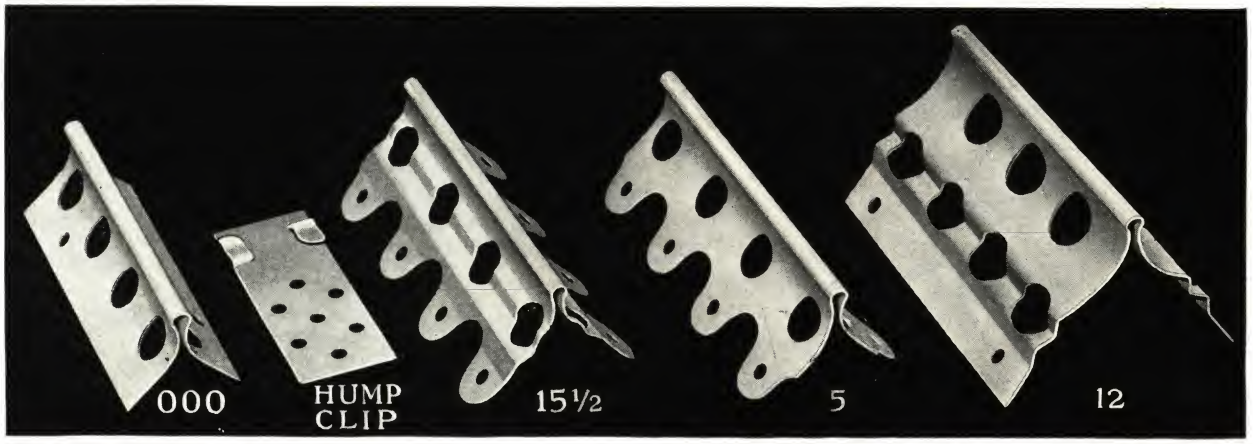
Stock lengths of all casings are standardized at 6 ft., 7 ft., 7 ft. 4 in., 8, 9, 10 and 12 ft.

No. 46 Miter Casing Brace keeps the two mitered ends in close contact and in true plane. Suitable for both ogee and quarter round types.



DETAIL SHOWING APPLICATION OF KNAPP CASING CLIP No. 45 AND No46 MITER CASING BRACE USED WITH ANY OF THE O-G OR QUARTER ROUND PLASTERED-IN CASINGS HERE IN ILLUSTRATED.

No. 45 Casing Clip forces and holds the casing nose in tight contact with the wood jamb, and the slot enables the mechanic to install the casing easily and quickly without danger of denting the face of the casing.



No. 000—26 gauge, small nose, short flange corner bead. No. 101 is same as 000 except in 24 gauge.

Hump Clip—Used with small nose corner beads Nos. 000, 101 and bull nose beads 604 and 14½.

No. 15½—26 gauge, crimped flange, scalloped edge corner bead.

No. 5—24 gauge, scalloped edge corner bead.

No. 12—26 gauge, crimped flange corner bead, 2½-in. flange.

No. 16 "Perfection" Corner Bead

To be of any real value, a corner bead must serve two distinct purposes.

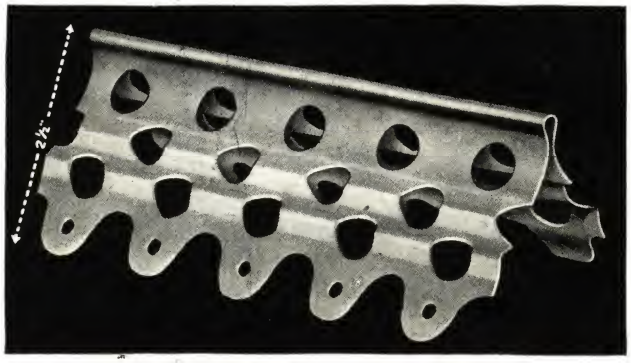
1—It must serve as a "straight edge" for corners.

2—It must protect the plastering at corners.

No. 16 "Perfection" Corner Bead serves both purposes to a higher degree of efficiency than any type of corner bead of which we have any knowledge.

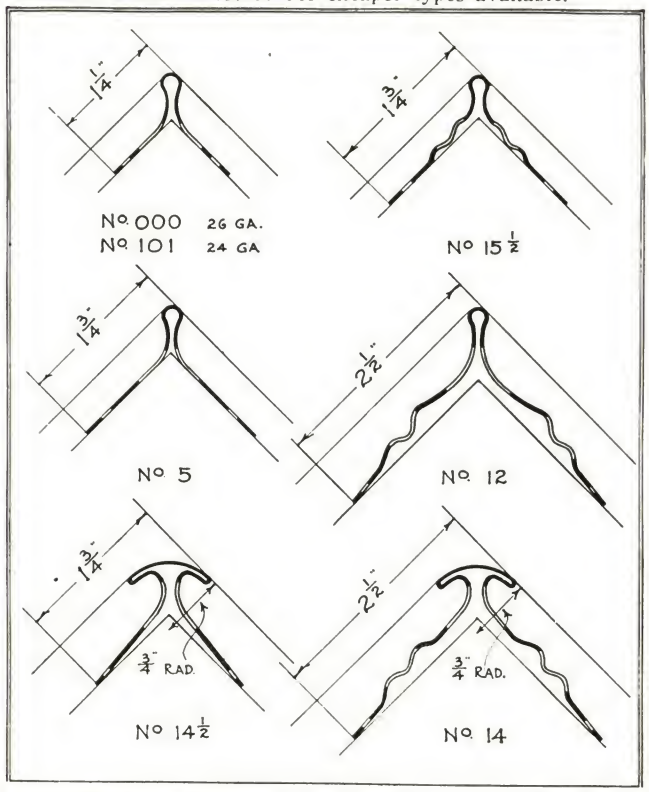
Because:

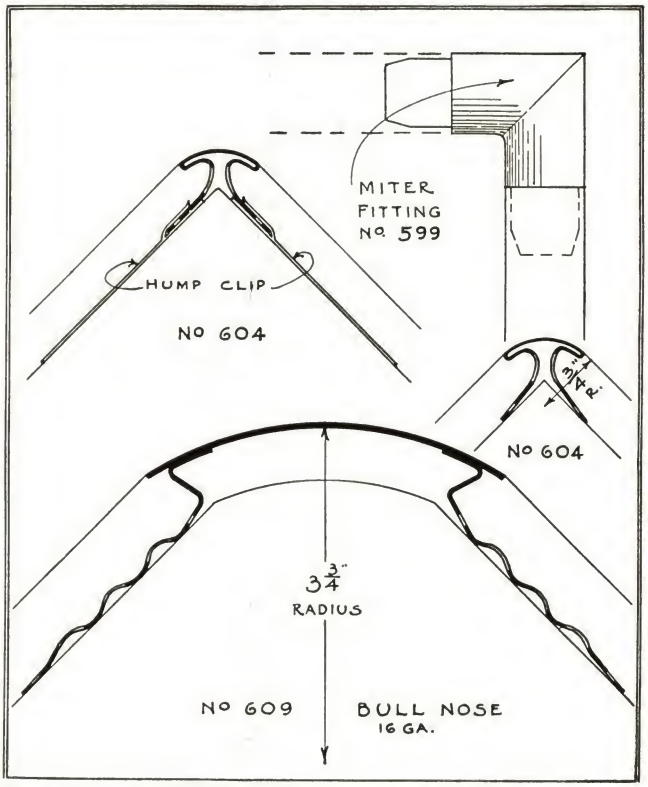
(1) It is absolutely straight and rigid.
(2) It will not bend or buckle in handling.
(3) It can be erected and plumbed quickly and easily.
(4) It can not easily be knocked out of alignment during or after the plastering operation.
(5) The plaster keying features are designed to give perfect reinforcement to the unelastic plaster.
(6) The scalloped edge prevents danger of straight line cracking.
(7) The ease and quickness of erection makes it more economical than most of the cheaper types available.

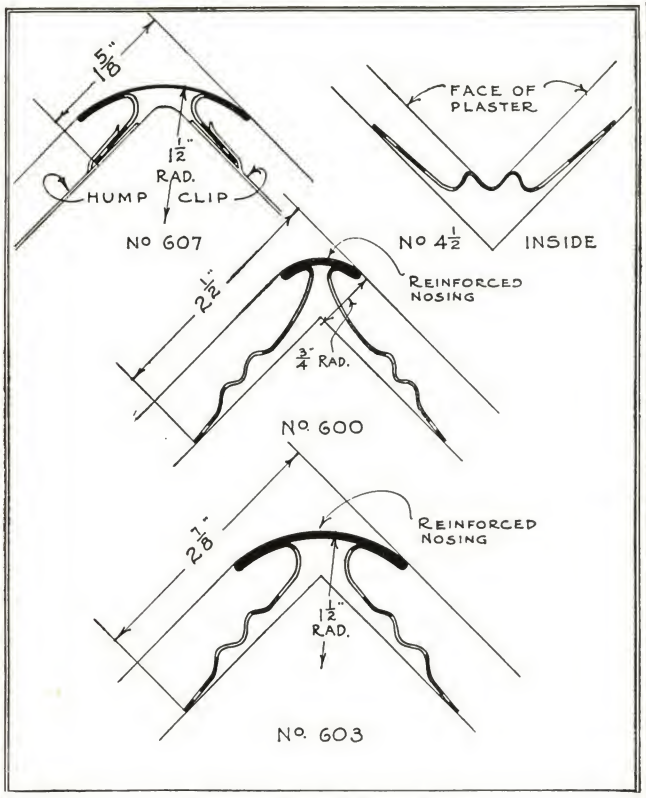


No. 16 Perfection Corner Bead—26 Gauge

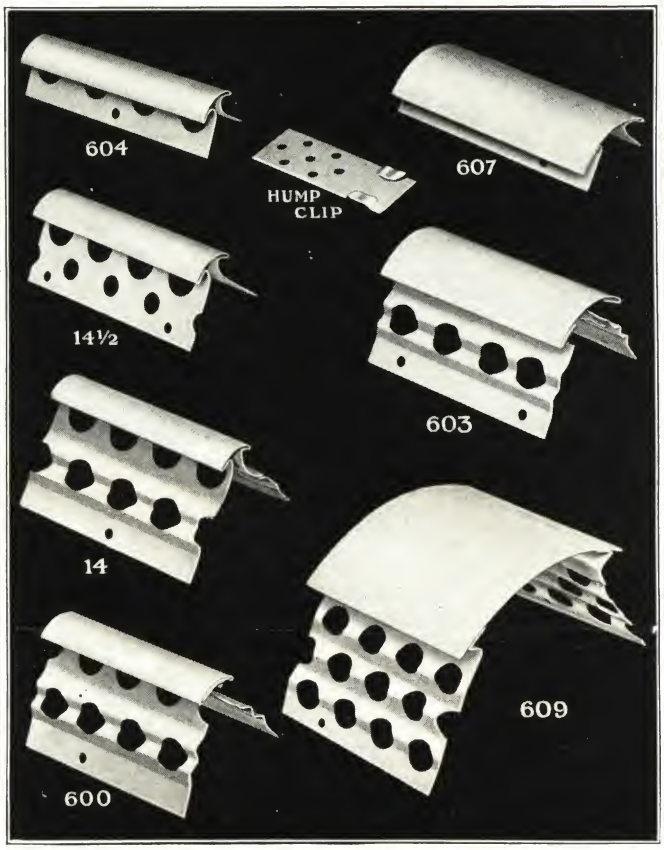
All small nose and all bull nose corner beads are available in the following standard stock lengths: 6, 7, 8, 9, 10 and 12 ft.





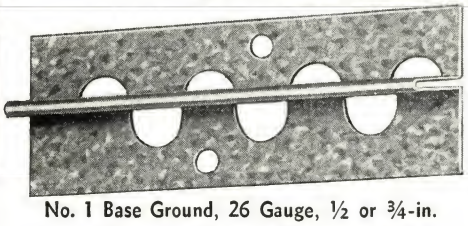


Cross Sections of Corner Beads

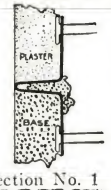


Sections of Bullnose Corner Beads

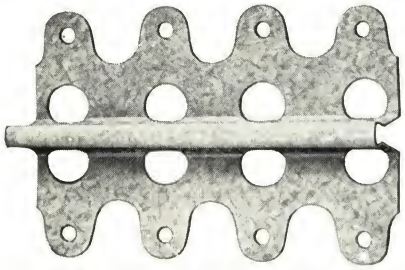
Note: All Base Grounds, Base Screeds, and No. 43 Cove furnished in 10-ft. stock lengths.



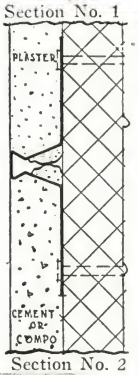
No. 1 Base Ground, 26 Gauge, ½ or ¾-in.



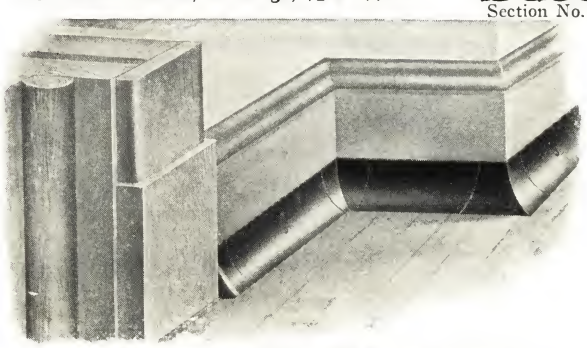
Section No. 1



No. 2 Base Ground, 26 Gauge, ½ or ¾-in.



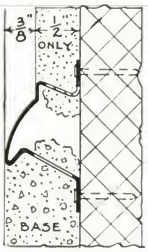
Section No. 2



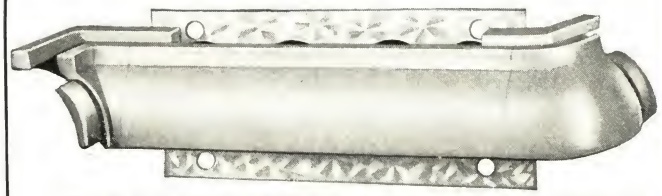
No. 43 Sanitary Metal Cove, 26 Gauge (Patented)
For old wood baseboards showing fittings at corners and return at door. Can also be furnished in bronze

Metal Base Screeds

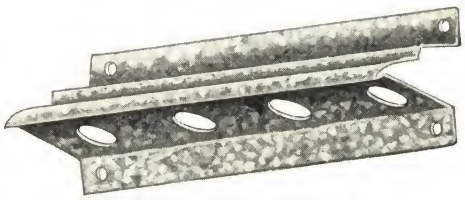
Base screeds are used to form a permanent ground between plastered walls and composition, cement or terrazzo bases, and protect the top of the base against damage by chipping.



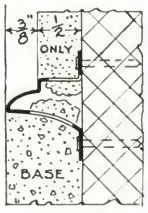
Section No. 42
Base Screed



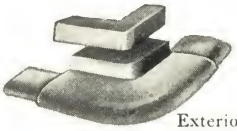
No. 42 Base Screed (With Corner Fittings Attached), 26 Gauge
Interior and exterior square ¾-in. radius and 1½-in. radius fittings are available



No. 49 Base Screed, 26 Gauge



Section No. 49

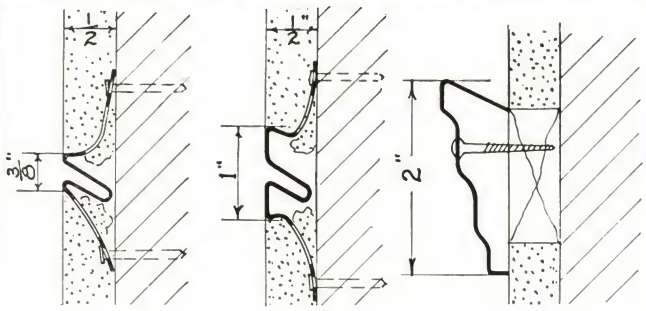


Exterior

No. 49 Corner Fittings

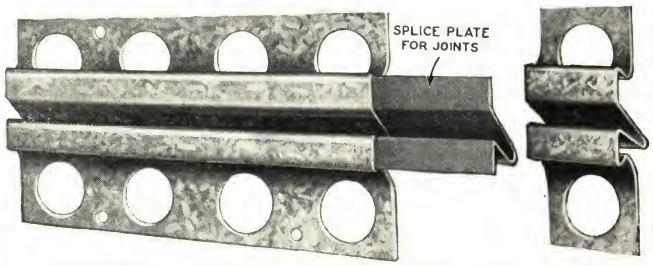


Interior



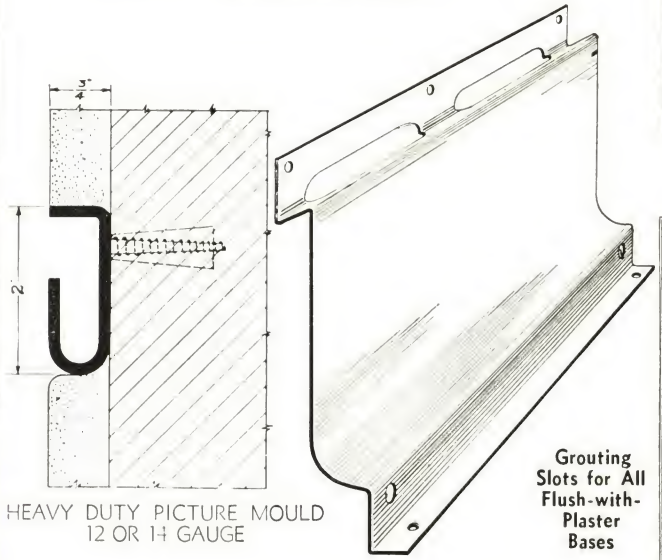
No. 23 No. 20 No. 208

Picture Moulds—Stock lengths, 10 ft.



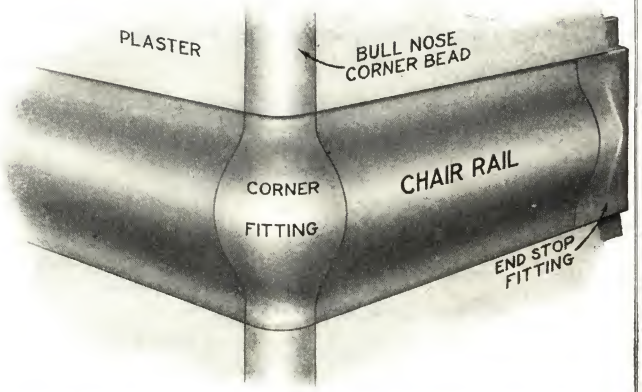
No. 20 Concealed Picture Moulding, 26 Gauge (Patented)

Painting the two exposed faces provides a double border ornament and separation



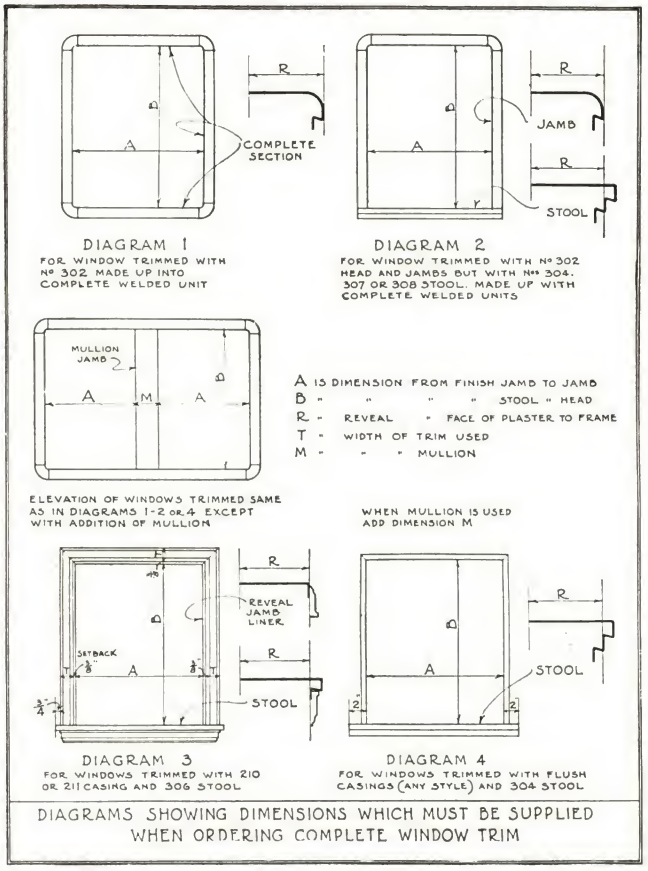
HEAVY DUTY PICTURE MOULD
12 OR 14 GAUGE

Grouting Slots for All Flush-with-Plaster Bases

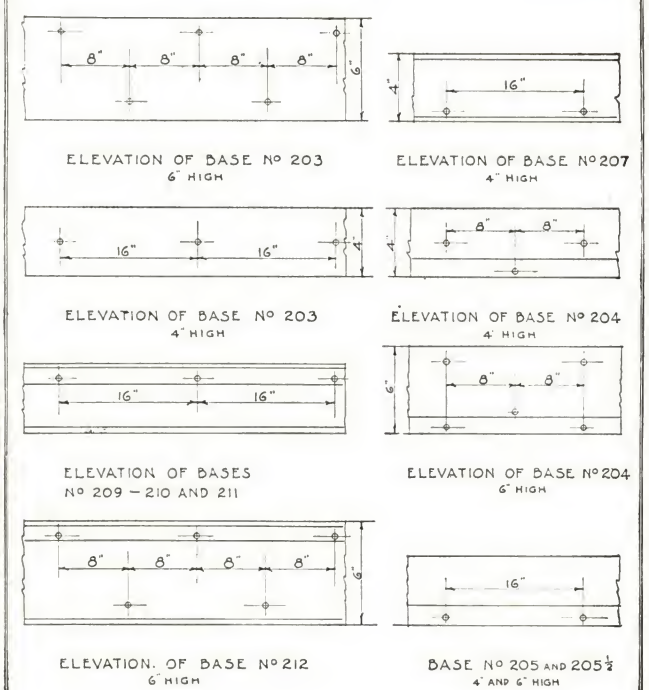


No. 300 Chair Rail Showing 3/4-in. Radius Corner Fitting, End Stop and 3/4-in. Radius Bullnose Bead

Stock lengths, 10 ft.; gauge 18



DIAGRAMS SHOWING DIMENSIONS WHICH MUST BE SUPPLIED WHEN ORDERING COMPLETE WINDOW TRIM



DIAGRAMS ILLUSTRATING OUR STANDARD SCREW HOLE PUNCHING FOR KNAPP METAL BASES

Chalk Trough and Blackboard Trim

There are two forms of chalk trough, Nos. 303 and 311, which differ only in detail. The specific difference may be seen by examining the details of that edge of the trough which contacts with the blackboard. In Style 303, this edge has a spring tension against the board itself, while in Style 311 this edge forms a return bevel designed to miter with the mould No. 27, which is used with it. Also in Style 311 the perforated dust screen is made in connection with a removable dust pan.

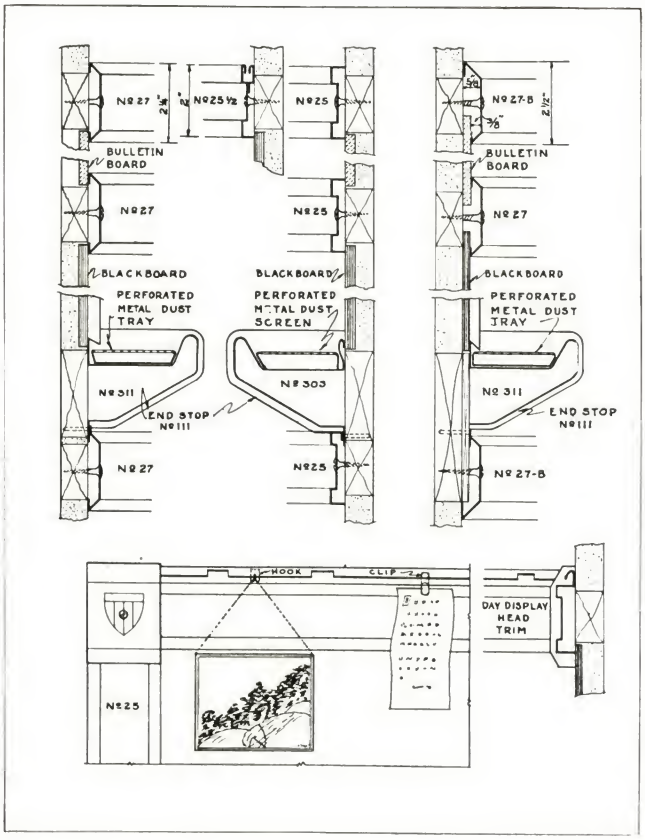
For the trim of the blackboard itself, either moulding Nos. 25 or 27B can be used, the difference being a matter of taste in design. Fittings forming the corners and intersections are made for all mouldings.

Knapp metal chalk trough and mouldings have been used satisfactorily for many years and with other items of metal trim, complete the metal trim idea for school buildings.

Stock Lengths—The Chalk Trough is furnished only in 6, 8 and 10-ft. lengths, and is cut to fit on the job. The dust screen and the dust tray pan are furnished only in 3, 4 and 5-ft. lengths. The blackboard mouldings are furnished only in 10-ft. lengths.

Cutting and assembly of Chalk Trough including dust screen or dust tray pan may be done at the factory at a nominal charge plus the wastage of material from stock lengths.

The Day Display Metal Trim with hooks and clips may be used in combination with Knapp's No. 25 Mould.



Knapp Metal Door and Borrowed Light Frames

(Illustrated on pages 10-11.)

Knapp's line of metal bucks for use with wood, Kalamein or hollow metal doors have the advantage of Knapp standard of high grade construction.

All miters and joints as between jamb pieces and head pieces and transom bar intersection are welded continuously through the joint. Plaster key flanges can be furnished when specified for the flush type of bucks and these are very essential with this design because it helps to spread the shock of slamming doors over a sufficient area so as to minimize the chances for plaster cracking around the door frames. Such flanges should be specified to be 3 in. wide with ⅜-in. perforations approximately six holes to the square inch and stiffened with rows of corrugation ¼ in. high, ⅝ in. on centers.

Years of experience have taught the Knapp organization how to build plastered-in trim. The Knapp metal bucks are superior in quality because of this background and tradition.

The gauges of metal in which these bucks can be made are shown on the accompanying drawings. All are made of the highest grade of furniture buck stock steel, prepared for any hardware which may be specified.

Knapp Combination Trim and Radiator Recess

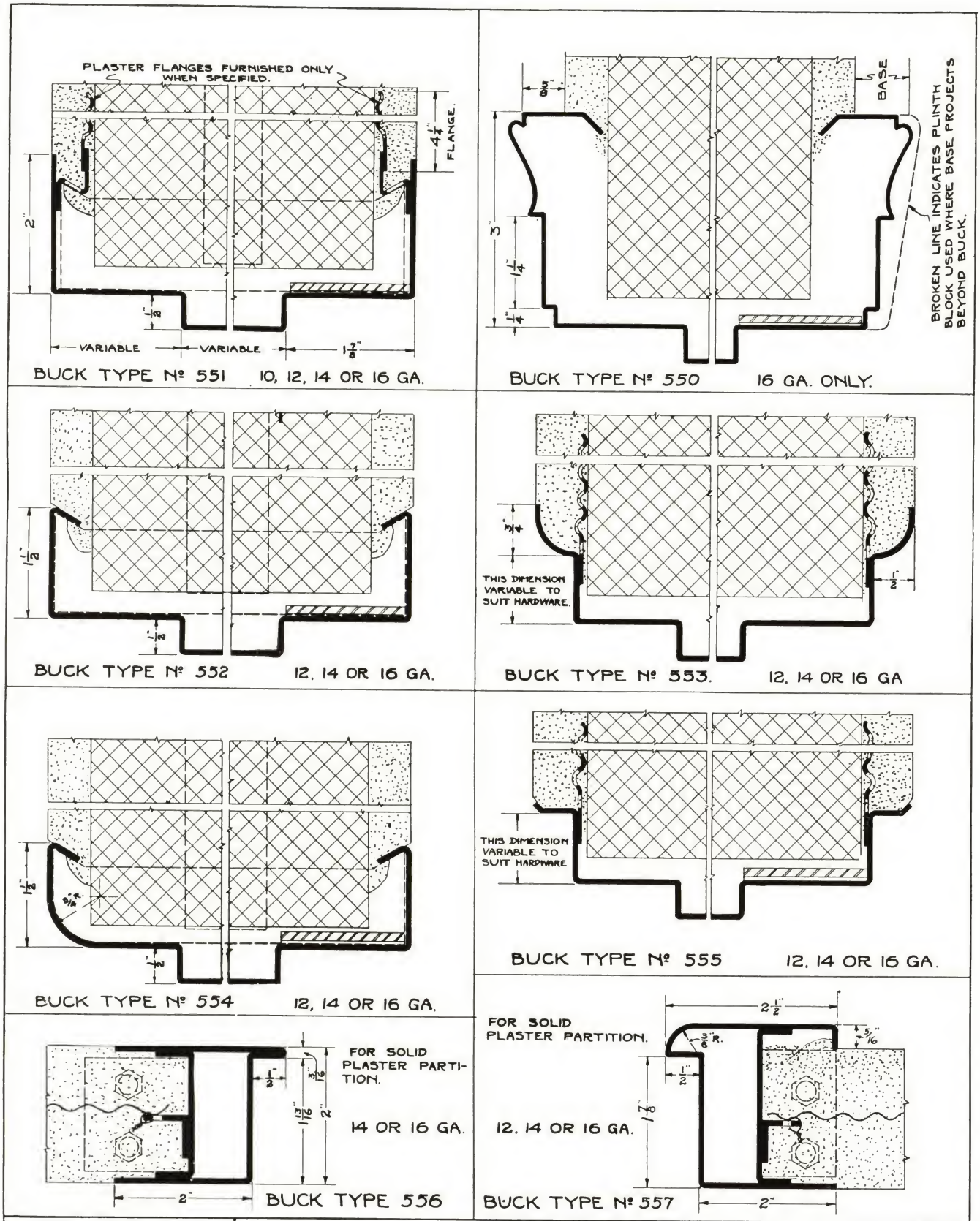
(Illustrated on page 12.)

Knapp Combination Trim and Radiator Recess carries forward a step the long used and popular Knapp Sanitary Window Trim and adds, as one complete unit to the window trim and stool, an insulated radiator recess.

It can be had with or without a grille front and is designed so that it can be used for supporting hanging cast iron radiators or for enclosing the Immured and Finned type of copper radiation.

For hospital designs the corners and angles can be made coved and rounded.

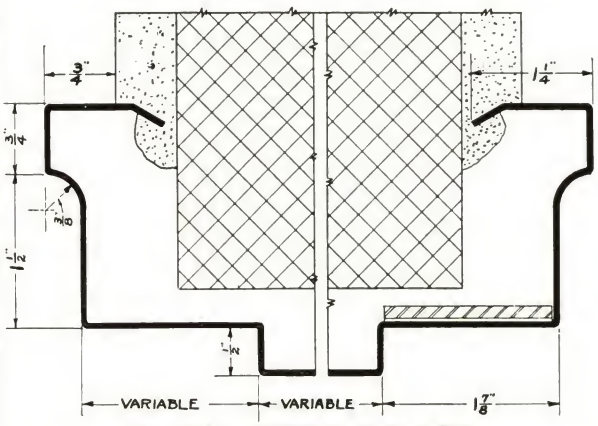
This unit is economical because it comes to the job completely assembled and ready to be set in place when the walls are up. Details will be made by Knapp's engineers to adapt its use to any type of window frame or to variable conditions of construction. Some suggested types of grille fronts are shown here, but architects' detail in this regard can be executed. Ornamental mouldings, if desired, can be attached to this trim around the jambs and head. Where stools of marble or cast terrazzo are desired, preparation can be made to receive same. The units can be furnished in white metal, if desired.



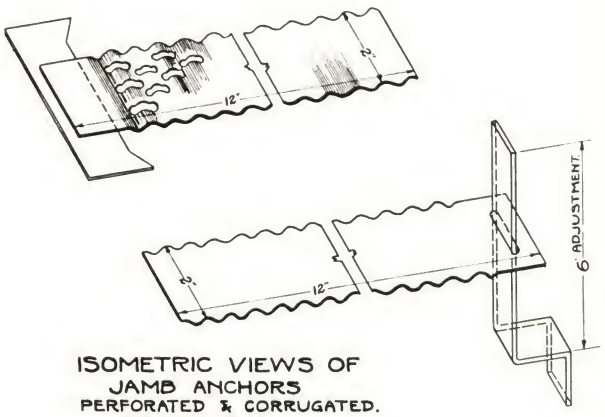
KNAPP BROS MFG. CO.
605 W. WASHINGTON BLVD.
CHICAGO, ILL.

STANDARD DOOR BUCKS
HALF FULL SIZE SECTIONS.

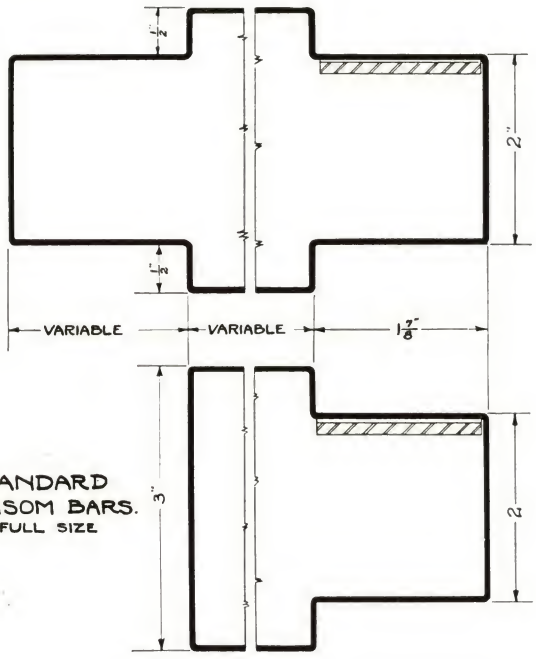
PLATE Nº	1164
CLASS	4
DATE	8-26-31.



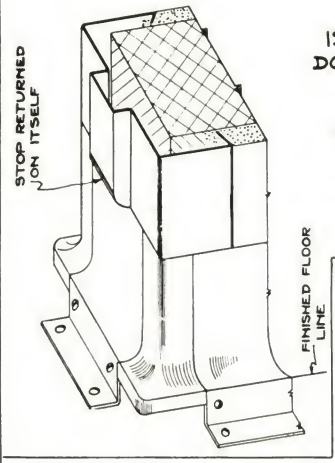
BUCK TYPE Nº. 558.



ISOMETRIC VIEWS OF JAMB ANCHORS
PERFORATED & CORRUGATED.
NOT TO SCALE.

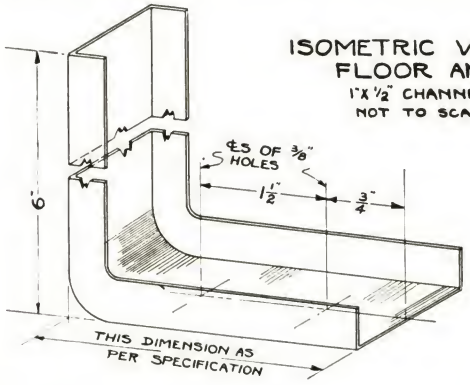


STANDARD TRANSOM BARS.
HALF FULL SIZE

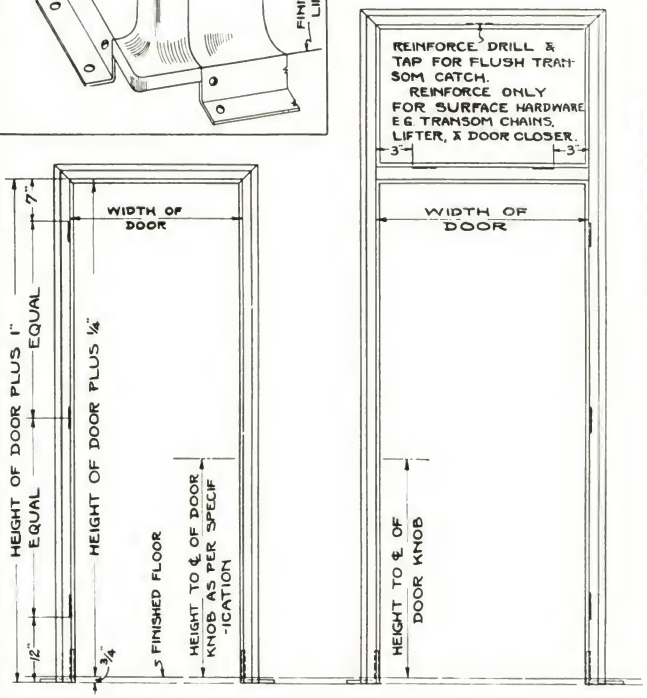


ISOMETRIC VIEW OF DOOR BUCK TERMINATING AT TOP OF BASE.

NOTE:-
BASE IS RETURNED THROUGH DOORWAY IN THIS CASE.

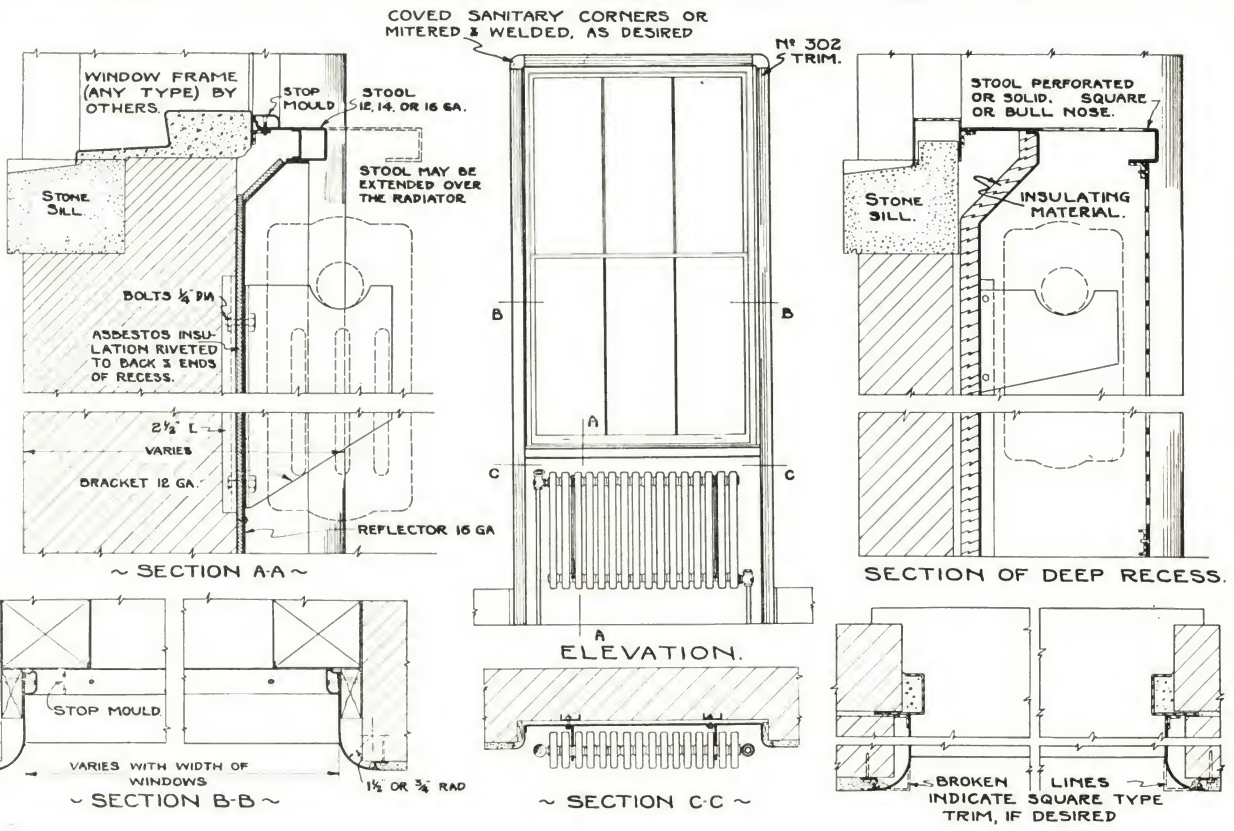


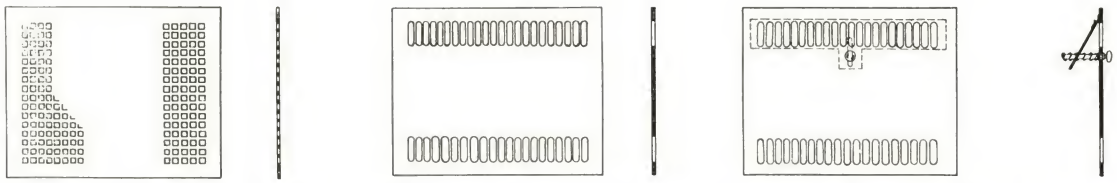
ISOMETRIC VIEW OF FLOOR ANGLE
1"x½" CHANNEL
NOT TO SCALE



ELEVATIONS OF TYPICAL DOOR BUCKS.

KNAPP BROS. MFG. CO. 605 W. WASHINGTON BLVD. CHICAGO, ILL.	STANDARD DOOR BUCKS. MISCELLANEOUS DETAILS.	PLATE Nº. 1165 CLASS. 4 DATE. 8-26-31.

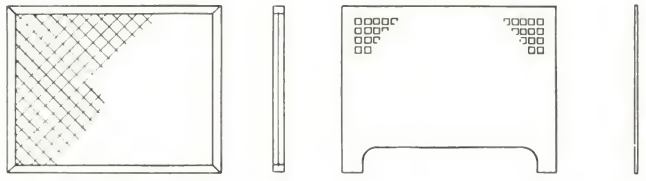




FLAT GRILLES.

GRILLE WITH SHUTTER

OTHER GRILLE TYPES AND PERFORATIONS ARE AVAILABLE



WOVEN WIRE GRILLE
CHANNEL FRAME BANDED.
PATTERN OPTIONAL.

OPEN BOTTOM GRILLE



MOULDING CLIP-ON TYPE
MOULDINGS CAN BE APPLIED ON THE FLAT WINDOW TRIM OR ON THE GRILLE TO GIVE A PANEL EFFECT

IMPORTANT

Architects and engineers frequently create new ideas of great benefit to the building industry without the means of developing them. Our facilities for developing, manufacturing and marketing within our field are at their disposal on a royalty basis.

KNAPP BROS. MFG CO 605 W WASHINGTON BLVD. CHICAGO ILL.	**WINDOW TRIM AND RADIATOR RECESS COMBINED AS AN ASSEMBLED UNIT**	PLATE Nº 1166. CLASS 12 DATE 9-4-31

Knapp Quick Set Anchor Slot

A New Member of the Knapp Family

(Patents Pending)

Description

Several methods for anchoring suspended ceilings and for holding veneers and ashlar to concrete columns and girders have been put on the market, but none of them have met all the conditions required by such a system of anchorage. The new Knapp Quick Set Anchor Slot accomplishes everything already accomplished by other devices on the market with additional advantages herein explained.

The Knapp Quick Set Anchor Slot is a device consisting of a sheet metal bevel sided channel into which is fastened a heavy steel rod supported by heavy steel anchor pins, which pass through the bottom of the channel for the purpose of being imbedded in the concrete construction.

This metal channel slot is placed on the rough forms of either concrete joist beam soffits, or on the back surface of the vertical column and girder form and held there by nails driven into the form and bent over the back of the channel. After the form is removed, this sheet metal lined slot is left in the concrete with the free standing rod held securely in place. A slotted anchor hook is provided, which hooks over the rod and can be used as a veneer tie or as a terra cotta or stone ashlar anchor.

Particular Advantages

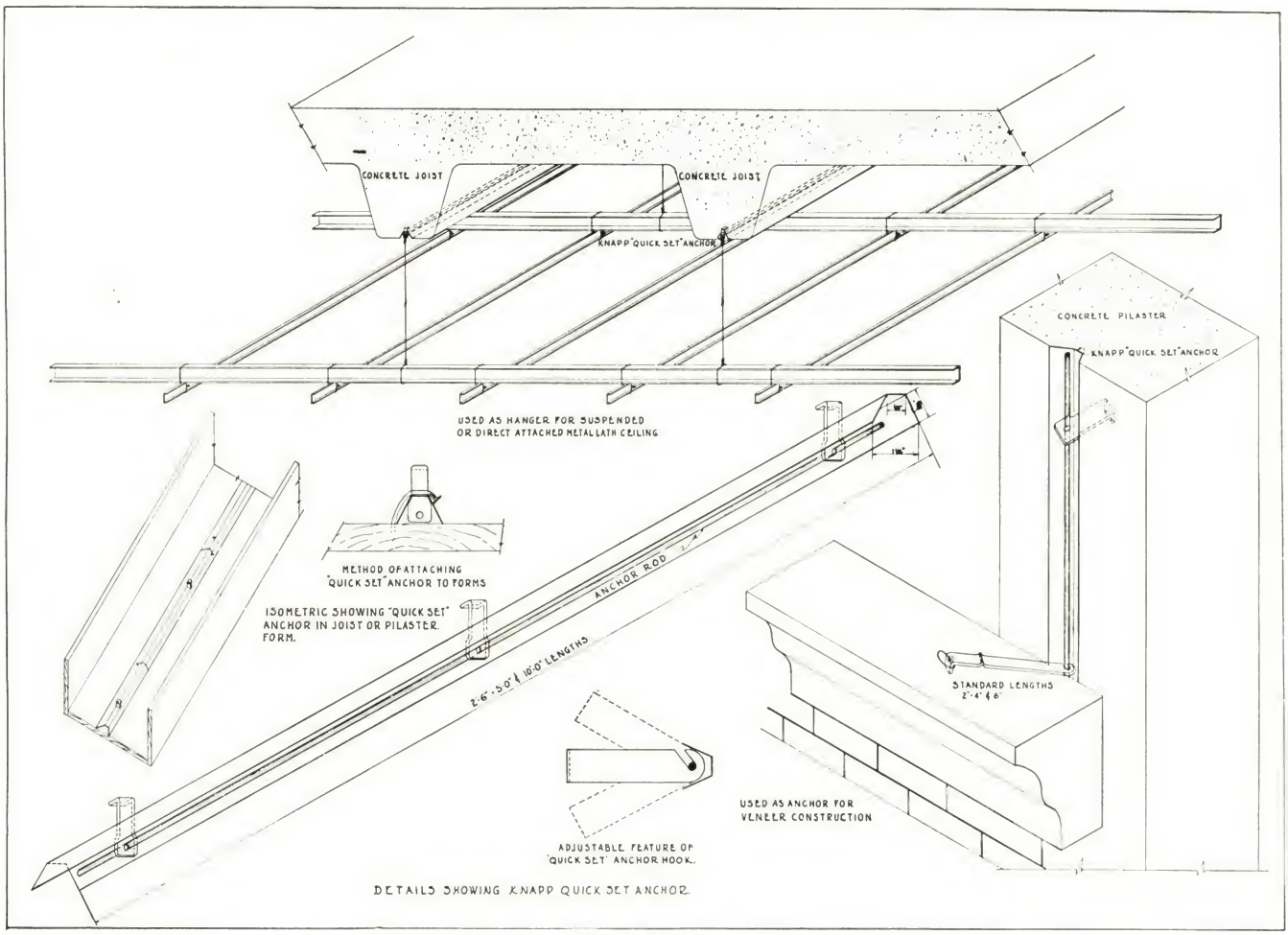
The particular advantages of this system when used for the suspension of ceilings or other hanging purposes are that it does away with the necessity of drilling holes in the bottom of the forms and placing typical old-fashioned wire hangers therein. With this channel slot in place, hanging wires can be attached at any point along the beam soffit *after the form is removed.* It is also quite obvious that in factories and other buildings where there are no suspended plaster ceilings this anchor slot can be used for suspension of electric light cords, pipe straps or a host of other things that usually are hung from a ceiling.

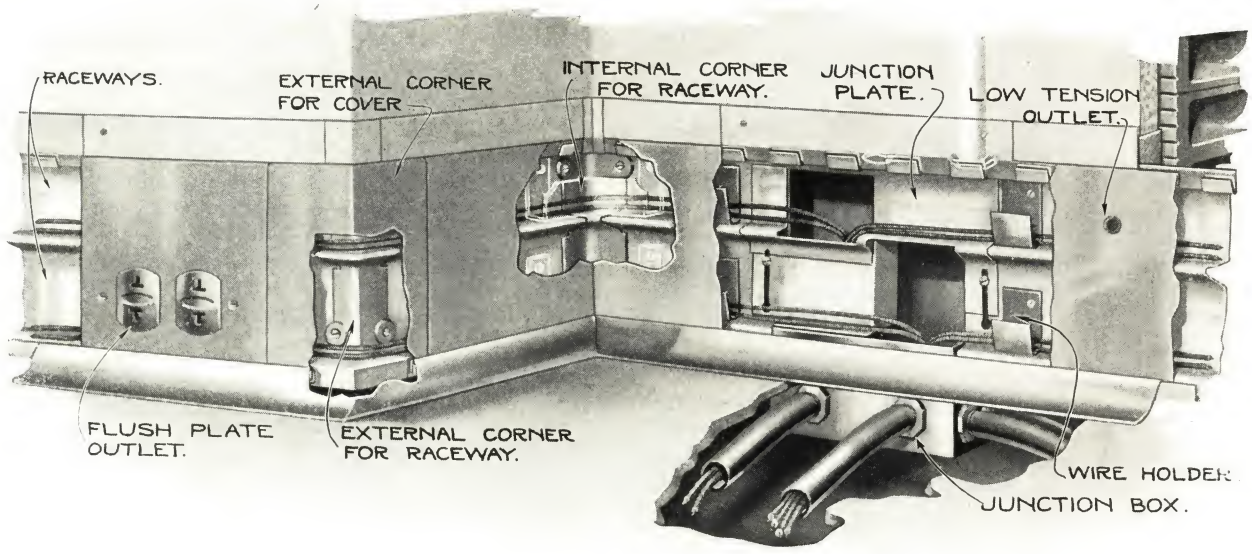
Where this slot is used for the purpose of procuring anchorage for brick veneers or stone ashlar, or terra cotta facing, it will be first observed that the holding feature of this anchor does not depend upon the walls of the slot itself, as the anchor pins go back into the concrete sufficiently to give a positive anchor. Also, the aperture of the slot is wide and not narrow.

It will also be observed that the anchor hook holding the veneer can be shifted in a radial direction and adjusted to meet varying locations of Lewis holes, etc., unlike any other slot on the market.

It also provides a rod to which wires can be attached where wire veneer ties or metal lath facing are desired. The metal hooks are designed in various lengths, and are made of 12 gauge steel, galvanized and stiffened by crimping. These hooks can be inserted with tremendous rapidity which suggests the name of "Quick Set." Experiment has shown that a workman can set the hooks in place over the rod at the rate of one every three seconds.

Knapp Quick Set Anchor Slot is furnished in convenient lengths of 2 ft. 6 in., 5 ft. and 10 ft. The hooks are sold separately by the thousand pieces.





(Inspected and Labeled by Underwriters' Laboratories, Inc.)

Manufactured under license on patents for Conduo-Base issued Nov. 28, 1922 and Dec. 21, 1926. Other patents pending

Wyr-Way Base Branch Circuit Distribution System

The Problem

The use of modern electric appliances and the frequent need of changes and additions has created a distribution problem that is of paramount importance to architects, engineers, maintenance men and building owners. In office buildings where undivided floor spaces have to await the requirements of the tenant before partitions can be located or where partitions have to be shifted from time to time, the problem is acute. In public and administration buildings newly appointed officials constantly demand changes and additions. *Flexibility* is essential and Wyr-Way supplies it.

Relative Cost

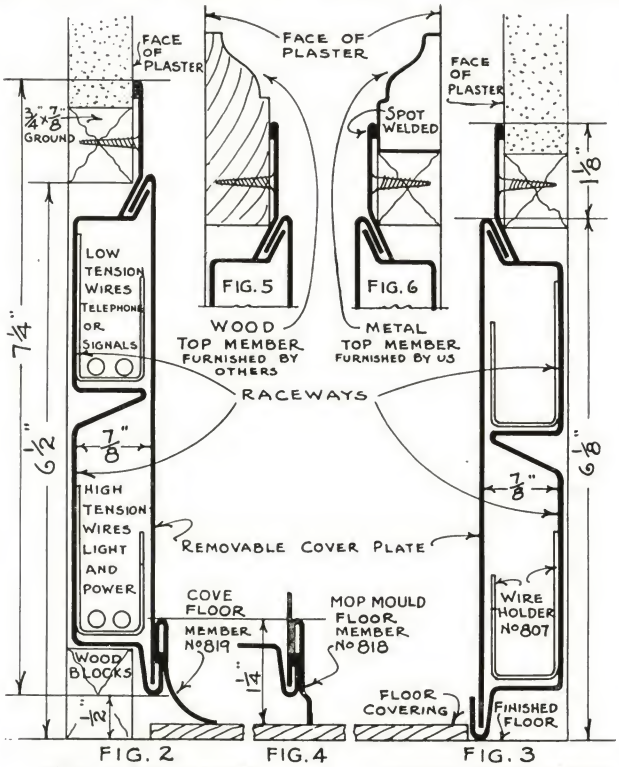
If the electrical layout is designed from the start to use the Wyr-Way system, and if given credit for what it replaces, Wyr-Way Base will cost no more than the past method of using predetermined outlets with a hardwood baseboard. The experience in office and public building construction in the past shows that innumerable changes have to be made in every job in the location of predetermined outlets involving cutting and channeling of walls and floors, plaster patching, and re-decorating. All this is made unnecessary by Wyr-Way and when this fact is taken into proper consideration *the cost of this system will be less* than other methods.

General Description and Explanation

Wyr-Way Base consists of two wire-carrying raceways with an easily removable cover plate concealing them. The upper raceway is designed to carry low tension wires, such as telephone, signal circuits, telegraph wires, etc. The lower raceway is designed to carry high tension wires for all lighting or power appliance requirements. The wires are laid in the raceways directly and do not have to be installed in conduits. The cover plate over the raceways is designed to be held in place by friction contact without the necessity for screws or other holding devices. While this cover is easily removable when needed, it is in no sense a loose cover.

Junction boxes of types depending on local requirements are provided so that the circuits may be conveniently brought to the raceways. Cast iron corner fittings are provided to eliminate the necessity for mitering at corners. Flush plates prepared for convenience outlets are provided so that they may be inserted at any point in the base for present or future outlets. The low tension outlets may be obtained by drilling a hole anywhere in the cover plate in front of the upper raceway.

A floor member is provided so as to complete the artistic effect of the base and give a sanitary finish at the floor line.



Half Full Size

Wyr-Way Base Branch Circuit Distribution System provides a way to obtain an outlet for either high tension or low tension service at any point in the perimeter of a room. This is accomplished without tearing out any part of the construction. The normal cost of one predetermined wall outlet will pay for several feet of Wyr-Way Base installed in place in which additional outlets can be had or changes in locations of outlets can be made at any time with but a small labor cost. This takes care of the requirements of the original occupants and the future tenants. It should be exceedingly important to the owners and tenants to know that there need be no exposed wires tacked to the trim or dangling in the air.

Floor Outlets

In large office spaces where it is desirable to use floor outlets in connection with the base outlets, it is possible to cross connect from any one of our Wyr-Way Base Junction Boxes to a standard floor box or outlet elbow. If steel joist construction is used, the connection is made from the floor outlet to the nearest respective raceways.

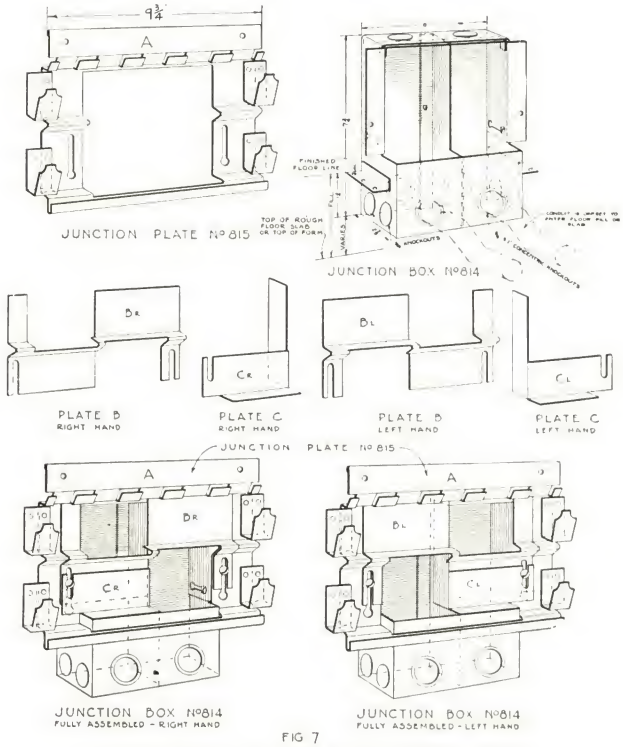


FIG 7
Nº 814 JUNCTION BOX WITH Nº815 JUNCTION PLATE SHOWING RIGHT AND LEFT HAND DIVISION PLATES

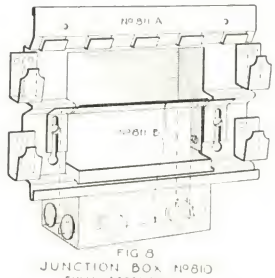


FIG 8
JUNCTION BOX Nº810 FULLY ASSEMBLED

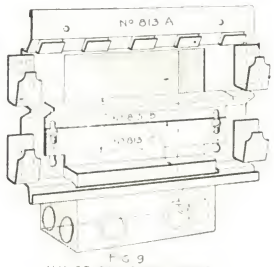


FIG 9
JUNCTION BOX Nº812 FULLY ASSEMBLED

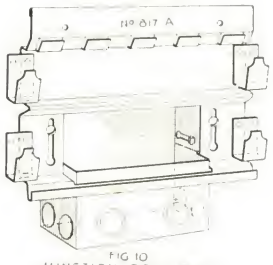


FIG 10
JUNCTION BOX Nº816 FULLY ASSEMBLED

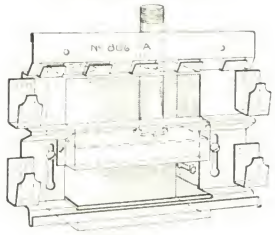


FIG 11
JUNCTION BOX Nº805 FULLY ASSEMBLED

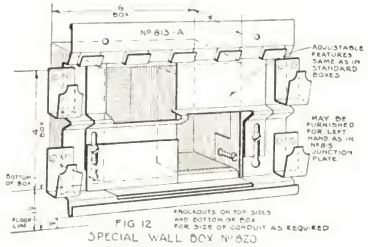


FIG 12
SPECIAL WALL BOX Nº820 COMPLETE ASSEMBLY

SPECIAL BOXES

The shell of the No. 811, 812, and 816 Junction Box is the same as the shell of the No. 814 Junction Box shown on page 6. The No. 811-A and No. 813-A Junction Plates are the same as the No 815 Junction Plate shown on Page 6. The No. 805 Junction Box sets on the finished floor. The No. 820 Junction Box sets in the wall above the finished floor.

Essential Information for Architect and Engineer

Layout Design—Figure 16 (on following page) shows a layout with Wyr-Way Base Branch Circuit Distribution for a typical office condition where the partitions are not predetermined. A junction box is placed at the column and one at the outside wall per bay. These junction boxes are connected together by standard conduit and are placed at the time the roughing-in conduit work is done.

To both the initiated and uninitiated, a careful study of Figures 16, 17, 18, 19, and 21, will show the adaptability and flexibility of the Wyr-Way Base Branch Circuit Distribution System. Note that service from this layout may be brought to the door from either side, thus eliminating the necessity for door jumpers, except in rare cases.

The raceways on the outside walls are kept continuous and not interrupted by partitions, forming a complete loop for high tension and low tension service, thus making it possible to utilize circuits originally provided for one section where it is not used in another section, where the requirements are greater than originally anticipated.

Our Electrical Engineering Department is at your service for layouts and further data.

Wyr-Way System a Timely Development—The modern trend in floor construction is to minimize the floor load consistent with carrying capacity of floor required. In this type of floor construction the use of an underfloor duct system cannot be considered because the accepted underfloor duct systems on the market require from 3½ to 5-in. floor fill. Wyr-Way Base Branch Circuit Distribution System offers a solution to this problem.

Wyr-Way Base with Underfloor Duct System—The system can be used conveniently and economically in conjunction with any of the accepted underfloor duct systems. The junction box placed at outside walls and columns can be hooked up with the cross-overs of the underfloor duct system.

Regardless of how much underfloor duct is used in the building, there is still necessity for side outlets and the smaller the subdivision, the greater their necessity and less the necessity for floor outlets. By using the system in conjunction with underfloor duct, and taking the high tension home runs from the ceiling distribution, a connection between the ceiling distribution, the base distribution, and the floor distribution for high tension service is established, and maximum flexibility is allowed in floor and base board for low tension service.

The fact that specifying the system does not add to the cost of the job when considered in the original design, makes it advisable for the engineer to use Wyr-Way Base Branch Circuit Distribution System either with or without underfloor duct.

Suggested Specification—In Electrical Specification Under Special Apparatus

Wyr-Way Base Branch Circuit Distribution System—(1) This contractor shall provide and install throughout the spaces hereinafter mentioned, a distribution system for electric, telephone and miscellaneous signal systems, comprised principally of a two-compartment metal base known as Wyr-Way Base and as manufactured by the Knapp Brothers Manufacturing Company, Chicago, Ill.

The system shall be complete with junction boxes, grounding clips, wire holders, flush plates, right and left-hand junction plates, internal and external corner fittings and metal floor member.

Note: This kind (bronze or steel) and type (cove mould or mop mould) of floor member should be mentioned.

This system shall be provided in the following spaces: .....

(2) Wyr-Way Base shall be of the two compartment type, the top being used for telephone and the low tension wiring, and the bottom for lighting circuits.

It shall be not less than 7/8 in. clear inside depth and approximately 7 in. from finished floor to top of plaster strip.

It shall be made of not less than No. 18 U. S. S. gauge special tight coat galvanized sheet steel. (Furniture Steel, if baked-on finish is required.)

All exposed parts shall have a special prime coat, the final finish to be applied as per architect's sample by the painting contractor. (If baked enamel finish is desired, specify whether in plain colors or grained to imitate wood; also state whether cover plate only is to be so finished or all exposed parts of base.)

Flush plates approximately 6 in. long shall be used to receive receptacles where shown on plans. These shall be furnished punched to receive receptacles, one plate to each 10 ft. of base.

Where telephone or signal outlets are required, a 3/8-in. bushed opening shall be provided by the electrical contractor at the extreme upper edge of cover plate in front of low tension compartment and at locations later to be determined by architect.

(3) ***Junction Boxes***—These shall be Knapp No. 814 Junction Boxes with knock-outs for both systems at top, front, rear and sides, permitting conduits to enter floor and wall. These boxes shall be made to accommodate the Knapp No. 815 Right or Left-Hand Junction Plate.

(4) Where door jumpers are required, Knapp No. 810 Junction Box shall be used so that 3/4-in. conduit may be run in the floor for both systems directly from one junction box to the other.

(5) ***Continuous Raceways***—The raceways on the outside walls shall be continuous and not interrupted by partitions. The Wyr-Way Base on partitions is to intersect with the raceways on the outside walls so that the wiring may continue to both sides of the partitions or brought into the raceways on the partitions. Curved internal corner wire holders shall be used at all internal corners, similar to Knapp No. 809.

(6) ***Wood Grounds***—These shall be furnished and installed by the general contractor, but the electrical contractor shall co-operate very closely, giving the necessary details and information to insure a proper installation. Care shall be exercised to see that the grounds are exactly parallel with the finished floor and at the correct height above floor.

(7) ***Branch Circuits***—In addition to branch circuits shown on plans, conduits shall connect Wyr-Way Junction Boxes to distributing cabinets and (Corridor wire mould) in accordance with (drawing? Number?).

(8) ***Labor***—All tools, material and labor for the erection of the Wyr-Way Base Branch Circuit Distribution System shall be furnished by the Electrical Contractor.

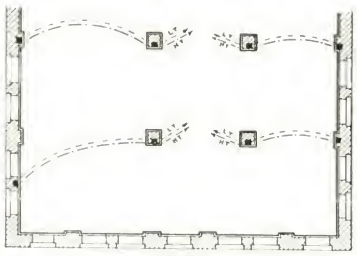


FIG 16
PLAN SHOWING KNAPP WYR-WAY BASE BRANCH CIRCUIT DISTRIBUTION SYSTEM ON OUTSIDE WALLS AND COLUMNS

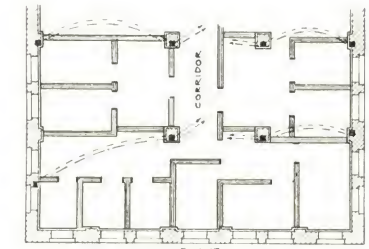


FIG 17
PLAN SHOWING KNAPP WYR-WAY BASE BRANCH CIRCUIT DISTRIBUTION SYSTEM WITH PARTITIONS



SYMBOLS
WYR-WAY BRANCH CIRCUIT DISTRIBUTION SYSTEM

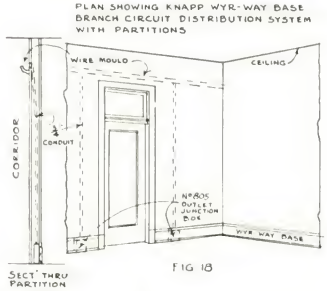


FIG 18

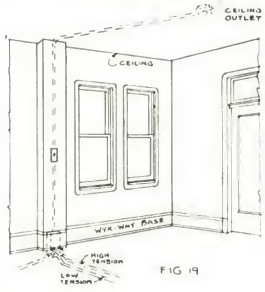


FIG 19

LAYOUT SHOWING KNAPP WYR-WAY BASE BRANCH CIRCUIT DISTRIBUTION SYSTEM

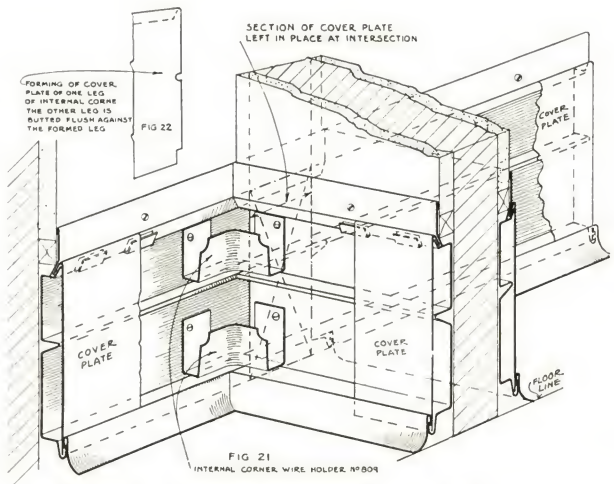
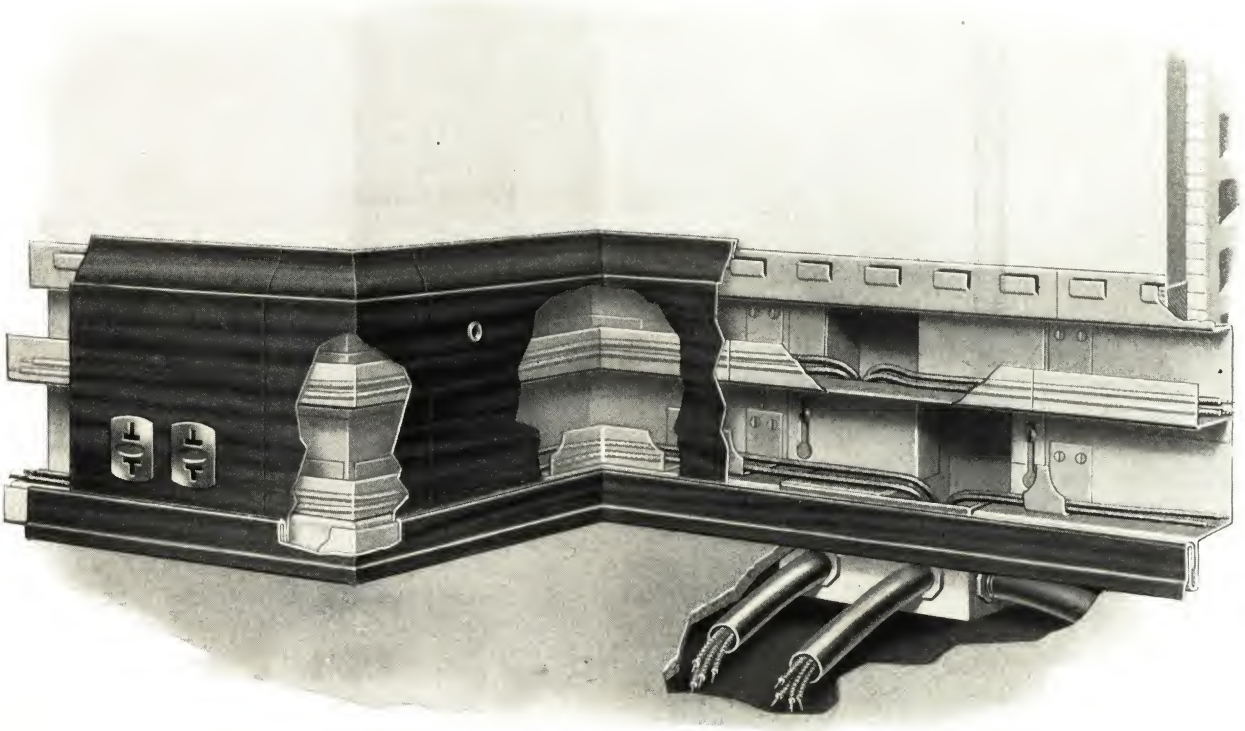


FIG 21
INTERNAL CORNER WIRE HOLDER Nº809

INTERSECTION OF A PARTITION WITH AN OUTSIDE WALL OR COLUMN

Submit Your Branch Circuit Distribution Problems to Our Electrical Engineering Department

(See following pages for new developments)



Master Wyr-Way—Series No. 1000

The general specification and technical discussion with reference to our Wyr-Way Base, on pages 14 to 16, applies to our Master Wyr-Way Base. The cover plate is easily removable and covers the entire raceway, so that expert fitting is not required for the raceway itself, although, care must be taken that the properly designed internal corner wire holders, and external corner wire holders, are attached to assure an electrical bond.

This type of base is recommended where it is desirable to have no attaching screws shown; where a top member design is required and where greater than normal wire carrying capacity is required. Master Wyr-Way *may be used for emergency main distribution* as well as branch circuit distribution.

The bottom hook of the raceway rests on the finished floor, so that when erecting the raceway, the length may be set on the floor and pushed into the space provided for it between the wood plaster ground and the finished floor. The space between the top of the raceway and the bottom of the wood plaster ground, is left to take up the irregularities in the floor level. Provisions are made to raise the cover plate if it sticks on account of the irregularities of the wall line.

Detail No. 7 embodies most of the advantages of our Master Wyr-Way with the exception that a 1-in. wire carrying space is provided instead of a 1½-in. There is also a difference in design near the plaster line.

Low Tension Wire Carrying Bases

Details No. 1, No. 2 and No. 3 on following page show various designs of low tension wire carrying bases.

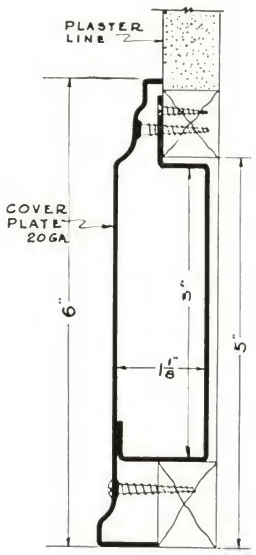
Detail No. 2 shows a low tension wire carrying base contained within the depth of the plaster. The bottom of the raceway acts as a base screed, and the cement or terrazzo base may be worked up to it. The top acts as a plaster ground, and the plaster is worked down to it. The cover plate is flat, and fits in as shown on the detail, the top being attached to the plaster ground by means of a sheet metal screw. When the job is completed the raceway is not visible and the cover may be finished either as part of the base or as part of the plaster, thus giving leeway with reference to design of base. This type of base is very economical and may be compared directly with the actual cost of conduit and fittings required to do similar work. It may be fed by standard conduit, stubbed up directly into the wiring space.

High Tension Wire Carrying Channels

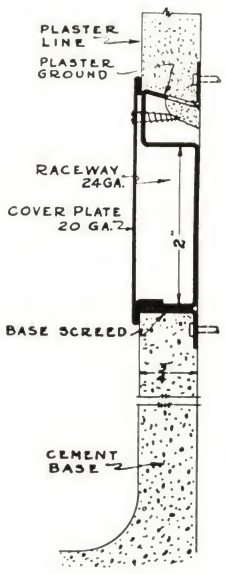
Detail No. 4 shows a raceway intended for high tension distribution only, and is valuable where flexibility is required in residences or public buildings, and where it is advisable to use a wood top member and a wood bottom member. Knapp Brothers also manufacture other designs of high tension wire carrying channels in the baseboard or for overhead distribution for special purposes.

WIRE CARRYING BASES FOR BRANCH CIRCUIT DISTRIBUTION

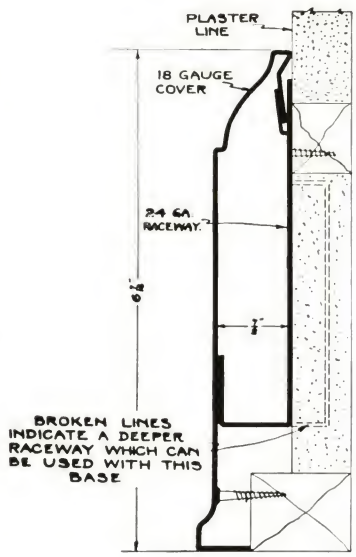
DETAIL Nº 1



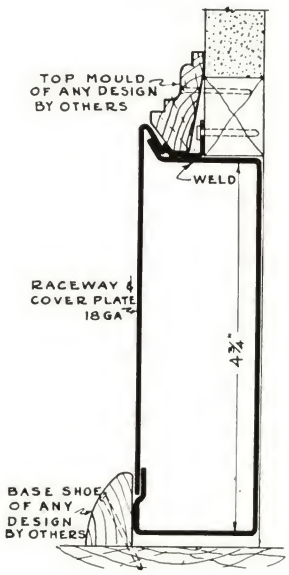
DETAIL Nº 2



DETAIL Nº 3



DETAIL Nº 4



LOW TENSION RACEWAYS.

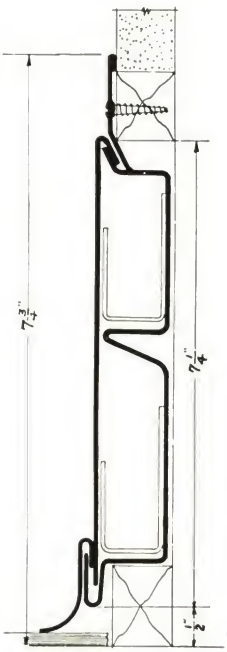
HIGH TENSION TYPE FOR RESIDENCES.

DETAIL Nº 5



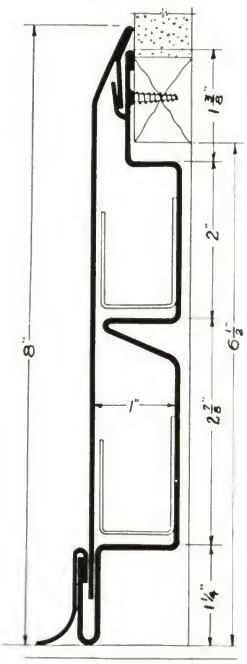
BASE TO MATCH STANDARD WYR-WAY BASE

DETAIL Nº 6



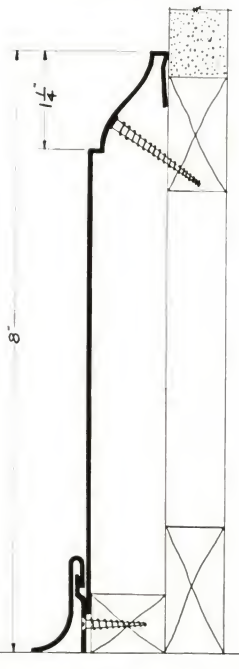
STANDARD WYR-WAY BASE SERIES Nº 800

DETAIL Nº 7



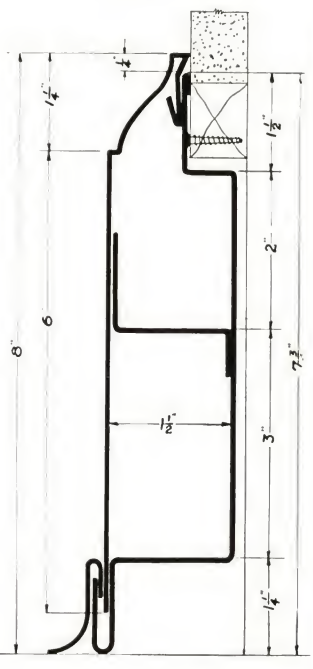
INTERMEDIATE WYR-WAY BASE SERIES Nº 900

DETAIL Nº 8



BASE TO MATCH MASTER WYR-WAY BASE

DETAIL Nº 9



MASTER WYR-WAY BASE SERIES Nº 1000

COMBINED HIGH TENSION & LOW TENSION RACEWAYS

MILCOR STEEL COMPANY

MILWAUKEE, WIS. CANTON, OHIO

CHICAGO, ILL. KANSAS CITY, MO. LA CROSSE, WIS.

SALES OFFICES

BOSTON, MASS. DETROIT, MICH. ATLANTA, GA. LITTLE ROCK, ARK. MINNEAPOLIS, MINN.
NEW YORK, N. Y. LOS ANGELES, CAL.

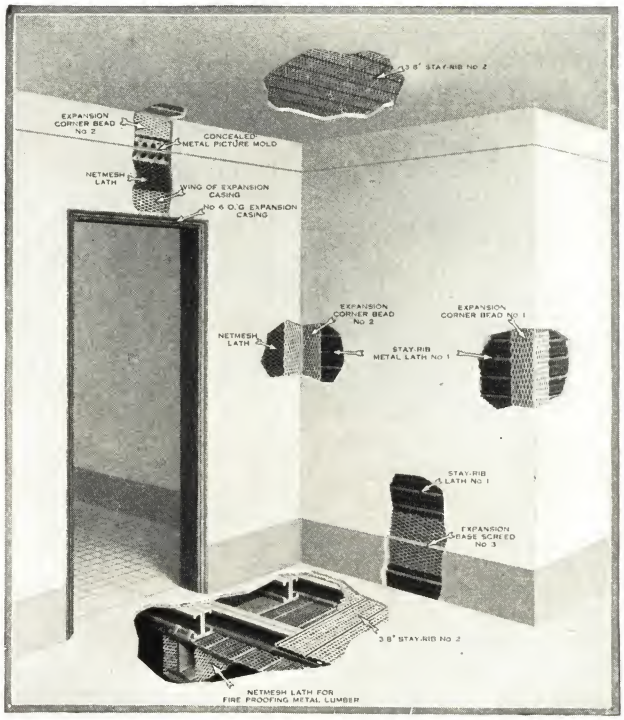
Products

KUEHN'S SPECIALMESH METAL LATH.
NETMESH DIAMOND EXPANDED METAL LATH.
STAY-RIB METAL LATH No. 1.
⅜-INCH STAY-RIB LATH No. 2.
¾-INCH STAY-RIB No. 3 REINFORCING LATH.
FURLATH.
TILATH.
¾-INCH RIB TILATH.
COLD ROLLED and HOT ROLLED STEEL CHANNELS.
STEEL DOMES (or PANS).
"EXPANSION" CORNER BEADS No. 1 and No. 2.
5-INCH WING 24-GAUGE EXPANSION CORNER BEAD.
"EXPANSION" BULLNOSE CORNER BEAD No. 10.
OLD STYLE CORNER BEADS.
"EXPANSION" CASINGS for DOOR and WINDOW TRIM.
"EXPANSION" BASE SCREED, FLASHING, ETC.
"EXPANSION" CORNICE LATH.
CONCEALED METAL PICTURE MOULDING.

Also Base Screeds, Metal Window Stools, Cove Bases, Chalk Rails; Architectural Ornaments; Marquises; Ornamental Cornices, Eaves Trough, Conductor Pipe and Elbows; Furnace Pipe and Fittings, Stove Pipe and Elbows, Mortar Boxes, and other Sheet Metal Products.

MILCOR
TRADE-MARK
(Registered)

For our pages on Steel Basement Windows, Sheet Metal Products, and Metal Tile Roofing, see Manufacturers' Index.



Practical application of Milcor Products shown at left. Wall construction exposed to show various Milcor Products essential to better plastering and fire-safe, crackfree walls, ceilings and floors.

Metals Used

All Milcor Products, including metal lath, are now available in the famous rust-resisting *Armco* ingot iron, as well as in steel, *copper alloy* steel, pure zinc, or genuine Anaconda copper.

Catalogues Available

8½x11 in. to fit your files.

No. 20-E—"The Milcor Manual" (96 pages) on metal lath and allied products, including standard architectural specifications for fire-safe construction.

"Modern Modes in Better Plastering" (32 pages).

No. 24-A—"Milcor Architectural Sheet Metal Guide" on roofing, cornices, architectural ornaments, ventilators, etc.

No. 30—Furnace Pipe and Fittings Catalogue (72 pages).

No. 36—"Invisible Joint" Metal Ceiling Catalogue (64 pages).

No. 28—Milcor Sheet Metal Handbook (128 pages) on general sheet metal products.

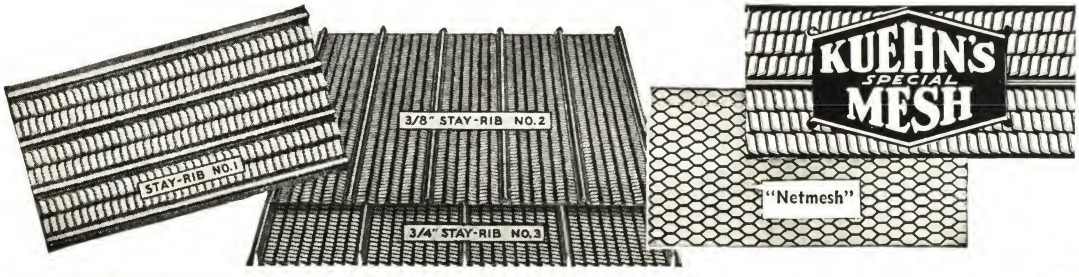
Kuehn's Specialmesh, Stay-Rib and Netmesh Metal Lath

Kuehn's Specialmesh has 16 reinforcing ribs to a sheet, spaced 1½ in. apart. They are corrugated to make them doubly rigid. The mesh is scientifically designed to secure adequate plaster key and assure proper metal surface for effective reinforcement and for economy in the amount of mortar used. Furnished flat for interiors and corrugated for stucco.

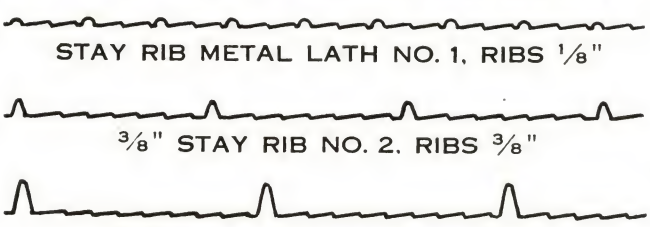
Milcor Stay-Rib Lath is designed particularly to solve the specific problems encountered in better plastering and in modern reinforced concrete floor and roof construction. The combination of sturdy ribs with the intermediate stays, or strands, results in greater strength and rigidity, and therefore makes safer work possible with less labor and materials. No jagged corners or sharp points. The mesh is open enough to insure thorough bonding of the lath with plaster or concrete, but the mesh is close enough to prevent excessive use of plaster or dripping losses of concrete. Compare Milcor Stay-Rib Metal Lath with any other types of rib lath. Samples free.

Milcor Netmesh is a particularly sturdy type of diamond expanded metal lath. Samples free on request.

Furnished in steel, copper alloy steel, *Armco* ingot or Toncan iron, zinc or copper, in standard weights and sizes. Consult "The Milcor Manual" and bulletin on "Reinforcing Rib Lath" for complete detailed data.



COMPARATIVE PROFILES OF STAY RIB LATH



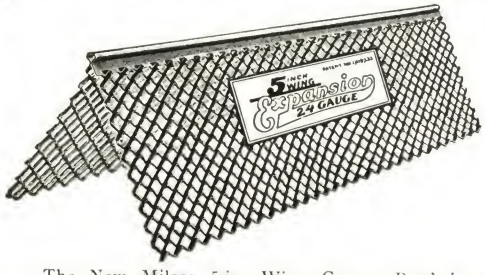
STAY RIB METAL LATH NO. 1, RIBS ⅛"

⅜" STAY RIB NO. 2, RIBS ⅜"

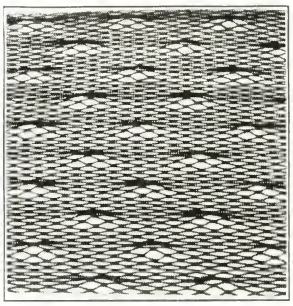
¾" STAY RIB NO. 3, RIBS ¾"

New 5-in. Wing Expansion Corner Bead

To the famous Milcor Line of Expansion Products has been added a new, exclusively manufactured corner bead. The important feature of this new bead is that it has expanded metal wings 5 in. wide—twice as wide as any previously made. The full 5-in. width wing may be used to advantage in many different places for interior construction, particularly those in which there is approximately a 5-in. space between the corner and adjoining lath or bead.

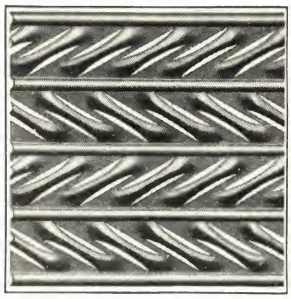


The New Milcor 5-in. Wing Corner Bead is made in galvanized steel, copper alloy steel or Armco ingot iron—24-gauge only.



Milcor Furlath

A self-furring stucco base. Indentations fur lath away from sheathing. Metal strands become embedded in mortar forming steel reinforcement. Cut from open hearth steel, or copper alloy steel (painted black) in 2.20, 2.50, 3 and 3.40 lb. weights; and from galvanized steel, galvanized Armco ingot iron or Armco ingot or Toncan iron painted black in 2.50 and 3.40 lb. weights



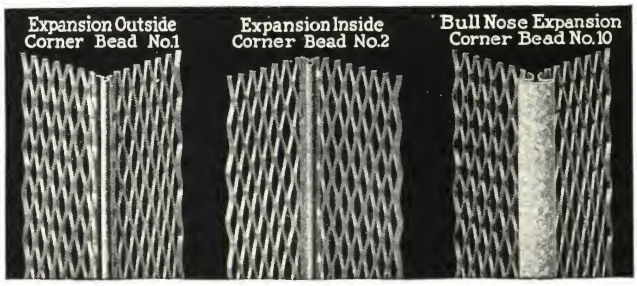
Milcor Tilath

For tile and terrazzo backing. Strong ribs and diagonal raised stays reinforce sheet and prevent sagging. Stays also provide reinforcing plaster key. Made from open hearth sheet steel 4.50 lb. per sq. yd. (painted); Milcor galvanized sheet steel 6.18 lb. per sq. yd., or copper alloy steel in same weights. Furnished in 24x96-in. sheets packed 9 to the bundle (16 sq. yd.)



Milcor No. 12 Extra Wide Flange Corner Bead

For outer corners only. Wings 2½ in. wide strengthened by lengthwise corrugations. Oval shaped nose, staggered plaster keyholes.

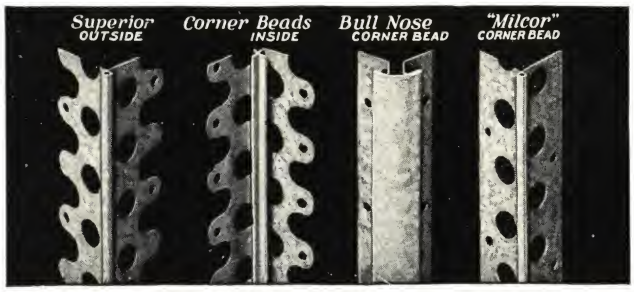


Milcor "Expansion" Corner Bead

Patent No. 1419232

The superiority of Milcor expanded metal corner beads—the "Expansion" line—is recognized everywhere. Millions of feet of this bead installed in hundreds of the finest buildings and in thousands of homes.

No. 1 "Expansion" Corner Bead for outer, exposed corners.
No. 2 "Expansion" Corner Bead for inner corners, ceiling angles, etc.
No. 10 "Expansion" Bullnose Corner Bead. Patent No. 1678813.
Complete details in "The Milcor Manual." Samples free



Milcor Old Style Corner Beads

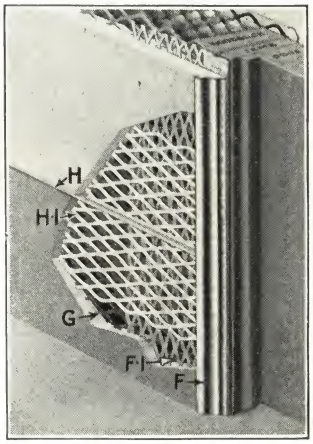
The Milcor line of Old Style Corner Beads is still available and while we recommend that Milcor "Expansion" Corner Beads be carefully considered for all outer and inner angles, there are often circumstances where it is practical to use these Old Style Corner Beads. Large stocks are always maintained in standard lengths, and deliveries always can be made promptly. Complete details in "The Milcor Manual." Samples free

Milcor "Expansion" Casings for Door and Window Trim (Patent No. 1,570,676)

These modern Milcor "Expansion" Casings take the place of costly, clumsy, unsanitary wooden trim for doors and windows, with interior plastering or exterior stucco. Although this metal trim adds considerable to the architectural beauty and finish of the interior or exterior, it is more economical than many other less satisfactory types of trim. This metal trim also prevents cracks in plaster around doors and windows and it is fireproof.



Casing Easily Fastened to Door or Window Jamb with Milcor Patented Casing Lock or Clip

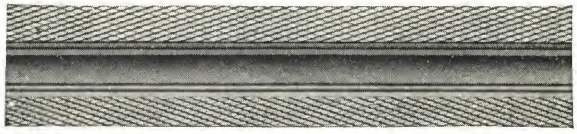


Section of Wall Exposed

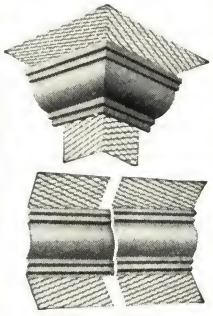
"F"—Exposed metal moulding of "Expansion" casing; F-1—Expanded metal wing of casing; G—Netmesh metal lath; H—Bead of "Expansion" base screed; H-1—Expanded metal wing of base screed

Milcor Expansion Cornice Lath

This metal cornice with expansion wings insures a perfect plaster job. It is permanently keyed to the plaster on both



ceiling and wall; no cracks can start or develop in the corner between ceiling and sidewall. The metal is lead-coated and takes paint perfectly. An invisible joint makes lengths and mitres fit exactly. Mitres are formed at the factory.



Mitre Joint

Milcor Expansion Cornice Lath is a new quality building product which enables the use of permanent metal construction for ornamental coves and cornices at an unheard of low cost.

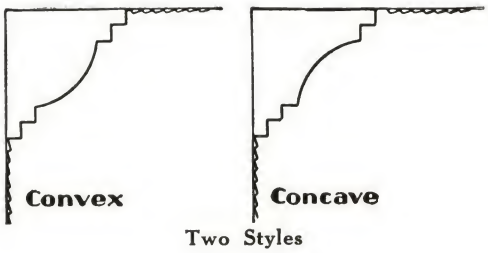
The new Milcor Expansion Cornice Lath is not designed to take the place of an elaborate plaster cornice made by skilled artisans. It will, however, permit the use of permanent, enduring metal in a quality installation where cost would have otherwise prohibited the use of a cornice—or as a substitute for inferior cornice material which warps, draws away from the plaster and spoils the effect of even the best plaster within a short time after the job is completed.

For beautiful interiors where modern construction is desired, and cost must be considered, Milcor Expansion Cornice Lath is most appropriate.

There are two standard styles, convex and concave, as shown in the sketches below.



Mouldings Made in Four Styles as Shown



Two Styles

NATIONAL STEEL FABRIC COMPANY

DIVISION OF PITTSBURGH STEEL COMPANY

Manufacturers of Steeltex (4 Types)

GENERAL OFFICES
Union Trust Building, PITTSBURGH, PA.

DISTRICT SALES OFFICES

ATLANTA	CINCINNATI	LOS ANGELES	PORTLAND	SAN FRANCISCO
BUFFALO	DETROIT	NEW YORK	ST. LOUIS	SYRACUSE
CHICAGO	HOUSTON	PHILADELPHIA	SAN ANTONIO	WASHINGTON

Products



STEELTEX (Welded Wire Mesh with Integral Fibrous Backing). There are four styles of STEELTEX—same principle, same protection—RIBBED STEELTEX LATH for interior plaster; STEELTEX for stucco; STEELTEX for brick or stone veneer; STEELTEX LATH for floors and roofs (concrete and gypsum).

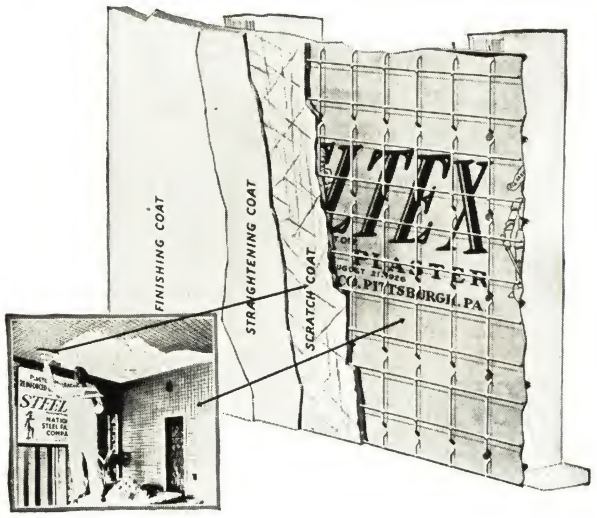
For NATIONAL REINFORCING (welded wire fabric) for buildings, roads, streets, sidewalks, driveways, runways, canals, concrete pipe, gunite and all other types of concrete construction, and STEELTEX lath for floors and roofs (concrete and gypsum), see Manufacturers' Index.

General Information

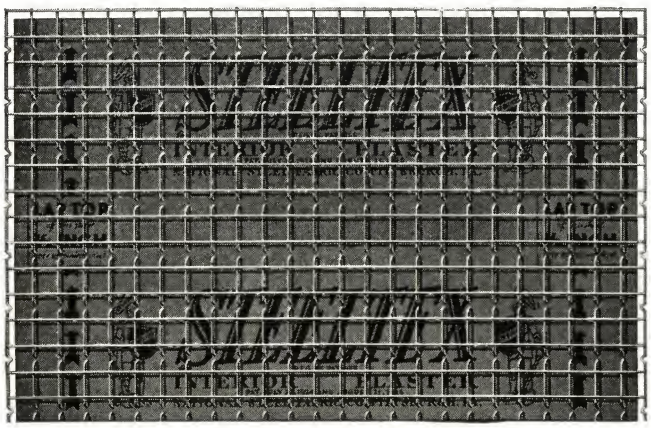
All four styles of STEELTEX have the same principle and offer the same protective qualities. Each style of STEELTEX, however, is specifically designed and manufactured to function efficiently according to the particular requirements for which each is intended. Briefly, STEELTEX is composed of electrically welded, cold-drawn, galvanized copper-bearing steel wire mesh attached to the various types of backing. This integral backing consists of a double waterproof membrane for stucco and brick and stone veneer, a heavy absorbent fibrous backing for plastering and a cord-reinforced backing for floors and roofs. In the different styles of STEELTEX the galvanized wire mesh varies in gauge and spacing according to the purpose it is to serve. The attachment of the backing to the reinforcing element of STEELTEX is accomplished by independent furring wires or ribs, as the case may be, and so manufactured as to offset the backing a correct distance away from the plane of the fabric to assure positive embedment of the steel wires within the plastic material when it is poured, plastered, or otherwise deposited against the backing.

Ribbed Steeltex Lath for Interior Plaster

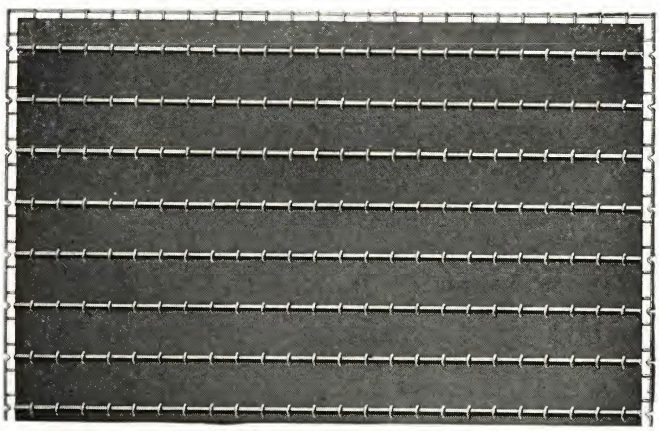
Ribbed STEELTEX lath is composed of three major units as follows: (a) The heavy, tough, fibrous backing onto which is woven (b) a 2x2 in. mesh of electrically welded copper-bearing steel wires (heavily galvanized). (c) Across the back of STEELTEX for plaster are rows of V-shaped metal rib stiffeners 3¾ in. on center which give Ribbed STEELTEX lath board-like rigidity, and fur the plaster slab slightly away from the bearings, a further preventive against cracks.



Above:
A cutaway section of a wall lathed with Ribbed STEELTEX. Note how the network of galvanized copper-bearing steel wires are embedded in the plaster, giving protection against plaster cracks and strengthening the entire framework of the building. The STEELTEX fibrous backing, becoming an integral part of the plaster slab, effectively seals the entire surface, tending to prevent heat leakage and preventing lath or joint marks



Front or plaster side of a sheet of Ribbed STEELTEX lath for interior plaster. Note the reinforcing network of welded, copper-bearing steel wires (galvanized) woven onto the heavy, fibrous backing



Extending across the back of the Ribbed STEELTEX sheet at 3¾-in. intervals are rows of V-shaped metal rib stiffeners. These stiffeners, plus the wire mesh and heavy backing, give STEELTEX its board-like rigidity

RIBBED STEELTEX LATH FOR INTERIOR PLASTER

Applying and Lapping

To obtain maximum results in plastering, start lathing on the ceiling at the corner of the room. After the first corner sheet has been nailed in place, apply second and succeeding sheets as shown in the accompanying illustrations.

Side wall sheets should be applied from the ceiling down to the floor so that all horizontal laps shall take place over the top sheets. Sheets shall be staggered on both ceilings and side walls and laps shall be made on studs or joists and never between.

Ribbed STEELTEX sheets should be nailed with 4d common wire nails or STEELTEX hooked lath nails or staples.



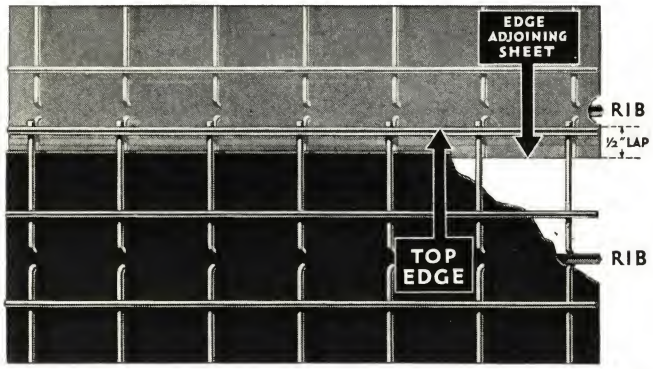
which a tough, fibrous backing is secured by means of a 26-gauge V-shaped rib).

Ribbed STEELTEX Lath shall be attached to walls and ceilings with 4d common wire nails or STEELTEX blued lath nails, or staples, over each alternate rib into each stud or joist. All joints shall be staggered on both ceilings and sidewalls, so that four corners of adjacent sheets shall not occur at any one place. End laps shall be 1 in. and side laps ½ in. Start lathing ceiling at corner bending the first sheet at the ceiling angle to provide a 6-in. drop or apron down the sidewall. Lath sidewalls from ceiling down so that all horizontal laps are made over top sheets. Plaster over Ribbed STEELTEX Lath shall be finished to not less than ⅝-in. grounds.

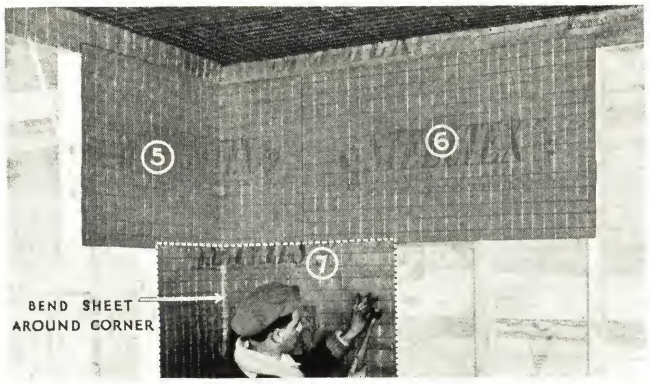
Note: In accordance with Board of Underwriters' requirements partitions must be plastered on both faces to full ¾-in. thickness with gypsum plaster to afford one-hour fire protection.



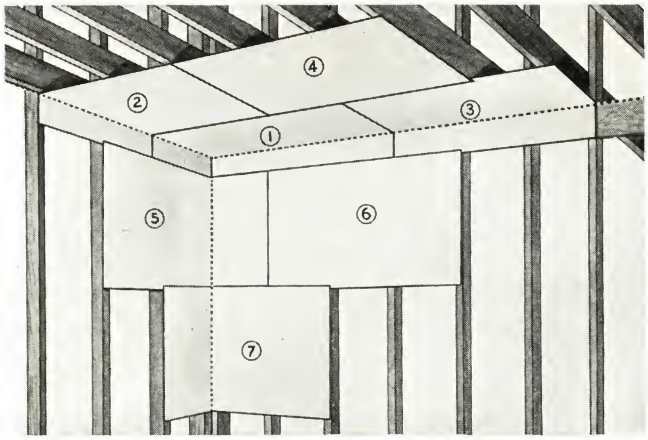
Start lathing on ceiling at the corner of the room. Bend the first Ribbed STEELTEX sheet at the ceiling angle to provide a 6-in. drop or apron down the sidewall as illustrated above. To form the sidewall apron, cut a corner of the sheet



A close-up of the horizontal lap. The fibrous backing is cut away to show the location of the rib stiffeners at the lap. The overlapping wire network of Ribbed STEELTEX Lath insures continuous reinforcing throughout the entire plaster slab



Sheets numbers 5 and 6 are shown applied. Indicating arrow points to angle which has been formed by bending of sheet number 7 around the sidewall corner. Sheet number 5 has also been bent around corner to form angle but has been carried to a different stud to break joints



Drawing illustrates proper method of lathing Ribbed STEELTEX for interior plaster. Note how all joints are properly broken and staggered. Sheet number 1 is the key sheet. Always start at corner on ceiling as indicated by sheet number 1, complete lathing on ceiling, then start sidewall lathing as indicated by sheet number 5, and work down to floor

Detailed Specifications of Lathing for Plaster

All interior walls, partitions, and ceilings (where so specified and designated plaster) shall be lathed with Ribbed STEELTEX Lath, manufactured by the NATIONAL STEEL FABRIC COMPANY, Pittsburgh, Pa. (a 2x2-in. 16-gauge, cold-drawn, electrically welded, self-furring, galvanized, copper-bearing wire fabric, to

Test Information

1-hour Fire Rating—Ribbed STEELTEX Lath was tested in the Underwriters' Laboratories, Inc., at Chicago and in accordance with their recommendation of May 20, 1931, carries the *1-hour fire rating.*

Bond and Load Test—The test performed at the Testing Laboratories of the Department of Civil Engineering of Columbia University, New York City, on August 27, 1930, showed STEELTEX, plastered in accordance with the manufacturer's specifications, to have a factor of safety of 74. Six specimens were tested, giving very little variance in the bonding value in pounds per square inch.

Rigidity Test—In a rigidity test conducted by the City of Portland, Oregon, H. C. Plummer, Building Inspector, "it was found that STEELTEX deflections were less for all loads than flat ribbed metal lath weighing 3.4 lbs. per sq. yd. On the basis of the test, therefore, on both 12 and 16-in. centers it is demonstrated that the stiffness of Ribbed STEELTEX is much superior to the diamond mesh lath weighing 3 lbs. per sq. yd., and is equal to or slightly better than the flat ribbed lath weighing 3 lbs. per sq. yd. and 3.4 lbs. per sq. yd., respectively."

Racking Test—The racking test made at Columbia University Testing Laboratories, Department of Civil Engineering—STEELTEX for Stucco applied direct to studs and stuccoed showed twice the strength of diagonal sheathing.

Sound Reduction Test—The sound reduction test conducted at the Bureau of Standards, Department of Commerce, Washington, D. C., January 20, 1930, showed that STEELTEX partitions are entirely comparable to other walls which they ordinarily replace.

Reinforcing Value—The reinforcing value of STEELTEX has best been proven by the ability of STEELTEX construction to stand up under severe strains. The attention of building authorities was centered on STEELTEX after the Florida storms, and more recently in the New Zealand earthquake and others. This detailed information is available.

Other Tests—In addition to the above tests other highly important laboratory tests have been conducted at Purdue University, Lafayette, Ind.; New York University, New York City; Carnegie Institute of Technology and Pittsburgh Testing Laboratories, Pittsburgh, Pa.; and Pennsylvania State College, State College, Pa. The NATIONAL STEEL FABRIC COMPANY maintains a fellowship at the Mellon Institute of Industrial Research, Pittsburgh, Pa.

The specifications for the fibrous backing of Ribbed STEELTEX Lath were developed at the Mellon Institute, and it is manufactured to meet these specifications exactly. The absorbency of the backing is thus accurately controlled so that it has instant bonding action with the wet plaster and aids curing of the plaster.

STEELTEX 3-IN. AND 4-IN. HOLLOW PARTITIONS



STEELTEX Channel Studs are comprised of ¾ and 1½-in. hot and cold rolled channels to which are welded 14-gauge galvanized prongs 5 in. on center. The purpose of these prongs is to afford speed and economy of STEELTEX Lathing.

The STEELTEX Channel Studs are spaced 16 in. on center and sheets of Ribbed STEELTEX are lathed by merely pushing the lath against the channel so that the prongs puncture the backing and then bending them over the reinforcing wires on the face of the sheet. When scratch coat of mortar is applied it bonds together both tying prongs and reinforcing wires, giving a secure monolithic plaster slab.

The STEELTEX 3-in. Partition weighs 14½ lbs. per sq. ft.; the STEELTEX 4-in. Partition weighs 14.7 lbs. per sq. ft. These weights are based on plaster with a density of 4½ lbs. per sq. ft. per ½-in. thickness.

STEELTEX has been tested by the Bureau of Standards for Sound Transmission, the results of which prove that it has a high sound-deadening value at varying frequencies.

STEELTEX Hollow Partitions permit easy access for electrical conduits and piping.



Cross section and view of STEELTEX 4-in. Partition Stud. Galvanized wire attachment prongs are electrically welded to the ¾-in. channels



Cross section and view of STEELTEX 1½-in. Channel. Galvanized wire attachment prongs are electrically welded to the 1½-in. channel

Specifications

Steeltex 4-in. Hollow Partitions—4-in. hollow partitions shall be constructed with STEELTEX 4-in. Partition Studs spaced 16-in. on center. A ¾-in. channel stiffener shall be placed horizontally through the center of the STEELTEX Studs half way between floor and ceiling and tied to each stud for support and spacing. STEELTEX 4-in. Partition Studs shall be secured to floor and ceiling bearings by runner channels, nailing, ceiling and floor brackets, holes cut in concrete floor, or by other accepted practice.

Ribbed STEELTEX Lath, manufactured by the NATIONAL STEEL FABRIC COMPANY, Pittsburgh, Pa. (a 2x2-in. 16-gauge, cold-drawn, electrically welded, self-furring, galvanized copper-bearing wire fabric to which a tough, fibrous backing is secured by a 26-gauge V-shaped rib) shall be applied over STEELTEX 4-in. Partition Studs by starting at the ceiling and working down to the floor so that all horizontal laps take place over the top sheets. Ribs of the lath shall be at right angles to the channels. Lath shall be attached to the channels by pushing the lath against the prongs so that the prongs puncture the backing and when the lath is placed firmly against the channel the prongs are bent over the reinforcing wires of the lath and pressed in firmly.

Joints shall be staggered so that four corners of adjacent sheets shall not occur at any one place. End laps shall be made over channels only and shall be 1 in. Side laps shall be ½ in.

Note: 4-in. partition studs are manufactured by the NATIONAL STEEL FABRIC COMPANY, Pittsburgh, Pa. with 14-gauge galvanized wire attachment prongs welded to the stud at 5-in. intervals.

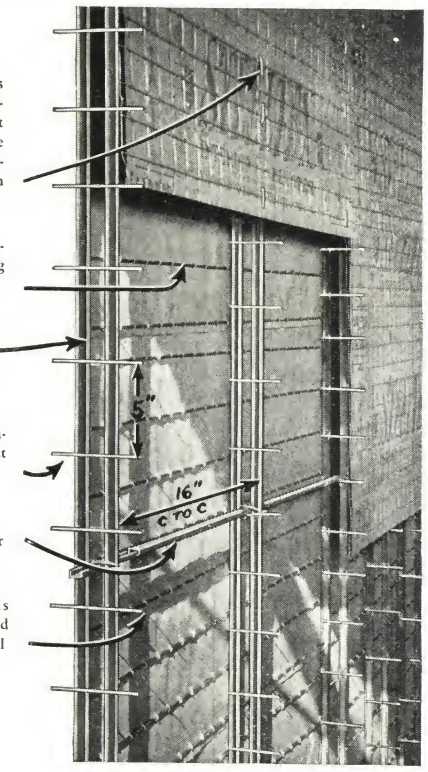
Steeltex 3-in. Hollow Partitions—3-in. hollow partitions shall be constructed with STEELTEX 1½-in. Channels spaced 16 in. on center and secured to floor and ceiling bearings with either runner channels, nailing, ceiling and floor brackets, holes cut in concrete floor, or other accepted practice.

Ribbed STEELTEX Lath, manufactured by the NATIONAL FABRIC STEEL COMPANY, Pittsburgh, Pa. (a 2x2-in. 16-gauge, cold-drawn, electrically welded, self-furring, galvanized copper-bearing wire fabric to which a tough, fibrous backing is secured by a 26-gauge V-shaped rib) shall be applied on both sides of the STEELTEX 1½-in. Channels by starting at the ceiling and working down to the floor so that all horizontal laps shall take place over the top sheets. The ribs of the lath shall be at right angles to the channels.

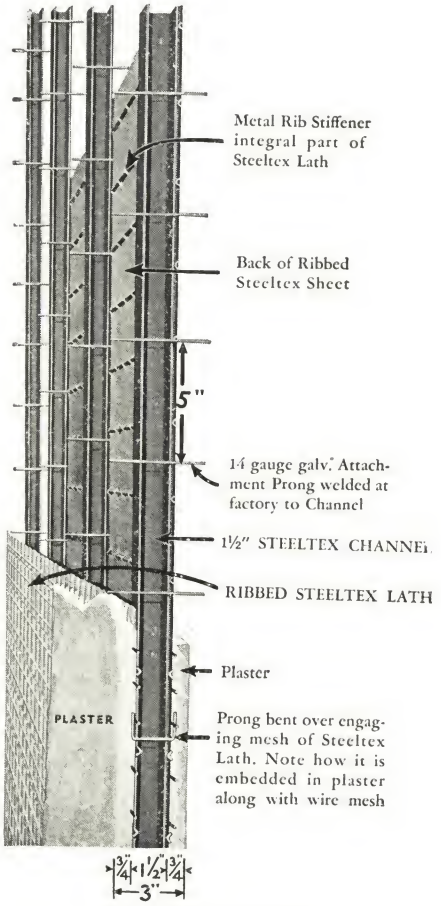
Lath shall be attached to STEELTEX 1½-in. Channels by pushing the lath against the prongs so that the prongs puncture the backing and when the lath is placed firmly against the channel the prongs are bent over the reinforcing wires of the lath and pressed in firmly.

Joints shall be staggered so that four corners of adjacent sheets shall not occur at one place. End laps shall be made over channels only and shall be 1 in. Side laps shall be ½ in.

Note: STEELTEX 1½-in. Channels are manufactured by the NATIONAL STEEL FABRIC COMPANY with 14-gauge galvanized wire prongs, welded to the 1½-in. channel at 5-in. intervals, the prongs extending over both sides of the channel.



4" HOLLOW PARTITION
using STEELTEX 4" PARTITION STUD and RIBBED STEELTEX LATH



3-in. Hollow Partition

STEELTEX SUSPENDED CEILING

The Steeltex Suspended Ceiling system is built up by means of Steeltex ¾-in. Channels. The Steeltex ¾-in. Channel comes to the job with galvanized wire prongs welded to the channel at 5-in. intervals. In lathing, Ribbed Steeltex is pushed up against the Steeltex ¾-in. Channel and the attachment prongs puncture the backing and are bent over the reinforcing mesh of the lath. Below is an illustration of the Steeltex suspended ceiling system looking down from above. The Steeltex suspended ceiling weighs 6.3 lbs. per sq. ft., based on a plaster with a density of 4½ lbs. per sq. ft. per ½-in. thickness.



Specifications

Plaster ceilings suspended from flat slab, arches, pan system, or other similar floor construction shall be constructed with Ribbed Steeltex lath, manufactured by the National Steel Fabric Company, Pittsburgh, Pa. (a 2x2-in. 16-gauge, cold-drawn electrically welded, self-furring, galvanized copper-bearing wire fabric to which a tough, fibrous backing is secured by a 26-gauge V-shaped rib) applied to Steeltex ¾-in. Channels. Steeltex ¾-in. Channels shall be spaced 16 in. on center and tied with 18-gauge, galvanized annealed tie wire to 1½-in. runner channel spaced 4 to 5 ft. on centers. Runner channels shall be suspended the required distance from the floor slab with heavy gauge, galvanized wire or with hanger straps.

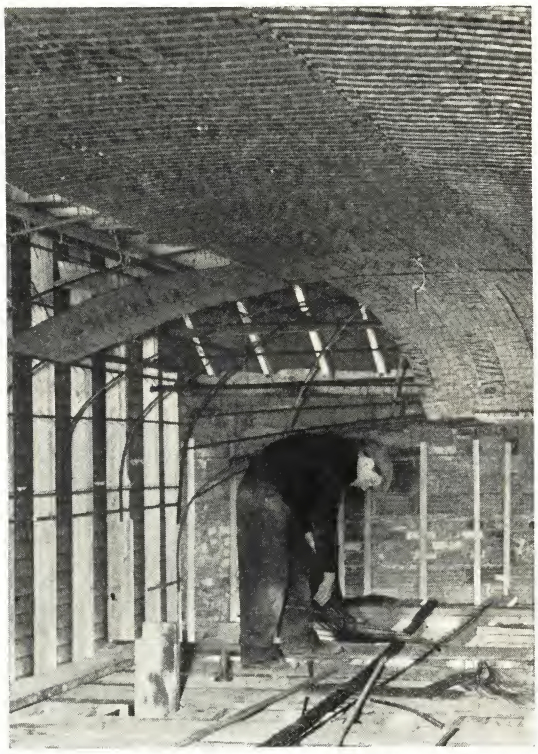
Ribbed Steeltex lath shall be placed with ribs at right angles to Steeltex ¾-in. Channels and secured to Steeltex ¾-in. Channels by pushing the lath against the prongs so that the prongs puncture the backing and when the lath is placed firmly against the Steeltex ¾-in. Channel the prongs are bent over the reinforcing wires of the lath and pressed in firmly.

Joints shall be staggered so that four corners of adjacent sheets of Ribbed Steeltex lath shall not occur at any one place. End laps shall be made on channels only and shall be 1 in., and side laps ½ in.

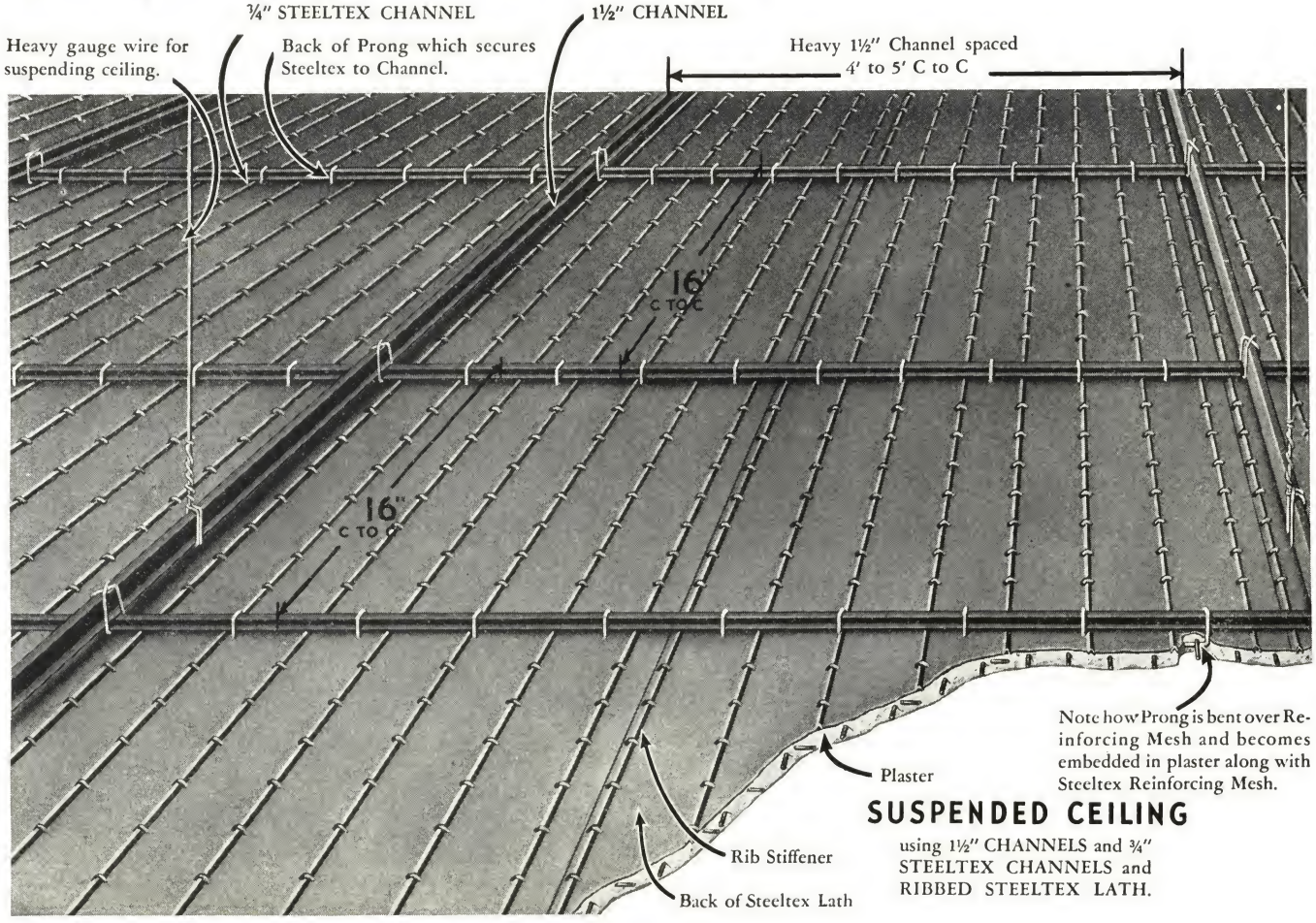
Note: Steeltex ¾-in. Channels are manufactured by the National Steel Fabric Company with 14-gauge galvanized U-shaped wire prongs welded to the channel at 5-in. intervals, illustrated below.



¾" STEELTEX CHANNEL



The Steeltex Ceiling System Is Readily Adapted to Any Desired Contour. The Steeltex Sheets May Be Formed Into Any Desired Shape and Will Retain That Shape



SUSPENDED CEILING

using 1½" CHANNELS and ¾" STEELTEX CHANNELS and RIBBED STEELTEX LATH.

STEELTEX ATTACHMENT BARS

The STEELTEX V-shaped Attachment Bar is used as a means of securing STEELTEX for plaster, stucco, and brick or stone veneer to steel framing up to 36-in. centers. If the spacing is greater than 36 in. the STEELTEX ¾-in. Channel is used. The STEELTEX ¾-in. Channel is composed of standard ¾-in. hot-rolled Channel with galvanized wire attachment prongs welded to the channel at 5-in. intervals.

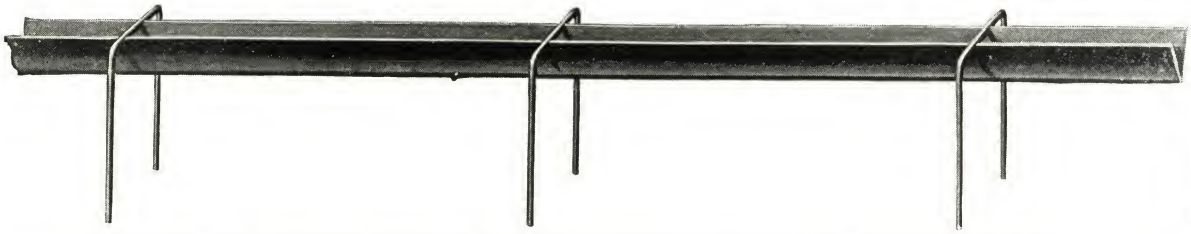


The STEELTEX Attachment Bar is made of either 19-gauge or 16-gauge, 1-in. steel strip, formed into a "V" shape for stiffness, to which are welded 14-gauge galvanized wire prongs 4 in. on center. The strip is thoroughly lacquered to resist rust.

The Attachment Bar is either wire tied or clipped 16 in. on center to the steel framing (including steel floor joists).

STEELTEX is then attached to the Attachment Bars by pushing the STEELTEX against the prongs so that the prongs puncture the backing, and when the STEELTEX is placed firmly against bar, prongs are bent over reinforcing wires on face of STEELTEX, holding it securely in place.

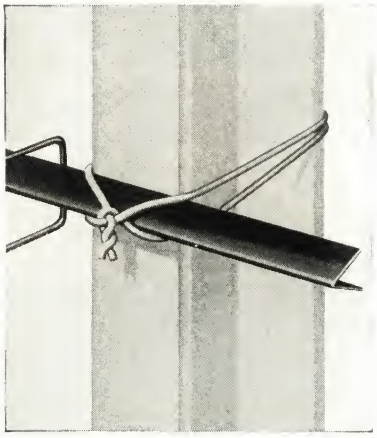
The STEELTEX Attachment Bar provides an economical method of lathing. It is furnished in 16-ft. lengths, 20 pieces to the bundle—packed in fibre board cartons of 320 lin. ft. each. (For specifications see next page.)

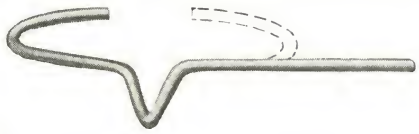


Above: A section of STEELTEX Attachment Bar. Note the U-shaped wire prongs welded to the V-shaped bar



End view of Attachment Bar

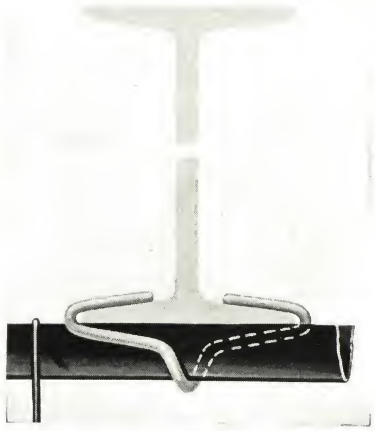




Above:
The STEELTEX beam clip for the STEELTEX Attachment Bar is designed to fit the V-shaped member of the Attachment Bar. Application of the beam clip is rapid—simply bend over beam flange into position. (See dotted line)

At right:
The STEELTEX beam clip holds the Attachment Bar securely in place on the ceiling joist

At left:
STEELTEX Attachment Bars are tied by a double turn of 14-gauge galvanized wire to the steel studs as shown

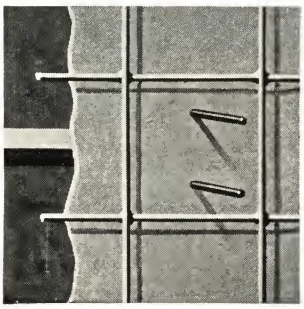


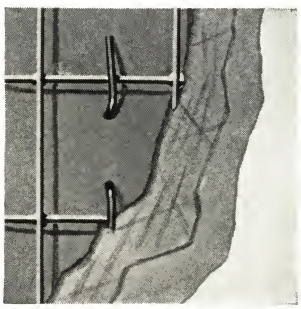
Recommended Spacings

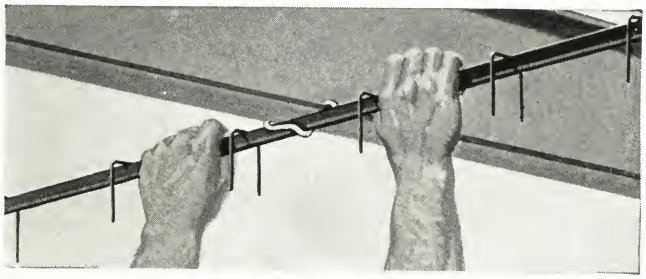
Spans up to 24 in.—use 19-gauge Attachment Bars.
Spans 24 to 36 in.—use 16-gauge Attachment Bars.
Spans over 36 in.—use STEELTEX ¾-in. Channels.

The STEELTEX Channels or Attachment Bars, in accordance with standard practice, are either wire tied or clipped to the steel members.

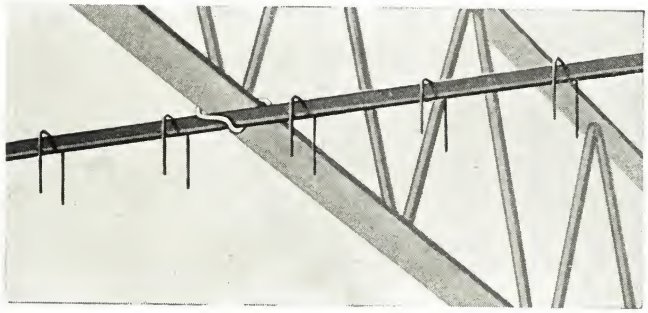
The two illustrations directly below show how the prongs puncture the STEELTEX backing and are bent over the reinforcing mesh of STEELTEX. When the plaster is applied, these wire attachment prongs become automatically embedded in the plaster along with the wire reinforcing mesh of STEELTEX.







The STEELTEX beam clip forms a strong, rigid attachment for the STEELTEX Attachment Bar



For flat top, open web joists the same STEELTEX beam clip may be used for attachment—or the Attachment Bar may be secured by an ordinary wire tie

STEELTEX LATHING OVER STEEL FRAMING



Specifications for Steeltex Lathing for Plaster Over Steel Frame Side Walls—Ribbed STEELTEX Lath, manufactured by the NATIONAL STEEL FABRIC COMPANY, Pittsburgh, Pa. (a 2x2 in. 16-gauge cold-drawn, electrically welded, self-furring, galvanized copper-bearing wire fabric, to which a tough, fibrous backing is secured by a 26-gauge V-shaped rib) shall be attached to the flanges of structural members with STEELTEX V-shaped Attachment Bars on STEELTEX ¾-in. Channels (19-gauge Attachment Bars shall be used where spacing of framing is less than 24 in.; 16-gauge Attachment Bars where spacing of framing is 24 to 36 in.; and STEELTEX ¾-in. Channels where spacing of framing is over 36 in.).

Attachment Bars or Channels shall be placed on 16-in. centers at right angles to steel framing members, wire tied or wire clipped to flanges of structural members.

Ribbed STEELTEX Lath shall be placed with ribs at right angles to Attachment Bars or Channels and each sheet shall be secured to the Attachment Bars or Channels by pushing the lath against the prongs so that the prongs puncture the backing, and when the lath is placed firmly against the Attachment Bar or Channel, the prongs are bent over the reinforcing wires of the lath and pressed in firmly. Lath sidewalls from ceiling down so that all horizontal laps are made over top sheets. Joints shall be staggered so that four corners or adjacent sheets shall not occur at any one place. End laps shall be made over Attachment Bars only and not between and shall be 1 in. Side laps shall be ½ in.

Note: STEELTEX V-shaped Attachment Bars (both 16 and 19-gauge) are manufactured by the NATIONAL STEEL FABRIC COMPANY with 14-gauge, galvanized U-shaped wire prongs, welded to the bar at 4-in. intervals, and STEELTEX ¾-in. Channels with 14-gauge, galvanized, U-shaped wire prongs welded to the Channel at 5-in. intervals.

Specifications for Steeltex Ceiling Lathing, Under Rolled Section or Bar Joist Floor Construction—Ribbed STEELTEX Lath, manufactured by the NATIONAL STEEL FABRIC COMPANY, Pittsburgh, Pa. (a 2x2-in. 16-gauge cold-drawn, electrically welded, self-furring, galvanized, copper-bearing wire fabric to which a tough, fibrous backing is secured by a 26-gauge, V-shaped rib) shall be attached to steel joists with STEELTEX V-shaped Attachment Bars or STEELTEX ¾-in. Channels (19-gauge Attachment Bars shall be used where spacing of joists is less than 24 in.; 16-gauge Attachment Bars where spacing of joists is 24 to 36 in.; STEELTEX ¾-in. Channels where spacing of joists is over 36 in.). Attachment Bars or Channels shall be placed at right angles to the steel joists and attached to the flanges of rolled section joists with clips which hook over the flange of the beam and to the bottom cord of bar joists by tying with a double strand of 18-gauge galvanized annealed wire. In all cases spacings of Attachment Bars or Channels shall be not over 16 in. and arranged so that joints of Ribbed STEELTEX Lath sheets shall be made over the Attachment Bar or Channel and not between.

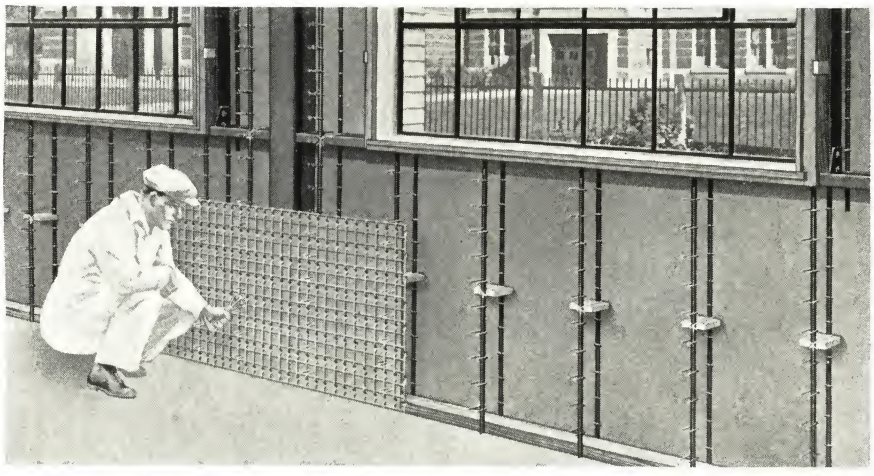
Ribbed STEELTEX Lath shall be lathed with ribs at right angles to the Attachment Bars or Channels by starting at the corners of the room and bending the first sheet at the ceiling angle to provide a 6-in. drop or apron down the sidewall. Ribbed STEELTEX Lath shall be secured to the Attachment Bars or Channels by pushing the lath against the prongs so that the prongs puncture the backing and when the lath is placed firmly against the Attachment Bar or Channel, prongs shall be bent over reinforcing wires of the lath and pressed in firmly. Joints shall be staggered so that the four corners of adjacent sheets shall not occur at any one place. End laps shall be 1 in. and side laps ½ in.



Ribbed STEELTEX Lath being applied to Attachment Bars at the ceiling over steel framing. Sheets of STEELTEX are pushed up and punctured by the extending prongs of the STEELTEX Attachment Bars. The prongs are then bent into position and hold the STEELTEX Lath firmly and securely in place

Note: STEELTEX V-shaped Attachment Bars (both 16 and 19-gauge) are manufactured by the NATIONAL STEEL FABRIC COMPANY with 14-gauge galvanized U-shaped wire prongs welded to the V-shaped bar at 4-in. intervals, and STEELTEX ¾-in. Channels, with 14-gauge galvanized, U-shaped wire prongs welded to the ¾-in. Channel at 5-in. intervals.

Specifications for Reinforced Brick Veneer Construction Over Steel Framing—All exterior walls over steel frame construction shall be sheathed with STEELTEX Style 38-16 as manufactured by NATIONAL STEEL FABRIC COMPANY. When steel framing is of standard rolled sections, STEELTEX may be attached to the flanges of structural members with STEELTEX V-shaped Attachment Bars. Attachment Bars shall be placed horizontally over the outside framing, spaced 16-in. centers, wire tied or wire clipped to flanges of structural members. Start placing STEELTEX at the sill line, finishing first width around building; second width of STEELTEX shall be laid overlapping (shingle fashion) the first width at least 1 in. Brickwork shall be laid not less than 1 in. from face of studs, and space between STEELTEX Sheathing and back of brickwork shall be filled with bricklaying cement mortar, as each course of brick is laid. Back-up mortar shall be well spaded in with bricklayer's trowel, so as to insure bond to both brick and STEELTEX.



Application of STEELTEX Attachment Bar running at right angles to horizontal steel girts. When the span is greater than 36 in. the STEELTEX Channel is used. The bars or channels are attached to the columns and girts by tying with 14-gauge galvanized wire

STEELTEX FOR BRICK OR STONE VENEER

The STEELTEX for Brick or Stone Veneer wall system eliminates the use of wood or composition sheathing, and in place of the sheathing uses a 1-in. reinforced cement back-up slab which is waterproof at the studs by means of the heavy waterproof backing on the STEELTEX. This construction does not involve a single change in building methods, and is no more costly than less satisfactory methods. STEELTEX for Brick or Stone Veneer is wrapped about the building, shingle fashion, in place of sheathing. As each course of brick or stone is laid, the mortar is spaded in behind with a bricklayer's trowel to fill up the 1-in. spacing between the brick and the STEELTEX. The mortar flows around the reinforcing wires of STEELTEX, embedding them thoroughly and bonding to the brick or stone. The result is a monolithic masonry wall composed of brick and steel reinforced cement, and the entire wall is protected against water or moisture penetration. This exterior wall construction, plus STEELTEX for Plaster on the inside of the studs, gives a highly desirable construction for many types of buildings. The exterior and interior of STEELTEX, with the 4-in. spacings between, act to insulate in the manner of the thermos bottle principle. The STEELTEX reinforced brick construction is highly fire resistant, provides insulation, sound-deadening, is waterproof and dampproof. Where additional insulation is wanted, a loose fill insulating material should be inserted between the studding as illustrated below.



Specifications

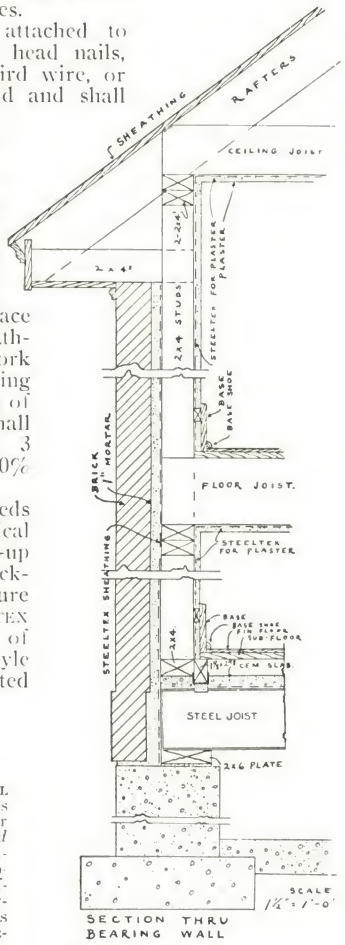
Sheathing—All outside walls for brick veneering shall be covered with STEELTEX Style 38-16, manufactured by the NATIONAL STEEL FABRIC COMPANY, Pittsburgh, Pa. (a 2x2-in. 16-gauge, cold-drawn, electrically welded, galvanized, copper-bearing wire fabric, to which is secured a double layer mastic-filled fibrous backing, furnished in rolls 50 in. x 108 ft.).

STEELTEX 38-16 sheathing shall be started at the sill line and the first width put around building and likewise the second width of STEELTEX 38-16, overlapping backing of first width at least ¾-in. In placing STEELTEX 38-16 sheathing disregard window and door openings. Cover them over where found more expedient to do so. Cuttings from the window and door openings may be used for covering gables and other miscellaneous places.

STEELTEX 38-16 shall be attached to studs with galvanized offset head nails, and shall be nailed every third wire, or 6 in. on center, to each stud and shall be securely nailed over every other wire, or 4 in. on center, around all openings.

Brick—All exposed walls of building showing brick shall be faced with one course of standard size approved brick. The back of brick shall be laid 1 in. from the face of the studs. The space between STEELTEX 38-16 sheathing and back of brickwork shall be filled with brick-laying cement mortar as each course of brick is laid. The mortar shall be 1 part portland cement, 3 parts clean, sharp sand, and 10% hydrated lime.

Brick shall be laid in full beds of same mortar with the vertical joints well filled and the back-up mortar well spaded in with bricklayer's trowel, so as to assure bond of both brick and STEELTEX 38-16 sheathing. The class of brick used, as well as the style of joint desired, to be selected by the architect or owner.



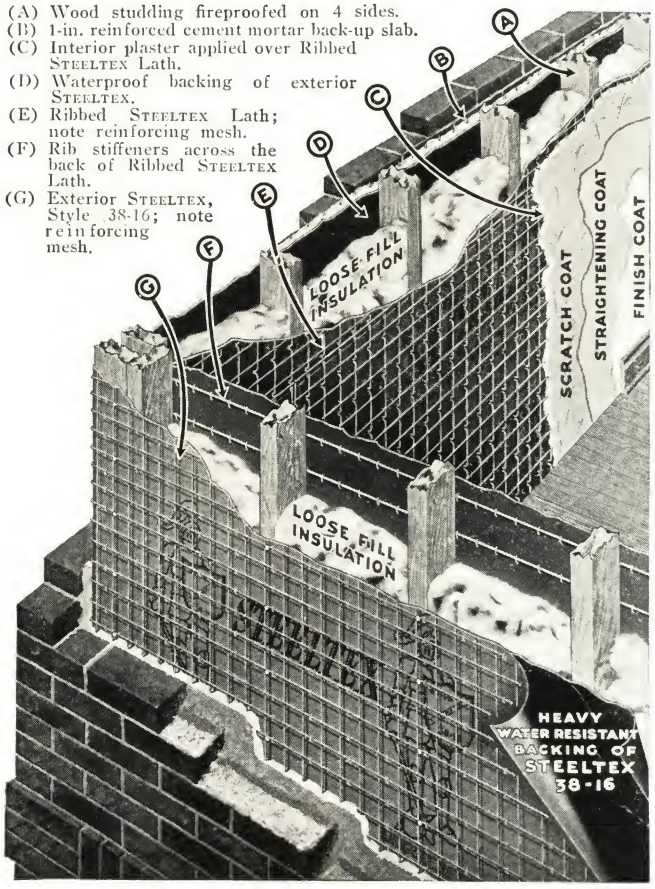
SECTION THRU BEARING WALL

DETAIL FOR REINFORCED BRICK CONSTRUCTION

The STEELTEX SUPER-WALL CONSTRUCTION SYSTEM provides *Reinforced* brick construction for the outside walls, and *Reinforced* plaster construction for the inside walls—and, in addition, provides waterproofing—damp-proofing—positive insulation—is vermin proof—fire resistive—has high sound resistance—is practical and economical in construction costs—and yet only standard builders' methods and building materials are employed.

Steeltex Super-Wall Reinforced Brick Construction

(A) Wood studding fireproofed on 4 sides.
(B) 1-in. reinforced cement mortar back-up slab.
(C) Interior plaster applied over Ribbed STEELTEX Lath.
(D) Waterproof backing of exterior STEELTEX.
(E) Ribbed STEELTEX Lath; note reinforcing mesh.
(F) Rib stiffeners across the back of Ribbed STEELTEX Lath.
(G) Exterior STEELTEX, Style 38-16; note reinforcing mesh.



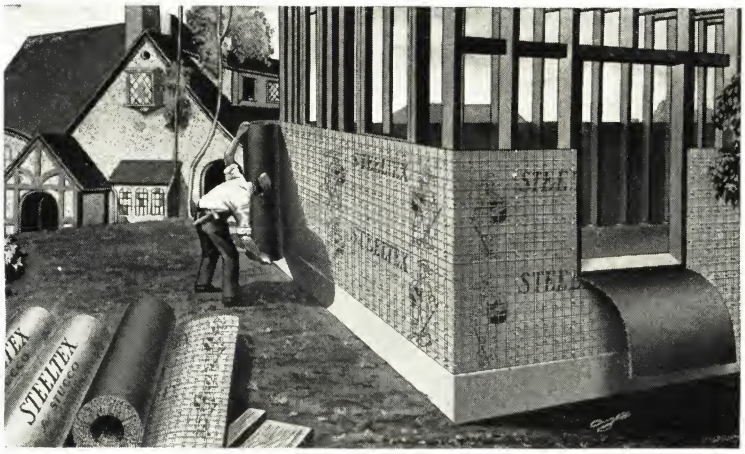


Brick masons spading mortar behind brick to form the 1-in. back-up slab of reinforced cement. To handle this additional mortar requires no extra laborers and very little added time on the part of the masons

STEELTEX FOR STUCCO

STEELTEX for Stucco is composed of a 2x2-in. galvanized welded wire fabric attached to a three-ply, waterproof membrane backing. The reinforcing element of STEELTEX adds tensile strength to the stucco slab (reinforcing it just as well designed concrete slabs are reinforced). The membrane backing in addition to providing a suitable base to receive and hold the wet mortar, gives to the stucco slab very necessary damp-proofing and insulating qualities.





STEELTEX for Stucco is cut to length and nailed completely about the building, one width above the other in shingle fashion. Window and door openings are cut away after the STEELTEX has been nailed. The cut out pieces are salvaged in gable work, etc.

Functions of Backing—The membrane backing, which is an integral part of STEELTEX for Stucco, is composed of two layers of heavy, water-resistant backing cemented together with a waterproof mastic compound. The wet mortar (stucco) is plastered against this backing and held in place by it until the stucco has set around the reinforcing wires. Thus the back of the stucco slab is completely sealed against the penetration of dampness and insulated against heat and cold.

Steel Fabric Reinforcement—The galvanized wire network extends across the face of STEELTEX for Stucco. It is secured to the backing by means of stitch wires which are crimped to permit positive embedment of the steel reinforcing, to a depth of ⅜ in. by use of the STEELTEX furring nail. As the wet mortar is applied against the backing, it flows under and around the wires, completely embedding them in the scratch coat. In this manner the stucco slab is reinforced with the correct amount of steel just as concrete is reinforced. The wire fabric is overlapped at all joints so that it forms a continuous network about the building, imparting to the stucco strength to resist ordinary strains and stresses without cracking (the square rigidly welded mesh gives equal strength in all directions) and adding structural value to the framework about which it is wrapped.





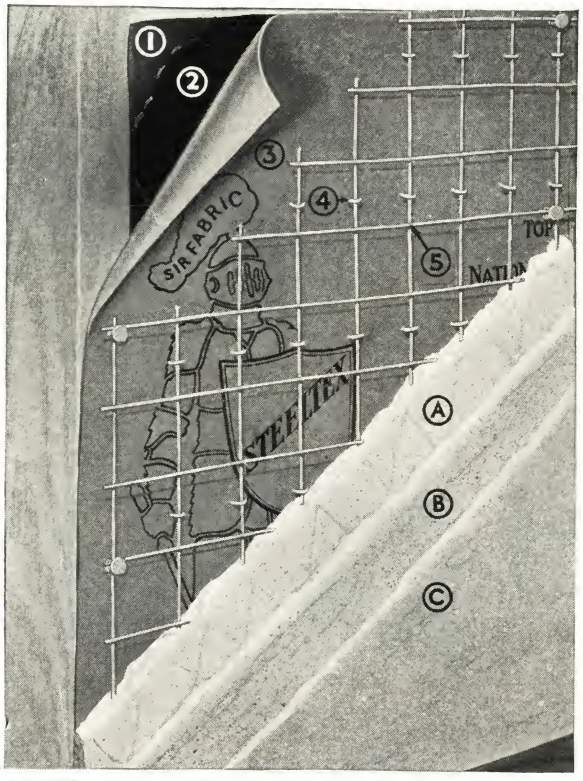
Detailed Specifications

All exterior walls (where so specified and designated stucco) shall be lathed with STEELTEX for Stucco, manufactured by the NATIONAL STEEL FABRIC COMPANY, Pittsburgh, Pa., (a 2x2-in. 14-gauge, cold-drawn, electrically welded, galvanized, copper-bearing wire fabric, to which is secured a three-ply tough, fibrous backing with a mastic filler between, and furnished in rolls 50 in. x 108 ft., or sheets 50 in. x 52 in.).

STEELTEX for Stucco shall be nailed over every stud horizontally across the building and every 6 in. vertically on the stud, placing STEELTEX Furring Nails under wires. STEELTEX for Stucco shall be toe-nailed at corners of mesh to automatically stretch the fabric taut.

First width of STEELTEX for Stucco shall be started at base line and extend around building. Second width shall lap the first ¾ in. (shingle fashion), the laps being wire to wire *with no fibrous backing in between.* Where vertical joints occur, the same method of lapping shall be employed. STEELTEX for Stucco shall be applied direct to studs or sheathing as the case may be (or over siding in case of overcoat work) by nailing to bearings.

STEELTEX for Stucco shall be carried up to the openings or under moulding of all doors and windows, and in no case shall vertical joints be joined at corners, under or over window or door openings, or between studs where STEELTEX for Stucco is applied direct to studs, or in no case shall STEELTEX for Stucco be butted, nor shall backing extend over face of the wire mesh at joints. STEELTEX for Stucco in rolls is recommended but when sheets are used they shall be placed so that all joints shall overlap the fabric ¾ in. with wire to wire, *no backing between.* In all cases stucco over STEELTEX Lathing shall be not less than ¾-in. grounds.

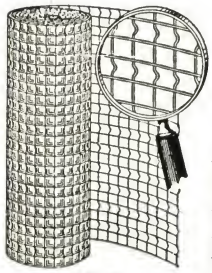


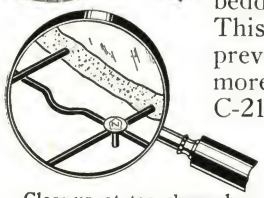
Above:
Analytical illustration of a built-up wall section in which STEELTEX for Stucco is used.
(1) Waterproof backing. (2) Waterproof compound. (3) Second layer of backing to which stucco bonds. (4) Furring device. (5) Galvanized, copper-bearing steel reinforcing fabric. (A) Scratch coat of stucco. (B) Straightening coat. (C) Finishing coat

NATIONAL REINFORCING FOR PLASTIC CONSTRUCTION

C-214 (C-216) Self-furring

NATIONAL REINFORCING Styles C-214 and C-216 are used to reinforce concrete, plaster, stucco, and other plastic materials. C-214 consists of a 2x2-in. 14-gauge, cold-drawn, electrically welded, galvanized copper-bearing steel wire mesh with a 3/8-in. furring crimp; C-216 is similar except that it is 16-gauge and is furnished with either a 3/8 or 3/16-in. furring crimp. The self-furring crimp enables the galvanized steel reinforcing mesh to become automatically embedded in the plastic material. This method of reinforcing prevents cracks and assures more permanent construction. C-214 is widely used for stucco reinforcing over composition sheathing or over wood sheathing, using Cordex building paper; for reinforcing concrete burial vault construction; for reinforcing stucco applied over new or old brick or concrete block walls. C-216 nailed to composition boards gives plaster or stucco the necessary reinforcement in all directions and eliminates the danger of cracking and falling plaster. C-216 is an ideal reinforcement for composition floors. Both styles of NATIONAL REINFORCING are furnished in 50-yd. rolls, 4x112½ ft. National galvanized fabric nails are recommended for their application.





Close-up at top shows how C-214 and C-216 are crimped to give self-furring.
Note how the steel mesh becomes embedded in plastic material, shown directly above



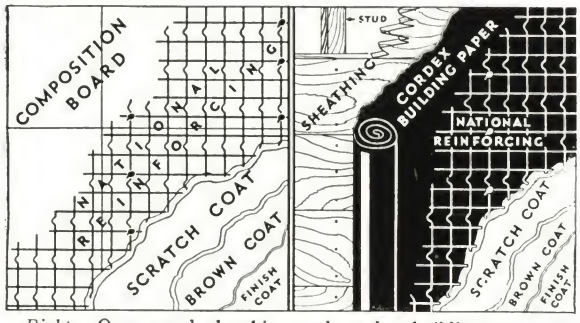


National Galvanized Offset Head Nails

Made in 1¼ and 1¾-in. lengths

Directions for Application

C-214 (or C-216) shall be secured over composition sheathing or over building paper on wood sheathing with National galvanized off-set head nails or common nails bent over, driven through sheathing into the studs. Nails shall be driven over every third wire (or 6 in.) through sheathing into studs, and over every second wire (or 4 in.) at all laps. The reinforcing shall be lapped ¾ in. both on end and side laps. Where stucco finish is used over new or old brick or concrete block walls, C-214 (or C-216) shall be secured to the walls with NATIONAL STEEL FABRIC off-set head nails, staples, or common nails bent over. Sufficient nails shall be driven into the mortar joint to secure the mesh over all the surface. If old mortar is loose or displaced, wooden plugs or wedges shall be driven in for nailing purposes.



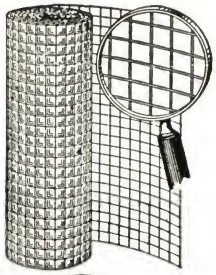
Right: Over wood sheathing and cordex building paper for stucco reinforcement

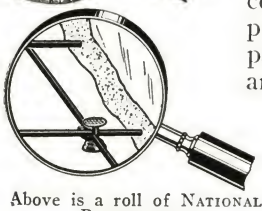
Left: Use of C-214 and C-216 over composition board for stucco or plaster reinforcement

NATIONAL REINFORCING FOR EXTERIOR STUCCO

AA 14-14 (AA 16-16) Not Self-furring

NATIONAL REINFORCING Styles AA 14-14 and AA 16-16 are used for reinforcing exterior stucco over composition sheathing or over wood sheathing using CORDEX building paper. AA 14-14 consists of a 2x2-in., 14-gauge, cold-drawn, electrically welded, galvanized copper-bearing steel wire mesh. AA 16-16 is identical in style, except that it is 16-gauge. Both NATIONAL REINFORCING styles AA 14-14 and AA 16-16 have no furring crimps and require the use of special STEELTEX galvanized furring nails. These furring nails assure a 3/8-in. furring of the reinforcing steel network away from the sheathing. As the wet mortar is applied, it flows under and around the wire mesh, completely embedding it in the scratch coat of the stucco slab. This proved method of construction imparts unusual strength to stucco, and also strengthens the structural framework of the building. Strains and stresses in the stucco are scientifically resisted and distributed to prevent cracking. Both styles of NATIONAL REINFORCING are furnished in rolls containing 50 yd., 4x112½ ft. The special STEELTEX Galvanized Furring Nails are available in boxes of 500—12 boxes to the carton.





Above is a roll of NATIONAL REINFORCING

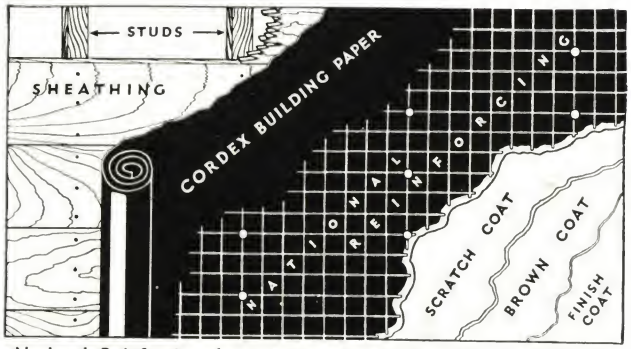
Lower illustration shows use of STEELTEX Furring Nail. Note how the steel mesh becomes embedded in the stucco slab



Steeltex Furring Nail

Method of Application

All exterior surfaces requiring stucco finish over composition sheathing or over building paper on wood sheathing shall be covered with NATIONAL REINFORCING, Style AA 14-14 (or AA 16-16). The reinforcing shall be secured with STEELTEX Furring Nails every 16 in. horizontally and every 6 in. vertically. The reinforcing shall be lapped ¾ in. both on end and side laps. As NATIONAL REINFORCING Style AA 14-14 (or AA 16-16) is not crimped for automatic furring, it is necessary to use the STEELTEX Furring Nail in order to insure proper embedment of the reinforcing mesh in the stucco.



National Reinforcing Applied Over Wood Sheathing and Cordex Building Paper for Stucco Reinforcement

PENN METAL COMPANY

ESTABLISHED 1869

Manufacturers of Steel Plaster Base, Metal Corner Beads and Cold Formed Channels

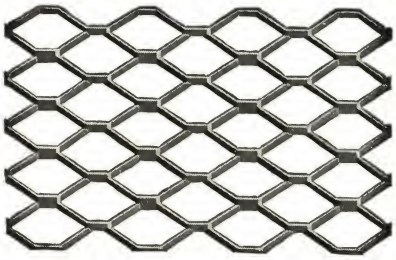
BOSTON, MASS., 40 Central Street NEW YORK, N. Y., 60 East 42nd Street
PARKERSBURG, W. VA. (Pittsburgh District)

Products

MESHTEX EXPANDED STEEL PLASTER BASE; DURABOND RIB AND MESH PLASTER BASE; MASTERIB ⅜-IN. RIB PLASTER BASE; PRE-FURRED (NON-FURRING) PLASTER BASE; PENCO CORNER BEADS, Wing, Bullnose, Base and Rail Types; CORNERITE; STRIPLATH; COLD FORMED STEEL CHANNELS.

Meshtex Expanded Steel Lath

Meshtex is the expanded lath with uniform mesh throughout—not merely a plaster base; it is a potent reinforcement. It lays flat while being put up, and stays flat when plastered.



MESHTEX

The strand is just turned enough to induce a free flow of plaster around each mesh, without cutting the key.

The extra wide sheet (27 in.) produces a decided saving in time required for installation, there being 12% fewer laps than where 24-in. sheets are used.

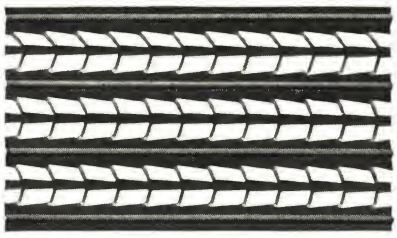
Every sheet is painted singly and baked dry.

Furnished in copper bearing steel and pure iron where desired.

Weight per sq. yd., lb.	
Painted	Galvanized
2.20	2.50
2.50	....
3.00	3.40
3.40	....

Durabond Steel Lath

Durabond is a real economy lath, with a uniform mesh of more than usual stiffness, due to the frequency and unique formation of the ribs, and the slanting curvature of intervening meshes.



Durabond

Takes plaster readily, yet its rib and mesh structure prevents the waste of overcoating.

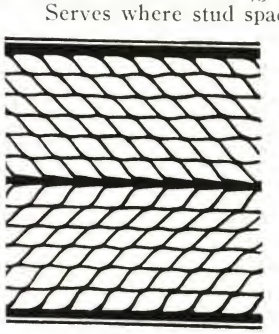
One-third of the lath surface enmeshes and keys the plaster; two-thirds of the lath surface bracing and reinforcing the ceiling or wall. Sheets 27 in. wide, save time in putting up—12% fewer laps than on 24-in. and 50% over 18 in. Every sheet is painted singly and baked dry. Made in weights painted 3.0 and 3.4 lb. per sq. yd.

Furnished in copper bearing steel where desired.

Masterib ⅜-in. Rib Lath

Seven ribs spaced 4½ in. on centers. Combines rib and mesh formation. Ribs ⅜ in. in height, in channel or U-shape.

Serves where stud spacing is greater than 16 in. on centers—walls, partitions, floors, roofs, suspended ceilings, etc.

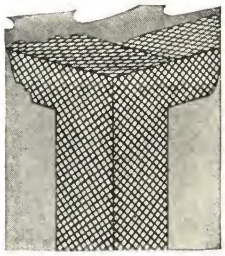


MASTERIB

Ribs act as furring and hold mesh area out from supports for free troweling and thorough plaster penetration. The ideal lath for bar-joist construction, metal dome (tin pan) construction, ceilings and floors.

Sheets 27 in. wide—painted singly and baked dry. Made in weights 3.0, 3.4 and 4.0 lb., painted.

Penco Cornerite



Penco Cornerite welds the joint of wall and ceiling together into an unbroken unit. The steel mesh absorbs the stresses and reinforces all the joints.

Penco Cornerite should always be used to reinforce the *corners* where *wood lath* or other plastering substitute is used.

4 in. wide on each flange—8 in. wide over all. Strips are an even 8 ft. long.

Penco Corner Beads

Penco Wing Bead—The accepted standard type for general construction. Reinforces plaster corners and insures accuracy of line. Made of tight coat heavy weight sheets that never discolor plaster. Lengths 6, 7, 8, 8½, 9, 10, 12 ft. standard plaster grounds. Weight per 1000 ft. crated, 200 lb.



Penco Bullnose Bead—Makes a large rounded corner double fold at nose, provides extra rigidity. Nose formed on ¾-in. radius with 1-in. face. Used in leading hospitals, public buildings, schools, etc.



Lengths 8, 10, 12 ft. standard plaster grounds. Weight per 1000 ft. crated, 315 lb.

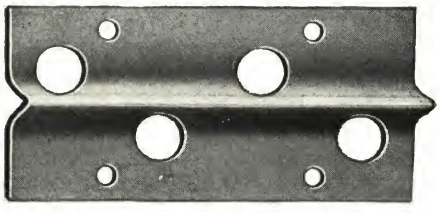
2½-in. Wide Flange Corner Bead— New and improved type of Penco Corner Bead with same nose as Penco Wing Bead. Lengths 6, 7 and 8 ft., 8 ft. 6 in., 9, 10, 12 ft. Weight per 1000 ft. crated, 330 lb.



Penco Base Screed

Unites plaster and cement or tile at the joints and eliminates cracks.

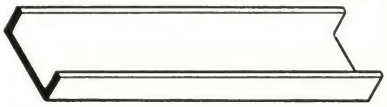
Made in 10-ft. lengths for standard plaster grounds. Weight per 1000 ft. crated, 185 lb.



Penco Cold Formed Channels

All formed from No. 16 gauge steel—strong, accurate, uniform, widely used for suspended ceilings, partitions, false beams, etc.

Stock lengths 20 ft.—4 sizes, ¾, 1, 1½ and 2 in. Other lengths as desired. Weights per 1000 lin. ft.: ¾ in., 276 lb.; 1 in., 332 lb.; 1½ in., 442 lb.; 2 in., 553 lb.



RICHSTO METAL TRIM COMPANY

Manufacturers of Interior Metal Trim and Building Specialties

AURORA, ILL.

A Complete Line

Richsto Products include a complete line of METAL CORNER BEADS, BASE GROUNDS and SCREEDS, METAL PICTURE MOULDINGS, DOOR and WINDOW CASINGS, WINDOW STOOLS, BASES, COVE MOULDS, CHAIR RAILS and OFFSET TRIM, CHALK TROUGH, BLACKBOARD TRIM, etc.

The New Enlarged Richsto Metal Trim Catalog Is Now Being Distributed—Send for Your Copy

This new Metal Trim Catalog contains all information essential to the architect and contractor for specifying, using and erecting all types of metal trim.

Illustrations, applications, specification detail and information are given in a way to make reference easy and convenient. This book should be in the permanent reference files of every architect and contractor.

It is a complete reference work, of which the following pages are but a digest. Write us if you have not had your copy yet.

We will gladly send you this catalogue and supply any special information desired.

CORNER BEADS, BULLNOSE BEADS

Standard Lengths 6, 7, 8, 9, 10 and 12 ft.

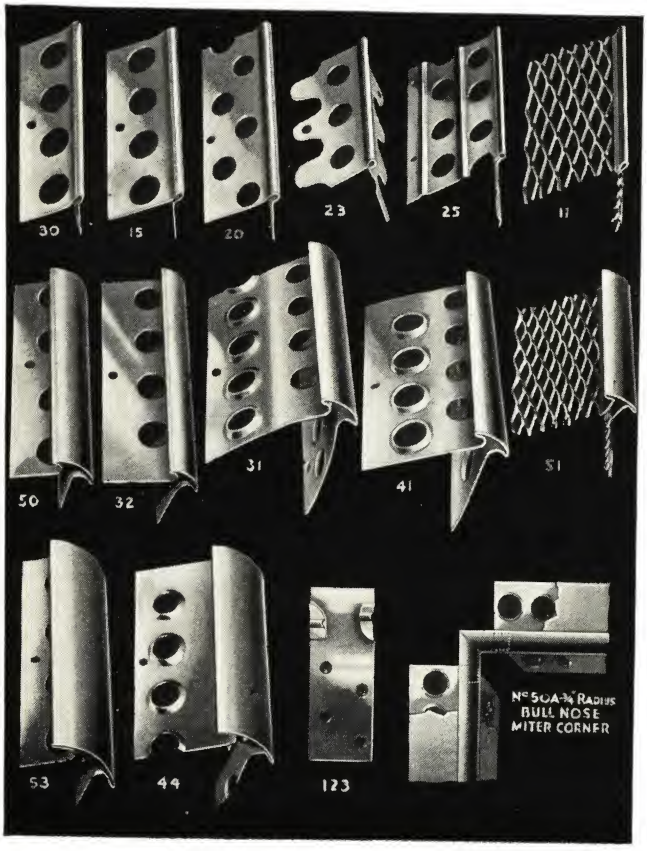
No. 30 Richsto Corner Bead—Made of 26-gauge steel. Nailing flange 1 5/16 in. long. Shipping weight approximately 200 lbs. per 1000 lin. ft.

No. 15 Richsto Corner Bead—Made of 26-gauge steel. Nailing flange 1⅜ in. long. Shipping weight approximately 210 lbs. per 1000 lin. ft.

No. 20 Richsto Corner Bead—Made of 26-gauge steel. Nailing flange 1⅝ in. long. Shipping weight approximately 220 lbs. per 1000 lin. ft.

No. 23 Richsto Scalloped Corner Bead—Made of 26-gauge steel. Nailing flange 1¾ in. long. Shipping weight approximately 220 lbs. per 1000 lin. ft.

No. 25 Richsto Corner Bead—Made of 26-gauge steel. Nailing flange 2⅝ in. long. Shipping weight approximately 330 pounds per 1000 lin. ft.



No. 11 Richsto Expanded Bead—Made of 26-gauge steel. Nailing flange 2⅜ in. long. Shipping weight approximately 230 lbs. per 1000 lin. ft.

No. 50 Richsto Bullnose Bead—¾-in. radius, 26-gauge steel. 1¼ in. length of flange. Shipping weight approximately 235 lbs. per 1000 ft. Furnished in 24-gauge material, shipping weight approximately 307 lbs. per 1000 ft. Richsto No. 123 clip required. Clips extra.

No. 32 Richsto Bullnose Bead—¾-in. radius. 1¾ in. length of flange, 24-gauge. Shipping weight approximately 412 lbs. per 1000 ft. Furnished in 26-gauge material, shipping weight approximately 350 lbs. per 1000 ft.

No. 31 Richsto Bullnose Bead with Reinforced Nose No. 310—No. 31, ¾-in. radius, 24-gauge. Length of flange 3 in. Cone shaped perforation form a perfect key. Shipping weight approximately 610 lbs. per 1000 ft. No. 310, reinforced nose, same specifications as 31 excepting it is furnished in 24-gauge flange with 20-gauge reinforced nose. Shipping weight approximately 795 lbs. per 1000 ft.

No. 41 Richsto Bullnose Bead with Reinforced Nosing No. 410—No. 41, ¾-in. radius. Improved long flange 3 in. Cone shaped perforations form a perfect key. 26-gauge, shipping weight approximately 495 lbs. per 1000 ft. No. 410, same specifications as No. 41 excepting a 26-gauge steel with 20-gauge reinforced nose. Shipping weight approximately 610 lbs. per 1000 ft.

No. 51 Richsto Bullnose Bead, Expansion Flange—¾-in. radius, 26-gauge steel. Improved long flange, 3⅛ in. Shipping weight approximately 375 lbs. per 1000 ft.

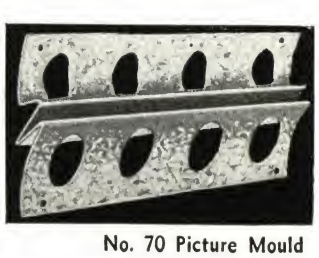
No. 53 Richsto Bullnose Bead—1½-in. radius, 26-gauge. 1¾ in. length of flange. Richsto No. 123 clip required. Clips extra. Shipping weight approximately 390 lbs. per 1000 ft. Furnished in 24-gauge material. Shipping weight approximately 446 lbs. per 1000 ft.

No. 44 Richsto Bullnose Bead—1½-in. radius, 24-gauge. Improved Long Flange 3 in. Cone shaped perforations form a perfect key. Shipping weight approximately 662 lbs. per 1000 ft. Furnished in 26-gauge material. Shipping weight approximately 595 lbs. per 1000 ft.

No. 52 Richsto Bullnose Bead with Expansion Flange—1½-in. radius, 26-gauge. Improved long 3-in. flange. Shipping weight approximately 570 lbs. per 1000 ft.

No. 440 Richsto Bullnose Bead with Reinforced Nosing—Specifications the same as for No. 44 Richsto Bullnose bead listed above except 26-gauge flange, 20-gauge reinforced nose. Shipping weight approximately 890 lbs. per 1000 ft.

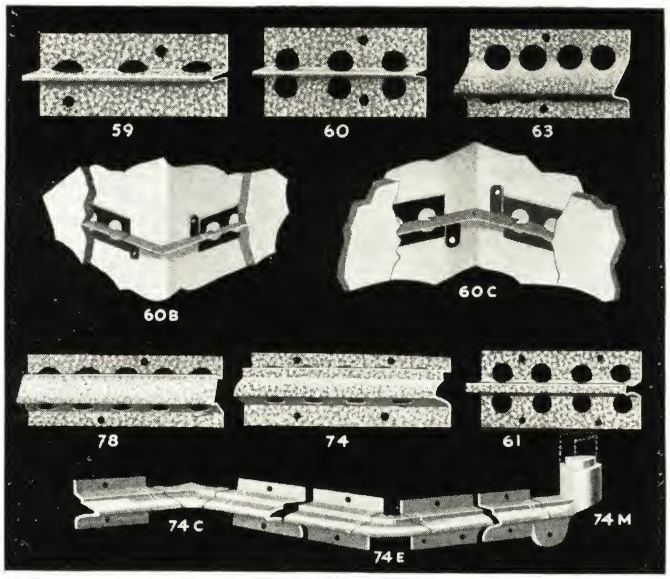
No. 70 Picture Mould—This is erected before plastering and serves as a plaster ground. The groove may be filled with plaster when it is desired to make the cutout for picture hooks as wanted only. Where it is desired to keep the groove open a cord or wire is inserted before plastering. Its removal afterwards takes out any plaster that may have become lodged in the groove. This type of Richsto concealed mould finds special favor in schools, dormitories, hospitals, office buildings, and hotels. Shipping weight approximately 236 lbs. per 1000 ft. Supplied in 10-ft. lengths only.





No. 70 Picture Mould

BASE GROUNDS—SCREEDS—FITTINGS—CASINGS



No. 59 Richsto Base Ground—Made of 26-gauge steel. Furnished in either ⅜ or ½-in. ground. Standard lenghts 9 and 10 ft. (Unless definitely specified we reserve the right to ship either 9 or 10-ft. lengths.) Shipping weight approximately 145 lbs. per 100 lin. ft.

No. 60 Richsto Base Ground—Made of 26-gauge steel. Furnished in ½, ⅝ or ¾-in. grounds—½-in. ground furnished unless otherwise specified. Standard lengths 9 and 10 ft. (Unless definitely specified we reserve the right to ship either 9 or 10-ft. lengths.) Shipping weight for ½ or ⅝-in. ground approximately 170 lbs. for 1000 lin. ft. Shipping weight for ¾-in. ground approximately 190 lbs. per 1000 lin. ft.

No. 62 Richsto Base Ground—(not shown)—Made of 24-gauge steel. Otherwise identical with Richsto No. 60 base ground. Shipping weight for ½ or ⅝-in. ground approximately 223 lbs. per 1000 lin. ft. Shipping weight for ¾-in. ground approximately 245 lbs. per 1000 lin. ft.

Standard Corner Fittings for Base Ground No. 60 and No. 62—Made of 20-gauge galvanized sheet steel properly formed to fit the base ground and continue it around either internal or external corners. They are furnished for forming internal or external square, ¾-in. radius, or 1½-in. radius corners. No. 60-A—Inside square corner. No. 60-B—Outside square corner. No. 60-C—Inside ¾-in. radius corner. No. 60-D—Inside 1½-in. radius corner. No. 60-E—Outside ¾-in. radius corner. No. 60-F—Outside 1½-in. radius corner. Shipping weight approximately 45 lbs. per 1000 pieces.

No. 63 Richsto Base Ground—Made of 26-gauge steel. Furnished in either ½ or ¾-in. ground. Standard lengths 9 and 10 ft. Shipping weight approximately 185 lbs. per 1000 ft.

No. 78 Richsto Base Screed—Made of 26-gauge steel. Shipping weight approximately 235 lbs. per 1000 lin. ft. The grounds on the top and bottom of this screed are ½ and 1 in. respectively. Standard lengths 9 or 10 ft. (Unless otherwise specified we reserved the right to ship either 9 or 10-ft. lengths.)

No. 74 Richsto Curved Point Base Screed—Made of 26-gauge steel. Shipping weight approximately 200 lbs. per 1000 lin. ft. The grounds on the top and bottom of this secreed are ½ and 1 in. respectively. Standard lengths 9 or 10 ft. (Unless otherwise specified we reserve the right to ship either 9 or 10-ft. lengths.)

No. 61 Richsto Base Screed—Made of 26-gauge steel. Available in ½ or ¾-in. grounds. Standard length 9 or 10 ft. Unless otherwise specified we reserve the right to ship either length. Shipping weight approximately 195 lbs. per 1000 ft.

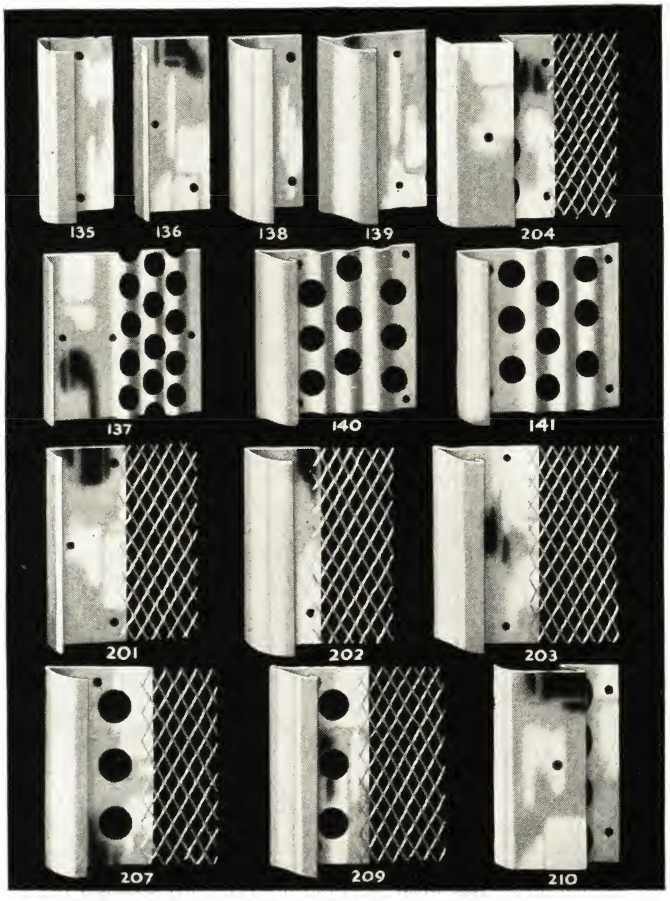
Fittings for No. 74 and No. 78 Base Screed—74 and 78-A—Inside square corner. 74-B—Outside square corner. 74-C—Inside ¾-in. radius corner. 74-D—Inside 1½-in. radius corner. 74-E—Outside ¾-in. radius corner. 74-F—Outside 1½-in. radius corner. 74-H—Right end stop. 74-J—Left end stop. 74-K—Right plinth for No. 136 and No. 137 casing. 74-L—Left plinth for No. 136 and No. 137 casing. 74-M—Right plinth for No. 138 and No. 141 casing. 74-N—Left plinth for No. 138 and No. 141 casing. 74-P—Right plinth for No. 139 and No. 140 casing. 74-R—Left plinth for No. 139 and No. 140 casing. Average shipping weight approximately 300 lbs. per 1000 pieces.

SPECIFICATION CHART FOR RICHSTO METAL CASINGS

No.	Gauge	Nailing flange	Shipping weight per 1000 ft. 20-gauge	Shipping weight per 1000 ft. 24-gauge
135	20	1¼ in.	318 lb.	225 lb.
136*	20	1½ in.	295 lb.	212 lb.
138*	20	1⅛ in.	335 lb.	247 lb.
139	24	1⅝ in.	.....	300 lb.
204	20	4 in.	620 lb.	.....
137*	20	4 in.	570 lb.	486 lb.
140	24	4 in.	.....	490 lb.
141*	20	4 in.	570 lb.	486 lb.
201*	20	4 in.	400 lb.	310 lb.
202*	20	4 in.	415 lb.	325 lb.
203	24	4 in.	.....	330 lb.
206*	20	4 in.	450 lb.	355 lb.
207*	20	5 in.	580 lb.	.....
208*	24	5 in.	.....	420 lb.
209	24	5 in.	.....	425 lb.
210	20	2¼ in. overall short flange	595 lb.	.....

*No. 120 Richsto Mould 20-gauge generally used.

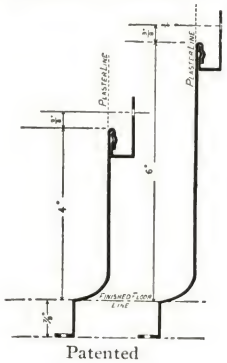
Complete casing details sent gladly



RICHSTO METAL BASE—A TYPE FOR EVERY PURPOSE

The new and improved line of Richsto Metal Base offers all that architect and contractor could wish in metal construction. The Richsto flush-with-plaster types find wide favor for schools, hospitals, public buildings and institutions. There is variety enough in the other types to meet all other structural requirements.

No. 110 Metal Base—Flush Type—This base is for use with any floor. It has the sliding bracket method of attachment, nailing on about 14-in. centers with ample openings for grouting after erection. Depth of bottom flange ⅞ in. also to be had in ⅛ in. to 2 in. at no extra cost. Joint plates furnished, one for every 12 ft. of base.

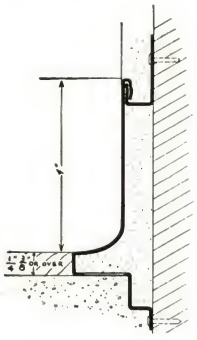


Patented

APPROXIMATE WEIGHTS OF NO. 110 BASE

Height	Gauge	Per 1000 ft.
4 in.	20	850 lbs.
4 in.	18	1055 lbs.
6 in.	20	1135 lbs.
6 in.	18	1397 lbs.

Corner fittings, plinths and end stops 4 in., 500 lbs. per 1000 pieces—6 in., 750 lb. per 1000 pieces.



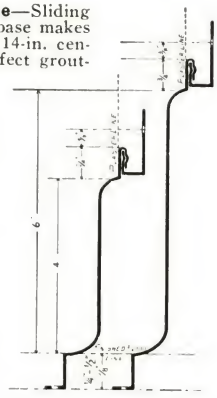
No. 111 Metal Base—Attached to Wall—This is a new Richsto base pattern created to meet an increasing trade demand. It is identical with the No. 110 base described above with the exception that attachment is made to the wall only, instead of to the wall and the floor, as in the case of No. 110. All descriptive detail given regarding base No. 110 applies equally to this base No. 111.

APPROXIMATE WEIGHTS OF NO. 111 BASE

Height	Gauge	Per 1000 ft.
4 in.	20	1050 lbs.
4 in.	18	1370 lbs.
6 in.	20	1400 lbs.
6 in.	18	1830 lbs.

Corner fittings, plinths and end stops 4 in., 500 lbs. per 1000 pieces—6 in., 750 lbs. per 1000 pieces.

No. 112 Metal Base—Projecting Type—Sliding bracket method of attachment for the top of the base makes it possible to nail at convenient points on about 14-in. centers and leaves ample openings for easy and perfect grouting after erection. The new feature, as in No. 110 base, is that the lower part is bent to right angle, giving added strength and a better job. Splice plates furnished to the extent of one per 12 ft. of base at no extra charge. Furnished with bottom flange formed to accommodate special floor thickness similar to No. 110 base.

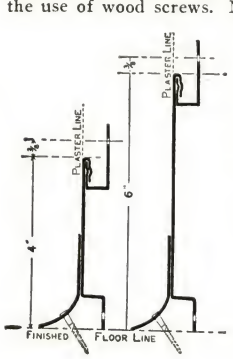


APPROXIMATE WEIGHTS OF NO. 112 BASE

Height	Gauge	Per 1000 ft.
4 in.	20	900 lbs.
4 in.	18	1275 lbs.
6 in.	20	1350 lbs.
6 in.	18	1585 lbs.

Fittings for 4-in. base approximately ½ lb. each. Fittings for 6-in. base approximately ¾ lb. each.

No. 114 Metal Base—Adjustable Flush Type for Wood or Linoleum—An ideal base for wood or linoleum floors. Of the flush type and provided with adjustable bottom cove mould. Where base is applied before plastering the cove member is either raised or removed so that the form may be laid under it. However, it is now possible to erect the lower part of the base after plastering and the floor is laid by the use of wood screws. Necessary 1-in. No. 5 wood screws are furnished for the cove of this base. Special lock screws make it possible to tighten this cove member from time to time. This assures the tight base even under conditions of shrinking or settlement of the floors. Base is made of either 18 or 20-gauge special tight coated, galvanized sheet steel. Height 4 in. or 6 in. Standard length 10 ft. Exposed surfaces are primed with our special gray primer.

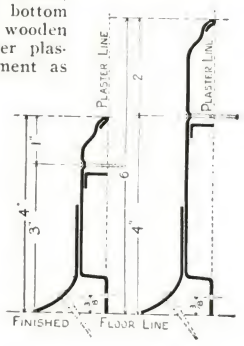


APPROXIMATE WEIGHTS OF NO. 114 BASE

Height	Gauge	Per 1000 ft.
4 in.	20	1075 lbs.
4 in.	18	1400 lbs.
6 in.	20	1425 lbs.
6 in.	18	1850 lbs.

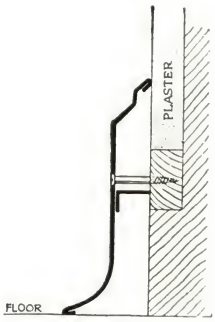
Corner fittings, plinths and end stops, 4 in., 500 lbs. per 1000 pieces—6 in., 750 lbs. per 1000 pieces.

No. 115 Metal Base—Adjustable Offset Type—This adjustable type base finds frequent application in office buildings because of affording opportunity to run telephone wires around a room, concealed behind the base. The adjustable bottom cove member makes it highly desirable for wooden or linoleum floors. This base is applied after plastering and has the same features of adjustment as the No. 114. The improved features are identical with those of No. 114, omitting pockets and machine screws. The welding of the furring strip to the base does away with the necessity of wood furring. 10-ft. lengths.

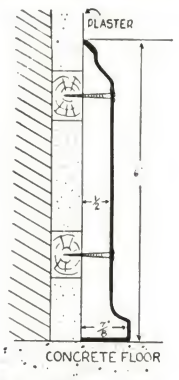


WEIGHT OF NO. 115 BASE

Height	Gauge	Per 1000 ft.
4 in.	20	950 lbs.
4 in.	18	1350 lbs.
6 in.	20	1300 lbs.
6 in.	18	1675 lbs.



No. 116 Metal Base—Removable—This base applied after plastering is strictly sanitary and is of the removable type. It is put in after the flooring is finished. It has a continuous furring strip along the back which eliminates the necessity of blocking out and also acts as a reinforcement causing the base to be extra rigid. This furring strip has been improved and changed. It is made of 24-gauge tight coated galvanized sheet steel, welded to base. Base is made of 18 or 20-gauge special tight coated galvanized sheet steel. Is removable at any time by simply taking out wood screws. Height 4 and 6 in. Standard length 10 ft.



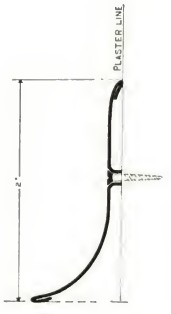
Also 2½ in. and 4 in.

APPROXIMATE WEIGHTS OF NO. 116 BASE

Height	Gauge	Per 1000 ft.
4 in.	20	905 lbs.
4 in.	18	975 lbs.
6 in.	20	1135 lbs.
6 in.	18	1300 lbs.

Corner fittings, plinths and end stops, 4 in., 500 lbs. per 1000 pieces—6 in., 750 lbs. per 1000 pieces.

No. 401 6 in., No. 402 4 in., No. 403 2½ in. Metal Bases—Three new bases, are all of the same style, differing only in height. May be used as casing. Designed for erection with concrete floors. New in design and treatment. Dignified, artistic and economical.



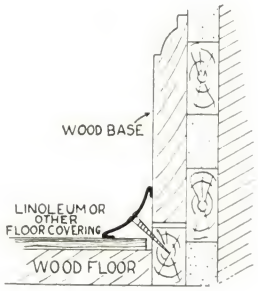
APPROXIMATE WEIGHT OF NO. 401, 402, 403

No.	Height	Gauge	Per 1000 ft
401	6 in.	20	935 lbs.
402	4 in.	20	685 lbs.
403	2½ in.	20	510 lbs.

No. 124 Metal Cove Mould Improved—This metal cove mould keeps angles clean. It is removable—quickly installed—moderate in cost. It finds frequent application for use with wooden base already installed as well as over linoleum. This mould, together with fittings, can be installed in either new or old buildings and is a distinctly sanitary convenience. An improvement over the older model consists in omitting furring strip. Countersunk screw holes take up the space between moulds and wood ground. 1-in. No. 5 wood screws are furnished. No screws necessary with fittings. These are held in place by moulding after erecting.

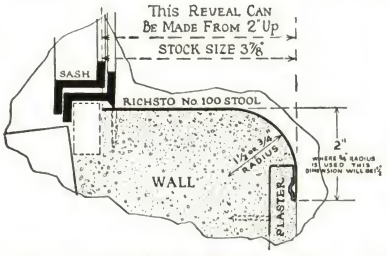
No. 170 Metal Cove Mould for Remodeling Old Buildings—This sanitary cove mould is especially favored for use in the remodeling of old buildings. It is especially adapted for use with wood floors and can be installed over linoleum or carpet. It gives a tight fitting, good looking mould between base and floor. This mould is especially recommended for your most careful consideration. Fittings also furnished.

This mould is made of 24-gauge steel. Approximate shipping weight 254 lbs. per 1000 ft. It is furnished in 10-ft. lengths only. It is also supplied in brass to order. Approximate shipping weight 254 lbs. per 1000 ft.

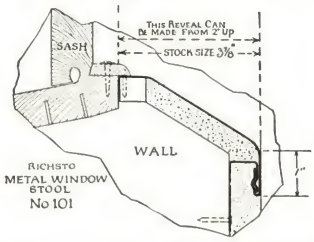


METAL WINDOW STOOLS, CHAIR RAILS, CHALK TROUGHS

No. 100 Window Stool—This new Richsto No. 100 stool is now made in both ¾-in. radius and and 1½-in. radius. The apron is ½ in. shorter on the ¾-in. radius. The 1½-in. radius can be used for the stool, and the ¾-in. radius for jambs and head. Fittings for 100A, ¾x1½ in., and 100A, 1½x¾ in. furnished. Fittings for the ¾-in. radius stool furnished same as standard 1½-in. radius. For interesting illustrations of uses of this stool see pages 58, 59, of our catalog. Made of 20, 18, 16 and 14-gauge special tight coated galvanized sheet steel. Standard reveal 3⅞ in. All exposed surfaces primed with our special grade primer. We furnish 1½-in. radius unless ¾-in. is specified.



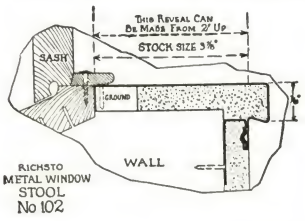
No. 101 Splay Stool for Thick Walls—Here is the preferred window stool where walls are thick and maximum light is desired. This stool has an adjustable bracket which slides in a groove permitting fastening to wall just where desired.



Stool should be filled at time of setting with cement mortar. With our method of attaching to wall, mortar can be filled under stool on the wall side after erection, thus accomplishing an easy, quick and perfect installation.

Made of either 18 or 20-gauge special tight coated galvanized sheet steel. Standard reveal 3⅞ in. Slope can be furnished at any angle. All exposed surfaces primed with our special gray primer.

No. 102 Flat Stool Adjustable Bracket—Where a flat, wide stool is desired, Richsto No. 102 meets every requirement. It presents an attractive finished appearance, such as is to be found in many of the old time wooden stools. Naturally it has all of the advantages of steel construction. Conservative in design, it has a quiet dignity that is most pleasing. This stool has the adjustable bracket feature which slides in groove, making it possible to fasten to a wall just where desired.

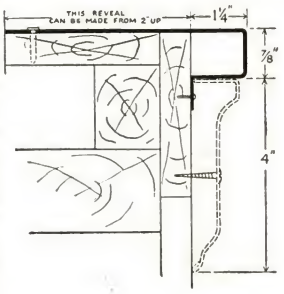




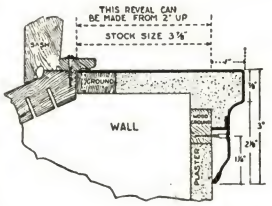
Stool should be filled at time of setting with cement mortar. With our method of attaching to wall, mortar can be filled under stool on the wall side after erection, thus accomplishing an easy, quick and perfect installation.

No. 103 Window Stool—Curved, ¾ in.-1½ in.—This is a new type of Richsto metal window trim that has been created in response to a real demand for a curved stool. This type of stool is being used in many public buildings, such as hospitals, hotels, schools and dormitories. In common with all types of Richsto metal stools, it is easy of erection, and the completed job presents an attractive workman-like appearance.

No. 104 Window Stool for Concrete Construction—Here is shown a new Richsto metal window stool that is identical with the No. 102 stool with the exception that in this type the face is square. Where this type of design is to be used this stool makes an ideal unit of construction. Its finished appearance is much like the older square edged models of wooden stools. In addition it has all of the advantages of steel construction. Ends of stool are properly notched and projecting ends of stools closed. No additional charge.

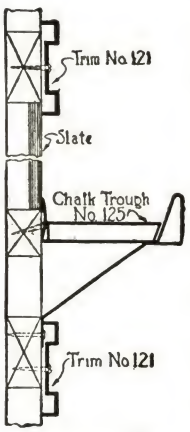


No. 105 Window Stool, New Style—This new style No. 105 Richsto window stool may be installed either before or after plastering. It is a wide, deep stool, unusually artistic in design, yet having a square trim appearance that meets with wide favor. As an erection detail it is to be noted that stools should be filled at time of setting with cement or mortar. Installation can be made either before or after plastering, which depends upon the construction. Has 1-in. projection beyond plaster line. Furring strip is welded to apron and reinforces it. 1½-in. No. 5 wood screws are furnished for the apron. These changes and improvements make a stool simple in design, easy to erect, and exceptionally pleasing in its finished effect. Ends are closed with 20-gauge galvanized steel.



No. 130 Chair Rail—a School Favorite—Our No. 130 chair rail is designed for erection before plastering and is set so the edges act as a screed line for plasterer. It has a sliding bracket method of attachment, nailing on about 9-in. centers, and leaving ample openings for easy and perfect grouting after erection. Made of 20-gauge special tight coated galvanized sheet steel. Comes in standard 10 ft. lengths, gray primer coated. Shipping weight, approximately 790 lbs. per 1000 ft.





One-fourth Size

No. 125 Chalk Trough—At the left we show a complete detail of the No. 125 Richsto metal chalk trough used in combination with No. 121 trim. The chalk trough is made of 24-gauge special tight coated galvanized sheet steel. All exposed surfaces primed with our special gray primer. Shipping weight approximately 1350 lbs. per 1000 ft. Splices furnished to the extent of one per 12 ft. of chalk trough at no extra charge. Proper screws for attaching furnished with material. Furnished in 6, 8 and 10 ft. lengths.

No. 121 Blackboard Trim—20-gauge steel, standard lengths 10 ft. All exposed surface primed with our special grade primer. Shipping weight approximately 400 lbs. per 1000 ft. Proper screws for attaching furnished with material.

SPECIFICATION CHART FOR RICHSTO METAL WINDOW TRIM

No.	20-gauge		18-gauge		16-gauge		14-gauge	
	Weight per 1000 ft., lbs.	Add per in. of reveal	Weight per 1000 ft., lbs.	Add per in. of reveal	Weight per 1000 ft., lbs.	Add per in. of reveal	Weight per 1000 ft., lbs.	Add per in. of reveal
100	903	138	1153	180	1550	225	1895	280
101	1150	175	1535	230	1800	295	2100	355
102	1040	138	1332	180	1875	230	2250	280
103	1000	125	1300	175	1550	220	1850	270
104	1300	125	1500	175	1700	220	1925	270
105	1250	138	1550	180	1800	235	2100	285

TRUSCON STEEL COMPANY

Manufacturers of a Complete Line of Permanent Building Products Including Metal Lath, Steel Channels and Plasterers' Specialties

YOUNGSTOWN, OHIO

Offices and Warehouses in Principal Cities—For list, see our pages on Steel Windows

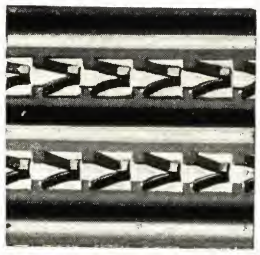
Products

METAL LATH; HY-RIB; STEEL CHANNELS; CORNER BEADS; BASE SCREEDS; METAL TRIM.

For other Truscon Products, see pages in this edition on Steel Windows, Steel Doors, Steeldeck Roofs, Steel Joists, Safety-Tread Steel, Channelplate and Teegrid Floors, Reinforcing Steel, Complete Buildings—as listed in Manufacturers' Index

PRODUCTS OF TRUSCON

Truscon "A" Metal Laths

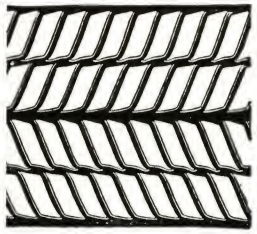


High quality laths that provide a very tenacious key for the plaster that is practically automatic with slight pressure. They combine the smooth surface of sheet lath with great rigidity and bond.

1-A weighs 3.0 lbs. per sq. yd.; sheets 24x96 in.

2-A weighs 3.4 lbs. per sq. yd.; sheets 22⅞x96 in.

Truscon Herringbone Doublemesh Lath



Designed to produce true economy in every stage in the production of a finished plastered interior. Cross strands deflect alternate double rows of keys in opposite directions, embedding the metal.

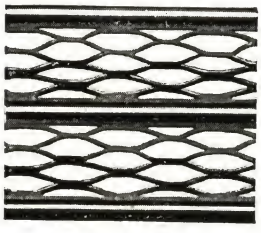
Weights, painted, 2.75, 3.0, 3.4 lbs. per sq. yd.; sheets 24x96 in. Also available in Galvanized, Copper-bearing and Armco Iron.



Truscon Diamond Laths

Available in either the regular diamond mesh or the new, small mesh types, also self-furring. These laths are general utility products featuring low cost, smooth finish and uniform pliability.

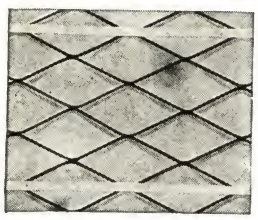
Weights, painted, 2.2, 2.5, 3.0, 3.4 lbs. per sq. yd.; sheets, 27x96 in. Also available in Galvanized, Copper-bearing and Armco Iron.



Truscon Diamond "A" Lath

Excellent as a base for interior plastering. Ribs, spaced 1⅜ in. on centers, are connected by an efficient diamond mesh that provides a strong key and thoroughly reinforces the plaster.

Weights, 2.75, 3.0 and 3.4 lbs. per sq. ft.; sheets 24x96 in.



Truscon Insulmesh

A plaster base that combines in one product the low first cost of wood lath, the crack prevention and firesafety of metal lath and the plaster economy and insulating ability of fibre and plasterboard. Sheets are 27x48 in. in size and consist of a strong, composite board, to which is attached an expanded metal mesh.

⅜-in. Diamond Rib Lath

A self-furring lath with ⅜-in. deep ribs, joined by an expanded diamond mesh. The rigidity imparted by the ribs permits wide spacing of supports and thus saves in cost of erection. It is particularly recommended for use with steel joists as a base for the plastered ceiling and as a reinforcement for the concrete slabs. Excellent for ceilings, straightaway partition work with channels, and for exterior stucco.

Weights, painted, 3.0, 3.4 and 4.0 lbs. per sq. ft.; sheets 24x96 in. Also in Copper-bearing and Armco Iron.

Truscon ¾-in. Hy-Rib

This product is a concrete reinforcement for floors, roofs, tanks, arches and other construction where elaborate wood forms are usually required. The heavy ribs are spaced 4 in. apart, permitting exceptionally wide spacing of supports, with the intervening mesh forming the same ingenious key obtained with "A" Laths. ¾-in. Hy-Rib is made in three weights: .58, .68 and .78 lb. per sq. ft., sheets 28 in. wide, up to 12 ft. long.

Self-Sentering

Self-Sentering is made up of a series of heavy, cold-drawn ribs, 1/16 in. high, spaced 3⅝ in. on centers, and connected by the most efficient form of expanded metal—the diamond mesh—all cut and drawn from one sheet of steel. Sheets are 29 in. wide and 6, 8, 10 and 12 ft. long, weighing .56, .65 or .75 lb. per sq. ft. It is used for concrete reinforcing and miscellaneous firesafe construction, serving as a combined lath, studding and form.

Truscon Plate Lath

Designed primarily for rigidity and plaster economy. Sharply defined ribs, spaced 1 in. on centers, and an unusual percentage of metal, as compared to open area, give this lath exceptional rigidity and provide sufficient resistance to the penetration of plaster to make it an ideal base for tile. Weight per sq. yd.: 4.625 lb. Sheets 24x96 in. size.

Truscon Stucco-Steel

A stucco reinforcement for use over sheathing, expanded from 17-gauge steel, with diamonds 1¼x2½ in. Sheets are 8 ft. long by either 2 or 4 ft. wide, weighing 1.8 lb. per sq. yd. Also available in sheets weighing 3.6 lb. per sq. yd. A special furring nail that locks the Stucco-Steel ⅜ in. from the sheathing is supplied.

Plastering Accessories

Truscon manufactures a complete line of plastering accessories, including tie wire, pencil rods, stud clips, furring nails and other materials.

Cold Rolled Channels

Truscon Cold Rolled Channels are accurately formed, with straight, true corners. Widths of channels are: ¾, 1, 1½ and 2 in., weighing 276, 332, 442 and 553 lb. per 1000 linear feet, respectively. Also a square channel, 1/16 in. wide, with flanges 9/16 in. high.

Corner Bead and Lath Strips

Included in the line of Truscon Corner Beads are rib steel beads with 1⅜-in. flange; wide flange beads with 2½-in. flange and expanded beads with a 2½-in. wide expanded apron. These beads are made from high-grade, tight-coated galvanized steel and are of the finest quality throughout. Standard lengths are 6, 7, 8, 9, 10 and 12 ft.

Truscon Cornerite and Strip-ite are made from diamond metal lath and form economical and efficient reinforcements for inside plaster corners, plastering patch work and miscellaneous uses where less than full lath sheets are needed.

WHEELING CORRUGATING COMPANY

Manufacturers of Steel Building Materials

WHEELING, W. VA.

BRANCH OFFICES

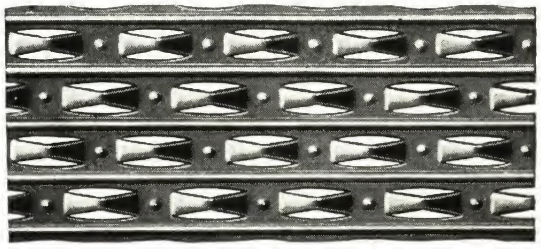
BUFFALO, N. Y.
CHATTANOOGA, TENN.
CHICAGO, ILL.
COLUMBUS, OHIO
DES MOINES, IOWA
DETROIT, MICH.
KANSAS CITY, MO.
MINNEAPOLIS, MINN.
NEW YORK, N. Y.
PHILADELPHIA, PA.
RICHMOND, VA.
ST. LOUIS, MO.

Products

WHEELING STANDARD DIAMOND LATH, painted; cut from galvanized sheet or cut from black sheet and galvanized after expansion.
WHEELING ARCH LATH, painted or galvanized.
WHEELING BAR RIB LATH, painted.
WHEELING BAR-X-LATH, painted.
WHEELING FLAT APRON, SCALLOPED EDGE and BULLNOSE CORNER BEADS.
WHEELING CURVED POINT and STRAIGHT POINT BASE SCREEDS.
Also Ash Pit Doors, Coal Doors, Wall Ties, Wall Plugs, Channels, Stucco Binder, Cornerite, Tie Wire, Stub Nails, Corner Bead Clips and Corner Shields.

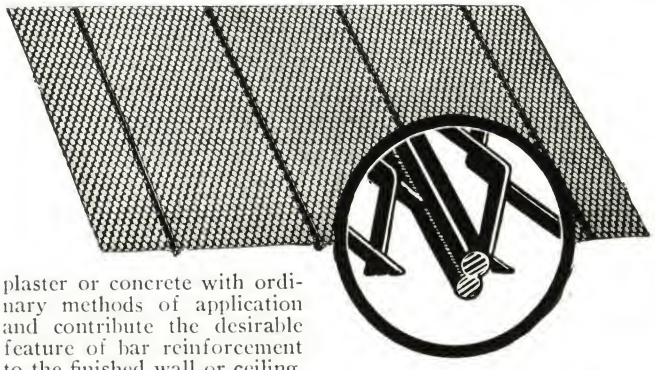
Wheeling Arch Lath

A distinctive type of steel lath weighing 4.5 lbs. per sq. yd., designed to provide the strongest and most rigid base of fireproof lath for plastered walls and ceilings. Manufactured of painted or galvanized steel, painted or galvanized Cop-R-Loy. Sheets 27 in. wide, 96 in. long.



Wheeling Bar-X-Lath

A combination of expanded diamond lath, recognized as having the best mechanical key for plaster, and wire rods welded in pairs to the sheet to give additional stiffness and reinforcement. Diamond lath is made in the usual manner after which, by a process developed exclusively by this company, each pair of rods is welded together on each side of the sheet of lath at intervals of 7 in. On long spans or wide spacing of supports where rigidity is required, Bar-X-Lath will deflect less than other types of equal weight. The rods are embedded in the plaster or concrete with ordinary methods of application and contribute the desirable feature of bar reinforcement to the finished wall or ceiling. Manufactured of painted steel and painted Cop-R-Loy. Sheets 27 in. wide, 96 in. long.



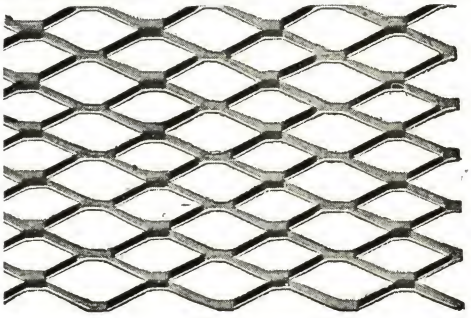
Wheeling Bar Rib Lath

A rib stiffened expanded diamond lath in which U-shaped ribs are an integral part of the sheet. Designed as a self-furring, fireproof metal lath base for plastered walls and ceilings. Made in three weights, 2.75, 3.0 and 3.4 lbs. per sq. yd., of steel or Cop-R-Loy, painted finish. Sheets 27 in. wide, 96 in. long.

Wheeling Standard Diamond Lath

A flat metal lath of uniform small diamond meshes used as a fireproof base for plastered walls and ceiling. Sheets 27 in. wide, 96 in. long. Furnished in all standard weights, made of painted and galvanized steel, painted and galvanized Cop-R-Loy.

Also furnished in Cop-R-Loy or steel, hand-dipped in pure molten zinc after the sheets are fabricated.



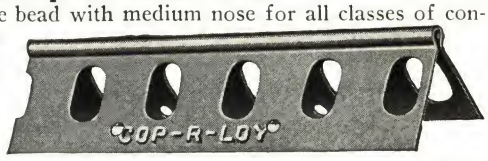
Wheeling Bullnose Corner Bead

Designed for hospitals, public institutions and all places where square corner projections are to be avoided. The broad rounded surface of the exposed part provides a strong reinforcement for the corner and assures a neat and workmanlike finish. Used extensively as trim around windows. Made exclusively of galvanized Cop-R-Loy.



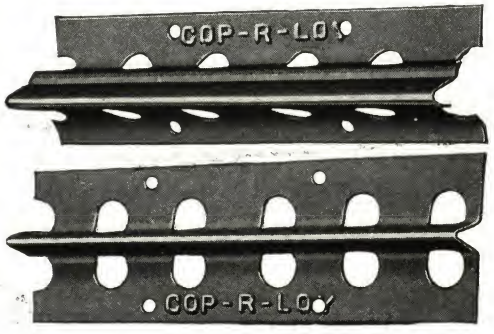
Wheeling Flat Apron Corner Bead

A wing type bead with medium nose for all classes of construction. Made only of 26-gauge galvanized Cop-R-Loy.



Wheeling Curved Point and Straight Point Base Screeds

The use of Wheeling Screeds forms a true line between the plastered wall and the base preventing the weakening of the concrete. Wheeling Curved Point Base Screed furnishes a neatly rounded cap for the base which also prevents water from getting behind plaster. Made exclusively of galvanized Cop-R-Loy.



Literature and Samples

Metal Lath Catalog and Descriptive Folders.
Specifications Metal Lath Construction.
Samples of Lath and Accessories upon request.
Address the nearest branch office.

WICKWIRE SPENCER STEEL COMPANY

GENERAL OFFICES
41 East 42nd Street, NEW YORK, N. Y.

OFFICES AND WAREHOUSES

WORCESTER, MASS., 80 Webster Street
CHICAGO, ILL., 208 So. La Salle Street
LOS ANGELES, CAL., 1070 No. Alameda Street
BUFFALO, N. Y., 1 River Road
CLEVELAND, OHIO, 1217 Guarantee Title Building
TULSA, OKLA., 314 East Archer Street
SAN FRANCISCO, CAL., 114 Townsend Street
SEATTLE, WASH., 1025 Sixth Avenue, So.
PORTLAND, ORE., 361 14th Street, No.

Product

CLINTON WIRE LATH.

For our pages on Electrically Welded Wire Fabric for concrete reinforcement, Wire and Iron Fences and Gates, and Metal Grilles, see Manufacturers' Index.

Clinton Wire Lath

Clinton wire lath has been a recognized standard of quality for over half a century and is one of the most efficient and trustworthy lathing materials in use at the present time.

Clinton Wire Cloth Company (Wickwire Spencer Company, successor), originator of wire cloth weaving, was the first concern to engage in the manufacture of fireproof lath.

Soon after the invention of power looms for the weaving of woolens and cotton, the Clinton Wire Cloth Company perfected a form of loom for weaving wire and entered into the manufacture of their wire lath. This woven wire mesh was the first efficient form of metal fireproofing ever used. It was used for fireproofing purposes as early as 1856, and many buildings are now standing which were fireproofed with this material at that time.

Wire Lath Has Great Strength—A drawn steel wire is, in the matter of strength and general quality of material, a superior product.

The wire, which is made by being drawn through a die, is, during its manufacture, subjected to a high tensile stress. This drawing and working of the material renders the wire a fibrous material of uniform quality, strong and reliable.

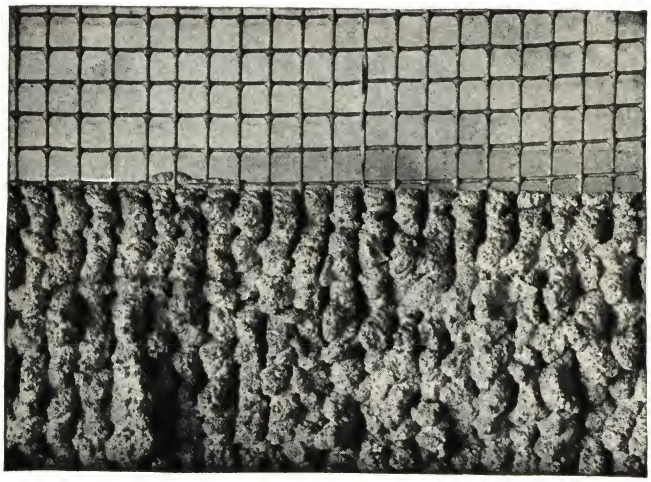
Perfect Key—The primary function of any lathing material is to serve as a foundation to grip and hold mortar. It is the key or the clinch of the backplaster which actually determines the efficiency of the plastered surface.

V-stiffeners—In cases where special rigidity is desired or where furring strips are widely separated, Clinton lath may be provided with V-stiffeners. These are rigid V-shaped ribs of No. 24 gauge steel securely fastened to the wires and extending across the fabric at intervals of 8 in.

In addition to giving additional stiffness, these V-stiffeners also afford an offset of ⅜ in. from the supports to which the lath is attached.

Stock Grades and Sizes of Clinton Wire Lath

Mesh and Gauge—All stock grades of Clinton wire lath are woven from No. 18 to No. 21 Washburn & Moen gauge wire with 2 and 2½ meshes per lineal inch in each direction.

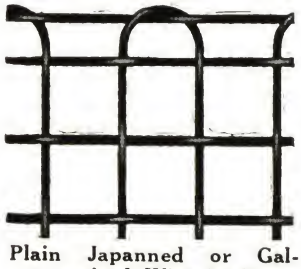


Key of Clinton Wire Lath

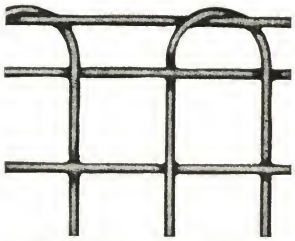


New York Telephone Building, Barclay and Vesey Streets, New York, N. Y.

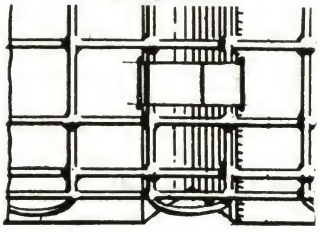
McKENZIE, VOORHEES & GMELIN, Architects
WILLIAMSON & ADAMS, Lathing Contractors



Plain Japanned or Galvanized Wire Lath
2½x2½ mesh



Plain Galvanized Wire Lath
2x2 mesh



Stiffened Galvanized Wire Lath
2½x2½ mesh

Japanned Lath—All sizes of Clinton lath, either plain or stiffened, may be obtained either japanned or galvanized.

Galvanized-after-woven Lath—Clinton lath, either plain or stiffened, is galvanized after weaving.

Size of Rolls—Clinton plain V-stiffened lath, either japanned or galvanized-after-woven, is furnished in rolls 150 ft. long x 36 in. wide.

SHIPPING WEIGHTS AND DIMENSIONS ONE ROLL CLINTON WIRE LATH*

Mesh §	Gauge	Plain Lath				Stiffened Lath			
		Painted		Galvanized		Painted		Galvanized	
		Wgt., lb.	Dia., in.	Wgt., lb.	Dia., in.	Wgt., lb.	Dia., in.	Wgt., lb.	Dia., in.
2	18	126	13	160	14	170	19	220	21
2	19	98	13	122	13	142	18	182	20
2	20	72	12	105	12	116	16	165	20
2½	18	161	13	203	14	203	19	263	21
2½	19	124	13	158	14	165	18	218	20
2½	20	90	13	124	13	135	16	188	20
2½	21	75	13	105	13	120	15	165	19

*All lath 36 in. wide; i.e., height of all rolls 36 in.
§Meshes per lineal inch in each direction.

Specifications for Interior Furring and Lathing

Furnished upon request.

AMERICAN CLIP-ON CORPORATION

Manufacturers of "Clip-On" Fireproofing and Fire-protecting Constructions

MAIN OFFICES
2236 North 27th Street, PHILADELPHIA, PA.

DESCRIPTION AND ADVANTAGES OF "CLIP-ON" CONSTRUCTION

Description

As indicated by the name "Clip-On" Constructions for ceilings, floors and partitions consist basically of a special type of plaster board or gypsum block fastened to supporting channels by specially designed clips. These constructions take the place of the usual systems for these purposes with many advantages as noted in the next column.

For more detailed description of the construction see below.

Clips—Clips for all "Clip-On" Board constructions are made of galvanized copper bearing steel.

Gypsum Boards—"Clip-On" Boards are manufactured in a solid sheet of gypsum encased in a tough fibrous covering, forming a uniform, strong, fire-resisting plaster base. The fibrous covering affords uniform suction, insuring a permanent, strong bond with gypsum plaster. The boards are ⅜x 16x48 ins. with ⅝-in. holes on 7½-in. centers along both long sides for insertion of toggle clips. "Clip-On" Boards are waterproofed on one side for all constructions, except solid board partitions which are not waterproofed.

Gypsum Ceiling Blocks—These are precast units of gypsum size 2x18x36 ins. and half units of 2x9x36 ins. with tongued and grooved sides and reinforced with No. 5 round rods. Hooks for attaching the blocks are fastened to No. 5 round rods both of which are embedded in the gypsum block.

Reinforced Gypsum Partitions—These are made of precast blocks of gypsum in size 2x12x30 ins. solid or 3x12x30 ins. hollow with bottom edges beveled to facilitate plastering of joints. These blocks are set dry, being held to the vertical channels and separated from each other by "Clip-On" Clips made for that purpose. These partitions can be built to much greater height than the usual type of 3-in. block partitions.

Plaster—"Clip-On" Bonding Plaster is an unsanded gypsum cement plaster which has exceptional adhesive qualities.

Advantages of "Clip-On" Board System for Ceilings and Partitions

Approved by National Lathing and Plastering Associations.

The *back* of "Clip-On" Ceiling Boards is *waterproofed.*

Prevents plaster falling off walls or ceilings.

Provides all necessary requisites of satisfactory plastering at a minimum cost.

Reduces the dead load in suspended ceilings approximately 50 lbs. per sq. yd.

Drying time reduced—only minimum amount of water used.

Corrosion and deterioration prevented—all metal clips being heavily galvanized copper bearing steel.

Fire-resistant properties higher than usual systems of equal thickness.

Straighter finished work made possible by its practicable method of construction.

Speeds up time of construction and reduces waste and rubbish.

No nails necessary for "Clip-On" Board on wood joists or studding.

"Clip-On" Boards, Clips and "Clip-On" Bonding Plaster are sold by reputable dealers everywhere.

It has been demonstrated that gypsum bond plaster bonds to gypsum board with much greater adhesion than plaster bonds to any other type of lath now on the market.

Advantages of "Clip-On" Precast Gypsum Block Ceiling

Can be quickly erected after floor construction is installed.

No special spacing of steel work required.

Can be erected under any spacing of floor beams.

Erection is very rapid and economical.

Can be suspended to any height required.

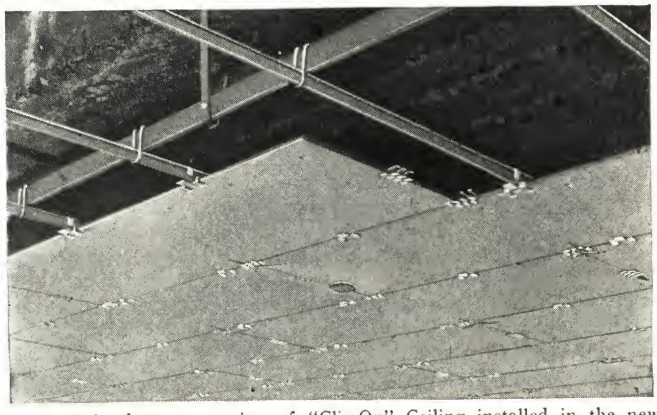
It has successfully *passed the four-hour fire, water and load test* of the city of New York.

Can be erected in any kind of weather.

Approved by building departments of New York, Philadelphia, Washington, Detroit, Pittsburgh and other cities.

TYPICAL "CLIP-ON" CEILING CONSTRUCTION

"Clip-On" Gypsum Board Suspended Ceiling



Above is shown a portion of "Clip-On" Ceiling installed in the new Lincoln-Liberty Building, Broad and Chestnut Streets, Philadelphia, John T. Windrim, Architect. There are 43,000 sq. yds. of this "Clip-On" Suspended Ceiling construction in this building.

In the "Clip-On" Gypsum Board method of suspended ceiling construction as illustrated the 1½-in. runner channel 48 ins. on centers and the ¾-in. furring channel 16 ins. on centers are installed in the usual manner. The "Clip-On" Boards are then fastened rigidly to the furring channels with channel clips by bending back leg of clip down over channel. Junction clips and toggles are inserted as specified and "Clip-On" Bonding Plaster applied and finished in the usual manner, resulting in a construction which is stiffer, straighter, lighter, speedier and more economical than the usual type of suspended ceiling. Can be applied to any style or spacing of floor beams, open joists, or trusses.

"Clip-On" Precast Gypsum Block Ceiling



Above illustration shows "Clip-On" Precast Gypsum Block Ceilings installed in the three new Department stores for Strawbridge & Clothier of Philadelphia, Simon & Simon and Dreher & Churchman, Architects. There are 900,000 sq. ft. of this construction in the above buildings.

In the "Clip-On" Precast Gypsum Block method of suspended ceiling construction illustrated the 1½-in. runner channels are erected on 36-in. centers with hangers not more than 36 ins. apart or 2-in. runner channels when hangers are between 36 and 48 ins. on centers. Then 1-in. furring channels on 36-in. centers are clipped to the runner channels and the "Clip-On" Blocks attached to the furring channels by hooks moulded in the blocks. The blocks are then plastered to the required thickness. This type of ceiling is not limited to any particular spacing of floor or roof beams and can be put in at any time after the floors are in place.

This Company also Manufactures and Erects Gypsum Floor and Roof Construction

SPECIFICATIONS FOR "CLIP-ON" FIREPROOFING AND FIRE-PROTECTING CONSTRUCTIONS, INCLUDING LATHING AND PLASTERING REQUIRED

Ceilings

This contractor shall erect the "Clip-On" System of Plastering as follows:

Suspended ceilings shall be furred with ¾-in. hot rolled channels, 16 ins. on centers clipped rigidly to 1½-in. hot rolled channels spaced not over 4-ft. centers, and same attached to hangers which are placed on centers not exceeding 4 ft. each way. Use No. 505 flat bottom hairpin clips for fastening ¾-in. furring channels to 1½-in. runner channels.

After furring channels have been properly placed, erect the "Clip-On" Boards ⅜x16x48 ins., securing them to furring channels by means of galvanized copper bearing metal "Clip-On" clips with joints broken at every course, and held fast by junction clips. Junction clips must be used at each corner and middle of every end joint of boards. Clips to fasten boards to channels must be spaced not over 16 ins. from center to center both ways. Insert No. 105 toggle wires in the holes provided, using three at junctions of boards, not over 48 ins. from center to center. Provide cushion consisting of strips of light gauge metal lath bent "L" shape at all ceiling angles.

Note: All "Clip-On" Board specified herein is a special gypsum plaster board perforated for toggles and waterproofed on one side, except the "Clip-On" Board used for 2⅛-in. solid partitions which is not waterproofed. All plastering grounds to be not less than ½ in. thick for walls and partitions.

Scratch and Brown Coat—Mix 100 lbs. "Clip-On" Bonding Plaster with 175 lbs. clean sharp sand (dry mixed) in a clean mortar box before adding sufficient water to make it a workable consistency. Then apply one tight coat directly to the "Clip-On" Board, pressing firmly to board and before set follow up to full thickness of ⅜-in. allowing for white coat. Use darby to straighten up and level off work ready for white coat or any other finish desired.

White Coat—To 100 lbs. first quality finishing lime, add 50 lbs. of first quality moulding plaster or gauging plaster. Trowel to a smooth burnished surface.

Sand Finish—Add two parts clean sharp white sand to one part first quality finishing lime—apply with a steel trowel and rub surface to the desired texture with a cork float.

Furred Walls

Erect ¾ or 1-in. hot rolled channel, securely fastened to wall, horizontally, starting at floor or ceiling, and space same not over 4-ft. centers. Wire ¾-in. channel vertically 16 ins. on centers to the horizontal channels, allow carpenter to fasten nailing blocks to channels where necessary for nailing grounds for plastering, trim, etc., then erect the "Clip-On" Board as above and plaster using 100 lbs. "Clip-On" Bonding Plaster to 175 lbs. sand for scratch and brown coats and level off using ½-in. grounds.

2⅛-in. "Clip-On" Solid Partitions

Erect ¾-in. hot rolled channels vertically 16 ins. on centers in an approved manner and fasten to floor, ceiling and door bucks. Allow carpenter to fasten nailing blocks to channels where necessary for nailing grounds for plastering, trim, etc. Clip the "Clip-On" Boards to the channels with No. 101 clips on one side of channels, also using only two junction clips No. 103 at end joints of each board. Proceed with plastering on both sides to required thickness of 2⅛ ins. with "Clip-On" materials using 100 lbs. "Clip-On" Bonding Plaster to 175 lbs. sand for both sides of boards and fill out on channel side of partition to required thickness using 100 lbs. "Clip-On" Bonding Plaster to 250 lbs. sand.

3½-in. and Over Hollow "Clip-On" Partitions

Erect two rows of ¾-in. hot rolled channels vertically on 16-in. centers to the required width, in an approved manner and fasten to floor, ceiling and door bucks, also hot rolled channels horizontally on about 6-ft. centers wired between vertical channels. Allow carpenter to fasten nailing blocks to channels where necessary for nailing grounds for plastering, trim, etc. Proceed with "Clip-On" Boards on both sides of partition and plaster with materials as mentioned above same as for furred walls. If soundproofing is desired in hollow portion of this partition, it can be easily built in during the erection.

Wood Construction

All wood construction erected in the usual manner. Clip board to ceiling joist, wall or partition studding and nail clips securely to same. Caution: Do not nail board to studding or joist at any point unless clips cannot be applied.

3-in. Finished "Clip-On" Solid Gypsum Partition or 4-in. Finished "Clip-On" Hollow Gypsum Partition

Erect a row of 1-in. hot rolled channel vertically on 30½-in. centers in center of partition fastening them at floor and ceiling line. Apply 2-in. "Clip-On" solid partition blocks or 3-in. "Clip-On" hollow partition blocks between the 1-in. channels and clip the blocks in place by interlocking "Clip-On" clips which also hold the blocks about ⅜ in. apart. All joints will be filled in by the plasterer with the brown coat that is being used when plastering both surfaces of the "Clip-On" Gypsum Blocks. All mortar to be composed of 100 lbs. "Clip-On" Bonding Plaster and 250 lbs. sand for both scratch and brown coats both sides and finish in usual manner to a thickness of ½ in. on each side including white coat making total thickness of partion 3 or 4 ins., respectively. Standard sizes of "Clip-On" Gypsum Partition Blocks are 2x12x30 ins. solid and 3x12x30 ins. hollow.

2½-in. Thick "Clip-On" Precast Gypsum Block Ceiling

Insert 1x$\frac{3}{16}$-in. hangers in floor construction 36 in. each way for 1½-in. hot rolled heavy section channel runners or 36 ins. one way and not over 48 ins. the other way for 2-in. hot rolled heavy section channel runners. Use ⅜-in. stove bolts at hanger extensions and at channel runners, bottom of extensions bent upward to further support runners.

Clip at right angles to above mentioned runner channels with $\frac{3}{16}$-in. wire hairpin clips 1-in. hot rolled heavy section furring channels 36 ins. on centers and draw tight to the channel runners. Where floor beams are not over 36-in. centers and the distance from the floor beams to the ceiling is not too great the runner channels may be omitted and hangers may be attached direct from the floor beams to the furring channels.

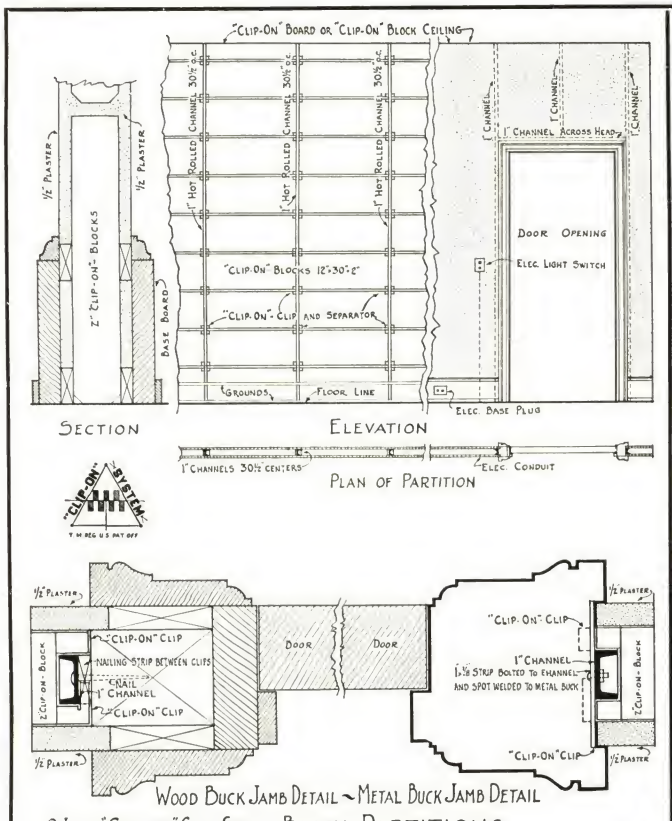
Release hooks from bottom side of block and turn same backward ready to hook over the 1-in. furring channels after which hook block to channels locking the tongue and groove sides. Always keep lateral joints of blocks tight together. Use hall blocks to assist in odd fittings of irregular areas and breaking of longitudinal joints of blocks. Break longitudinal joints with the previous layer of blocks at least 4 ins. Spacing of hangers must not be more than 3x3 ft. for 1½-in. channels or 3x4 ft. for 2-in. channels as given above.

Plastering contractor is to fill up any small openings when plastering. Plaster in usual manner to ½-in. thickness using 100 lbs. "Clip-On" Bonding Plaster to 200 lbs. sand for scratch and brown coats.

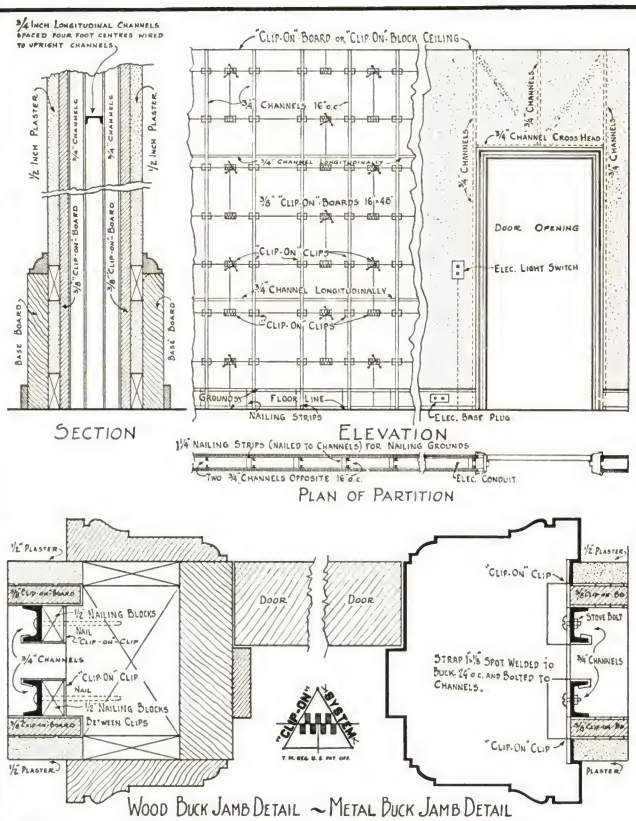
Standard size of "Clip-On" Precast Gypsum Ceiling Blocks is 2x18x36 ins. Half blocks are 2x9x36 ins.

Note: All iron should be painted or dipped. "Clip-On" Block Ceilings must be in place before partitions are erected in order to secure proper suspension and fire protection. Use metal lath at all intersections.

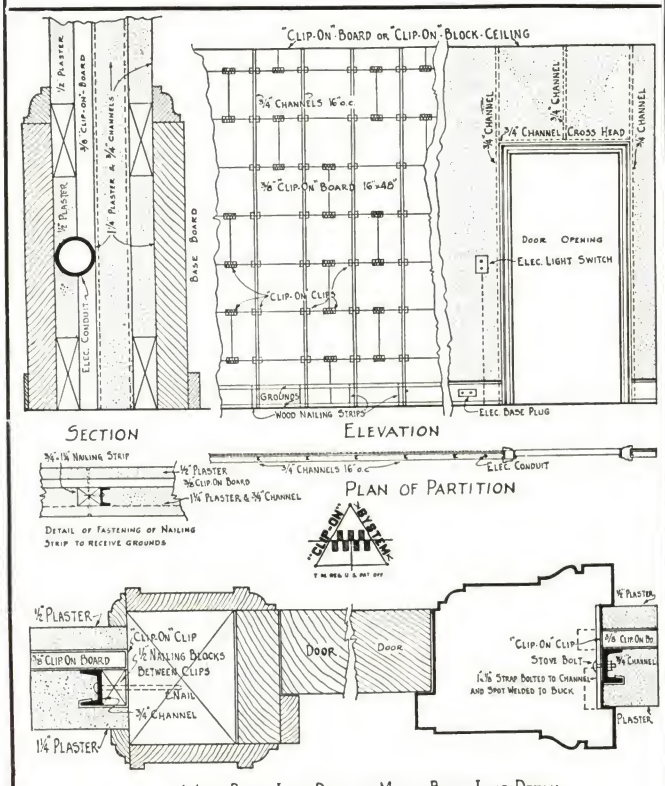
Note: When portland cement mortar is specified, apply 2-in. mesh poultry wire well stretched and fastened over the "Clip-On" Blocks or Boards by wiring to clips.



2 INCH "CLIP-ON" CLIP SOLID BLOCK PARTITIONS



"CLIP-ON" BOARD PARTITIONS 4 INCH AND OVER



2⅛ INCH "CLIP-ON" BOARD SOLID PARTITION

The 2⅛-in. Solid Partitions are made of "Clip-On" Gypsum Boards fastened to vertical channels by "Clip-On" Clips, forming a straight plastering base, which is then plastered both sides. These partitions can be built to much greater heights than the ordinary 3-in. block partition and all electrical work can easily be concealed in them.

A Few Typical "Clip-On" Installations

Building	Architect
Philadelphia, Pa.	
Girard Trust Building	McKim, Mead & White
Lincoln Liberty Building	John T. Windrim
Architects Building	Members, Philadelphia Chapter, A.I.A.
University Club	Grant M. Simon
Hardt Building and Integrity Trust Co.	Paul P. Cret
Aldine Trust Building	Arthur W. Hall
Market Street National Bank	Ritter & Shay
Medical Tower Professional Building	McIlvaine & Roberts
Philadelphia Municipal Convention Hall	Philip H. Johnson
Pennsylvania Hospital Building	Zantzinger, Borie & Medary
Strawbridge & Clothier Main Store	Simon & Simon
Charles E. Bartlett Junior High School	Irwin T. Catharine
Other Cities	
Daily Times and Professional Building, Ardmore, Pa.	Dreher & Churchman
Good Counsel College, White Plains, N. Y.	Emil G. Perrot
Buck Hill Falls Inn, Pocono Mountains, Pa.	Bunting & Shrigley
Bohack Realty Warehouse, Maspeth, L. I., N. Y.	Koch & Wagner
St. Andrew's School, Middletown, Del.	Arthur H. Brockie
Shoreham Apartment Building, Washington, D. C.	Private Plans

CERTAIN-TEED PRODUCTS CORPORATION

GYPSUM DIVISION

Manufacturers of Gypsum Lath

GENERAL OFFICES

100 East 42nd Street

NEW YORK, N. Y.

For Sales Offices, see Gypsum Plaster Pages

For Our Other Products, see Manufacturers' Index

GYPSUM LATH FOR GYPSUM PLASTERING

Certain-teed and *Beaver* Gypsum Lath are made from gypsum rock plaster and faced with tough fibre surfacings front and back. Millions of tiny air cells, embedded in the gypsum base by a special process, greatly increase the natural insulating properties of gypsum.

These slabs are available in the following sizes: 16x32 in., 16x48 in., 32x36 in. and 32x48 in. in ⅜-in. thickness, also 32x36 in. in ¼ and ½-in. thicknesses.

This form of lath is quickly applied—clipped to steel studs and joists in fireproof buildings or nailed to frame construction. It braces the framing, bonds with gypsum plaster securely, saves time and material in plastering and does not spoil the "set" of plaster by absorbing any quantity of water from it. It will not swell, buckle, rust or burn. The finished wall is a better insulator against heat, cold and sound.

The two outstanding features required of gypsum lath are strength and binding qualities with plaster.

Government specifications require that ⅜-in. gypsum lath shall have a transverse strength (load carrying capacity) of not less than 40 lbs. when loaded across the fiber, and not less than 20 lbs. when loaded parallel to fiber, when tested according to standard methods.

The following table which gives the adhesion in pounds per square inch of plaster to various lath backings, shows that our gypsum lath forms the best adhesion with gypsum plaster:





TRADE-MARKS

BONDING QUALITIES OF GYPSUM PLASTER ON VARIOUS KINDS OF LATHS*

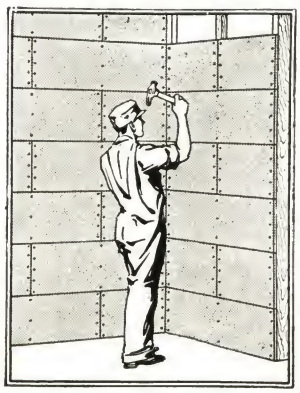
Kind of lath backing	Adhesion, lb. per sq. in.
1. Wood Lath No. 1	2.1
2. Metallic Laths	
(a) Sheet Metal	1.6
(b) Expanded Metal	4.3
(c) Woven Wire	2.4
3. Plaster Boards	
(a) Fibre	2.3
(b) Gypsum	6.0

*Name of testing laboratory on request.

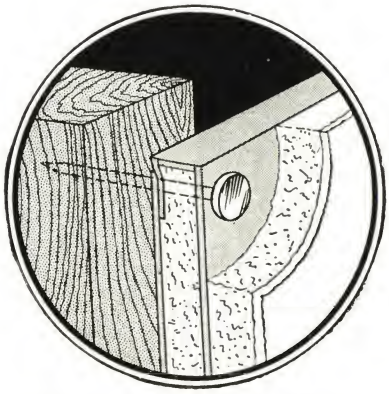
Certain-teed and *Beaver* gypsum lath, being built from gypsum rock, are highly fireproof. Permanent satisfaction in using it depends largely upon staggering the panels and on using standard grounds in plastering.

When Used in Frame Buildings

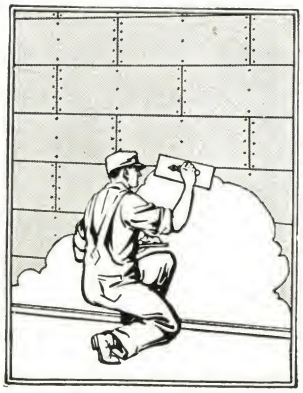
Gypsum lath makes a smooth, evenly finished plastering job, and saves time in lathing, labor and material. The slabs are light, easy to handle and nail to the studs and joists. Being uniform in size, they are easy to cut to fit around openings and into odd-shaped corners. Plastering over it is quick work and gratifying to careful workmen. The full base coat is applied in one operation. It is firm and true, and the surface takes



Light in Weight and Easy to Nail to Studs and Joists



Gypsum Lath Builds a Sturdy Wall



The Full Base Coat Is Applied in One Operation

hold of the plaster with even suction at every point, making it just right for rapid troweling.

Less plaster is required than for wood or metal lath since there are no openings through which plaster must be forced to form keys. There is instead an over-all surface bond of much greater strength with no plaster waste.

Specifications for Use in Frame Buildings

General—This contractor shall examine all studs, joists and furring and see that they are all spaced 12 or 16 in. on centers, and are set straight and true to line; also that all wood grounds are of the correct thickness and properly installed. Where the above work is not satisfactory he shall so advise the General Contractor who shall arrange to have the proper adjustments made.

Note: The placing of studs, joists and furring on 12 or 16-in. centers and setting them straight and true to line should be included in the specification for Carpenter Work.

Note: All wood grounds for plastering should be furnished and set by the Carpenter and included in the specification for Carpenter Work. They should be ⅞ in. thick for ⅜-in. gypsum lath, ¾ in. thick for ¼-in. gypsum lath and 1 in. thick for ½-in. gypsum lath.

Lathing—All lath shall be *Certain-teed* or *Beaver* Gypsum Lath for all walls, partitions and ceilings. They shall be .... in. thick x .... in. x .... in.

Note: Where it is desired to have all horizontal joints staggered, use the following paragraph.

Breaking Joints—The bottom rows on walls and the starting rows on ceilings shall consist of alternate half and full size boards to provide for breaking of horizontal joints on walls and cross joints on ceilings. Vertical joints on opposite sides of partitions and walls shall not occur on the same stud.

Note: Where it is desired to have all vertical joints staggered, use the following paragraph under the heading "Breaking Joints."

The boards shall be applied across all studs, joists and furring the long way, breaking all vertical joints on walls and all butt joints on ceilings. Vertical joints on opposite sides of partitions shall not occur on the same stud.

Plastering—Gypsum lath shall not be wetted before plastering. First coat shall be thoroughly applied and the plaster worked well into the joints and the surface scratched or scored to provide a bond for the second coat.

Nailing—Lath shall be well nailed to studs, joists and furring. The center of lath shall be nailed first—then edges. Nails shall be spaced about 3 in. apart at ends and intermediate studs. All nails shall be driven home.

Nails—Shall be 1¼ in., 13-gauge, $\frac{5}{16}$-in. diameter head, blued and sterilized special plaster board nails, or 1¼-in. 3d sterilized blued lath nails, or 3d common nails for ⅜ and ¼-in. lath, and 4d common nails for ½-in. lath.

Note: For balance of plastering specification see *"Basic Specification"* in the plaster section of CERTAIN-TEED PRODUCTS CORPORATION pages in this edition of SWEET'S ARCHITECTURAL CATALOGUES.

When Used in Fireproof Buildings

Clipping the uniform size slabs of *Certain-teed* or *Beaver* Gypsum Lath to steel studs and joists is rapid work. Plastering the true, firm surfaces of uniform coolness and suction is a time-saving job of real satisfaction to the plasterer. He "scratches" and "browns" to the full thickness of the base coat, in one operation, quickly getting a true surface for a finish coat of even thickness and strength. He saves plaster, too, for these laths provide a natural bond with gypsum plaster, of great strength, and there are but few openings in the backing it builds. Add to the savings of application those of supporting construction due to its lighter load, and you can realize the worthwhile economy Certain-teed and Beaver Gypsum Lath can effect.

Specifications for Use in Fireproof Buildings

Note: Gypsum lath can be readily placed on any of the various types of solid or hollow metal stud walls or partitions and suspended ceilings.

Solid Partitions

Supports—Will be metal studs for solid partitions spaced 24½ in. on centers and anchored to flooring and ceiling, furnished and installed under another contract.

Note: If the above partition framing is to be included in this specification the above paragraph should be revised and should include the type of construction and the manufacturer's name.

Lathing—Shall be *Certain-teed* or *Beaver* gypsum lath (include sizes), erected on one side of studs only, and secured to metal studs by approved device specified by the manufacturer of studs used. Bottom row shall consist of alternate half and full size boards to provide for breaking of horizontal joints over entire wall. Metal clips shall be placed at middle of each horizontal joint separating boards not less than ¼ in.

Grounds—Will be furnished and wired to studs by the Carpenter, and of sufficient thickness to allow at least ½-in. thickness of plaster beyond face of lath.

Note: The furnishing and setting of the above grounds should be included in the specification for Carpenter Work.

Plastering—Gypsum lath shall not be wetted before plastering. First coat shall be thoroughly applied and the plaster worked well into the joints and the surface scratched or scored to provide a bond for the second coat.

Hollow Partitions

(Exceptions to above specifications as applied to hollow partitions.)

Note: Revise the various clauses of the above specification to include the requirements for a hollow partition construction.

Supports—Will be metal studs for hollow partitions.

Lathing—To be erected on each side of studs. Full and half size boards of bottom rows to match on opposite sides of studs. Steel cross braces to be fastened to opposite horizontal joint clips, if necessary.

Grounds—(As above.)

Plastering—(As above.)

Suspended Ceilings

(Exceptions to solid partition specifications as applied to suspended ceilings.)

Note: Revise the various clauses of the solid partition specification to include the requirements for a suspended ceiling construction.

Supports—Solid partition metal studs to be used as joists and suspended on hangers, embedded or otherwise anchored at intervals as specified by the manufacturer of metal used.

Lathing—(As on solid partition.)

Grounds—(None required.)

Plastering—(On undersurface as specified for solid partitions.)

Other Uses

Gypsum lath is a material easy to saw and nail; it is uniform in size and thickness; it will not burn; has superior heat, cold and sound insulating properties; is moistureproof and has remarkable strength. With all these advantages it fills many other requirements in the building field besides serving as an ideal plaster base.

As a sheathing for the frame building it adds strength to withstand building sway and settling, saves fuel in winter, keeps out heat in summer, and adds immeasurable fire protection. Also, the speed with which it is placed saves time in building.

It is used in large quantities for fire protection, being nailed direct to timbers; for building fire-stop partitions and ceilings and for lining closed spaces susceptible to fire.

Under flooring, it serves as an effective sound, heat, cold and fire insulation.

Under roofs and on attic walls it saves many dollars in fuel by preventing heat from escaping. It keeps out sun heat in summer and is excellent insurance against the spread of fire.

For poured gypsum roofs it is a part of an excellent type of construction. It serves as a base and as the poured gypsum bonds with it becomes an integral part of the roof.

For the factory where the underside of the roof is the ceiling, its fibre surface is clean, dustless and attractive, and adds heat and cold insulation to the gypsum of the roof itself.

SIMPLEX STEEL PRODUCTS CO.

Non-bearing Partitions and Suspended Ceilings

TELEPHONE
Lakeview 0395

1146 Roscoe Street
CHICAGO, ILL.

Product

The SIMPLEX SYSTEM of PARTITION and CEILING CONSTRUCTION.

The SIMPLEX SYSTEM
PARTITION AND CEILING CONSTRUCTION
"THE TIE THAT BINDS"
TRADE-MARK

The Simplex System

An effective and economical method of constructing fireproof and soundproof partitions (non-bearing) and suspended or furred ceilings.

Gypsum plaster board has long been recognized as a building and lathing material of considerable merit due to the fireproof qualities of the gypsum and excellent insulating qualities of both the gypsum and the paper surfacing on both sides of the plaster board.

Simplex studs are designed so as to furnish a continuous shoulder on which the plaster boards are securely fastened by No. 10 gauge wire pins 3 in. long. This method of attachment leaves an open joint between plaster boards and permits the plaster to key between the boards and through to the hollow space in the studs.

The prong (integral with the stud) and pin project less than ⅛ in. from the surface of the plaster boards, permitting the rapid application of plaster to the surface.

Advantages Offered by the Simplex System

(1) Fireproof—All materials entering into Simplex construction are *fireproof*—steel and gypsum—and constructions of this nature have been passed upon by underwriters and building departments of most principal cities.

(2) Soundproof—The Simplex hollow partition contains all the desirable elements for good insulation: (1) a complete air space; (2) gypsum in generous quantity, and (3) four thicknesses of paper, which excels all other materials for sound insulation.

(3) Light Weight—The hollow Simplex partition plastered (when dry) weighs 10 lb. per sq. ft. This is a saving of from 40 to 70% of the partition load as compared to the heavier built-up partitions.

This light weight permits economical structural designing and is particularly advantageous when designing buildings for light occupancy using steel or bar joists, or similar light and rapid construction.

(4) Saves Space—Because of the construction details and the method of erection, Simplex partitions save from 1 to 2½ in. in finished thickness with results equally as effective and satisfactory.

The following sizes carried in stock for immediate shipment. Other sizes made to order.

1¼-in. hollow studs for partitions to finish 3 in.
2¼-in. hollow studs for partitions to finish 4 in.
3 -in. hollow studs for partitions to finish 4¾ in.
4¼-in. hollow studs for partitions to finish 6 in.
6 -in. hollow studs for partitions to finish 8 in.

(5) Conceals Piping—Conduit and other piping is readily concealed in the hollow space and by using the proper size studs, piping as well as steel columns, etc., can be completely covered without patching or the use of other materials.

(6) Rigid Construction—In erecting Simplex partitions steel channel runners are used on the floor and ceiling. The studs are set upright in these runners. The result is, walls that are straight with all units securely fastened.

(7) Sanitary—Simplex partitions are plastered with gypsum (hardwall) plaster, resulting in a hard smooth finished surface, sealed at floor and ceiling with steel runners, insuring sanitation to the highest degree.

(8) Wood Grounds, etc.—Ground nailing blocks, strips, door bucks and other attachments are cared for so as to permit the utmost in economy with permanency assured.

(9) Economical—All units being large and light in weight, as well as low in cost, permits the completion of work at a saving in both time and expense.

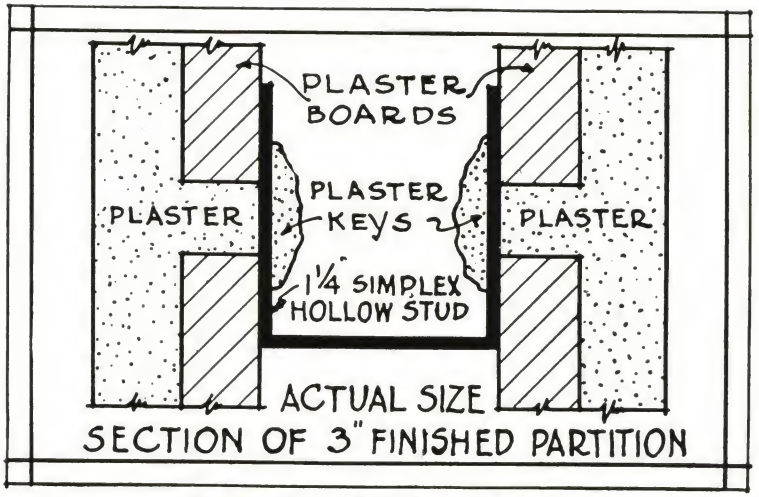
(10) Better Plastering—The nature of plaster board is such that it is most economical to use a rich mixture of gypsum plaster, with the result that a better quality of work, a more lasting and smoother surface are at all times assured.

(11) Salvage Value—The character of studs and fastenings permits the easy salvaging of studs and runners for re-use, with a minimum of waste and debris.

(12) Adaptability—The economical cost, rapid erection, simple details, light weight and the high quality of the materials used make Simplex construction the most logical for use where savings in time and cost as well as high grade construction are desired in such buildings as hotels, apartments, office buildings, schools, dormitories, hospitals, etc.

Details and Handbook

Full size and scale details showing economical and substantial methods of caring for such items as door bucks, grounds, carpet strips, blackboards, ironing boards, metal base, etc., have been prepared and will be sent on request with complete textbook.



Section of 3-inch Finished Partition

Specifications for Hollow Partitions

This contractor to erect hollow Simplex partitions where shown, using Simplex studs of the sizes shown on plans, anchoring channel runners to floor and ceiling, and setting studs upright on 24½-in. centers. Studs to be securely nailed to door bucks and nailed or wired to intersecting walls. Corner studs to be used where required.

After studs have been properly placed, attach ⅜x24x32-in. gypsum plaster board to each side of studs, using No. 10 wire pins secured in place by use of Simplex tying tool to hold boards securely against steel studs. Pins to be 6 in. or less apart.

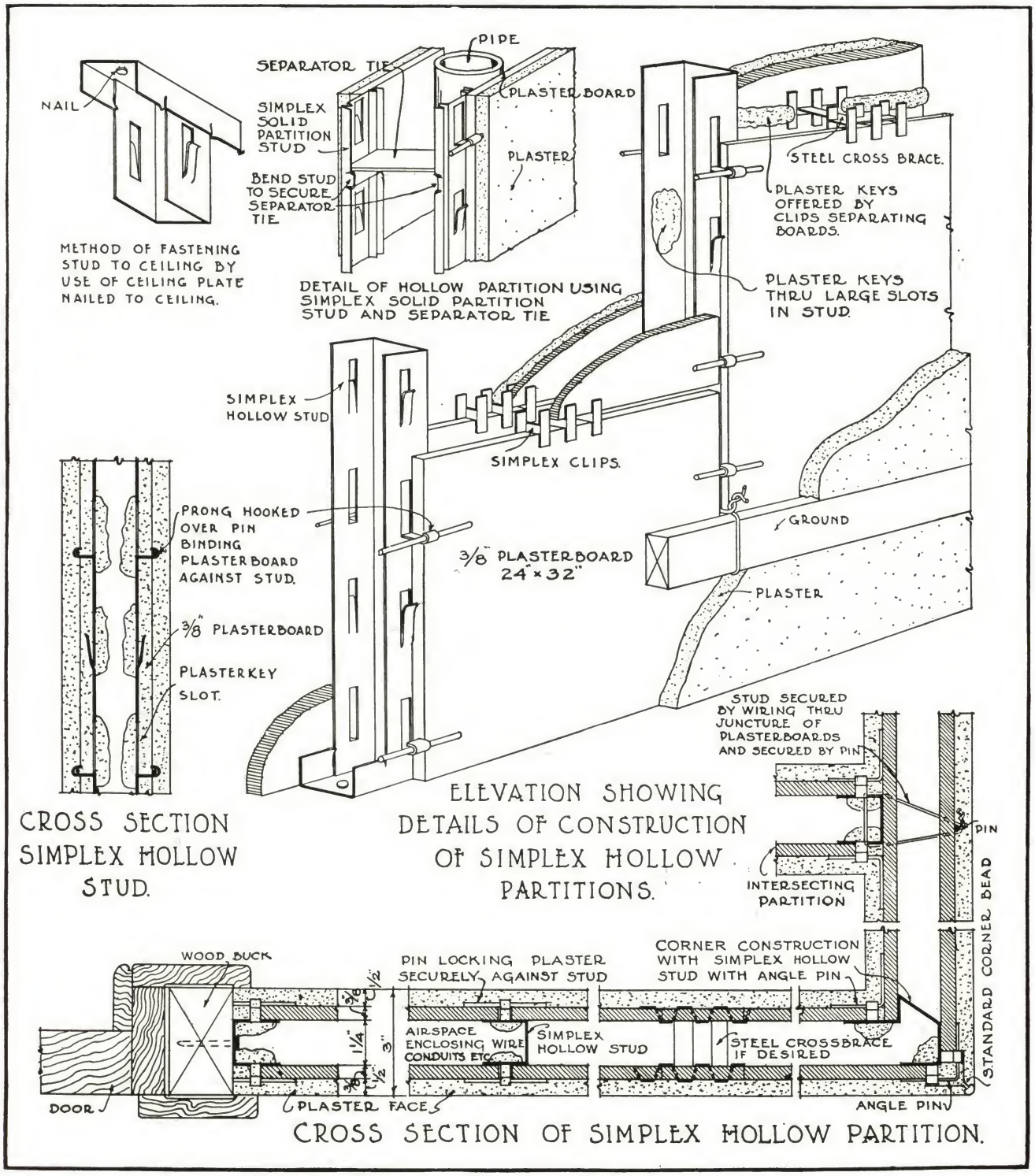
The bottom row of plaster boards shall be full and half size, alternated to give broken joints. In center of each horizontal joint furnish and place one Simplex cross clip to separate boards not less than ¼ in. for plaster key.

If more practical for wide partitions, two rows of studs may be used with plaster board attached to exposed sides only.

All exposed surfaces to be plastered in accordance with recommended specification of the Gypsum Industries.

Note: Suggested specifications detailing three methods of mixing and applying plaster to Simplex partitions and ceilings have been prepared and will be sent on request.

Simplex construction insures you of getting straighter, better walls at less cost and in less time, better plastering, smoother surface and faster work. They create harmony on the job, eliminate congestion and debris.



Details of Construction of Simplex Hollow Partitions

Specifications for Simplex Ceilings

This contractor to erect or attach all flat suspended or furred ceilings by the Simplex System.

Under Concrete Slabs or Joists—Wire hangers of No. 8 or 9 gauge to be inserted in concrete at time of pouring, on about 2-ft. centers both ways.

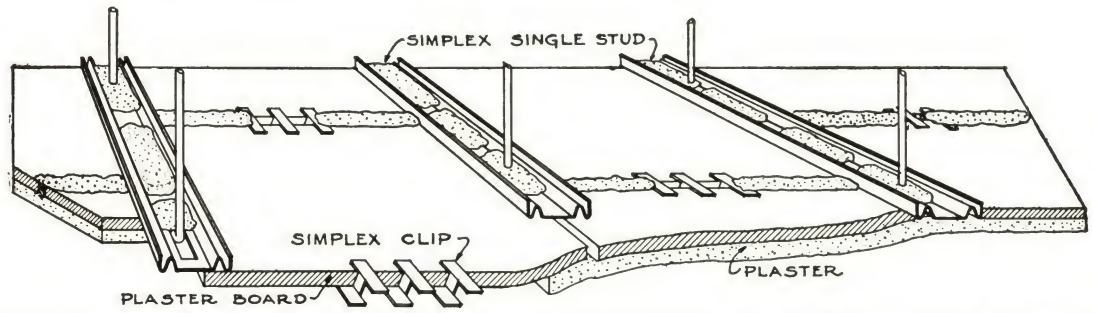
After hangers have been straightened and marked for height level, bend at right angles and tie around ¾-in. channel irons and cross furr under channel iron with Simplex ceiling runners set on 24½ to 24⅝-in. centers properly paralleled, using a double strand of No. 18 gauge tie wire. Cross tie on each channel. Where ceilings are to carry plank walk, gauge of hangers should be increased and channel irons should be 1½-in. instead of ¾-in.

Under Steel Joists—Where ceilings are attached to under side of steel joists, Simplex ceiling runners are to be attached immediately below joists, set on 24½ to 24⅝-in. centers, using Simplex steel joist clips for attaching.

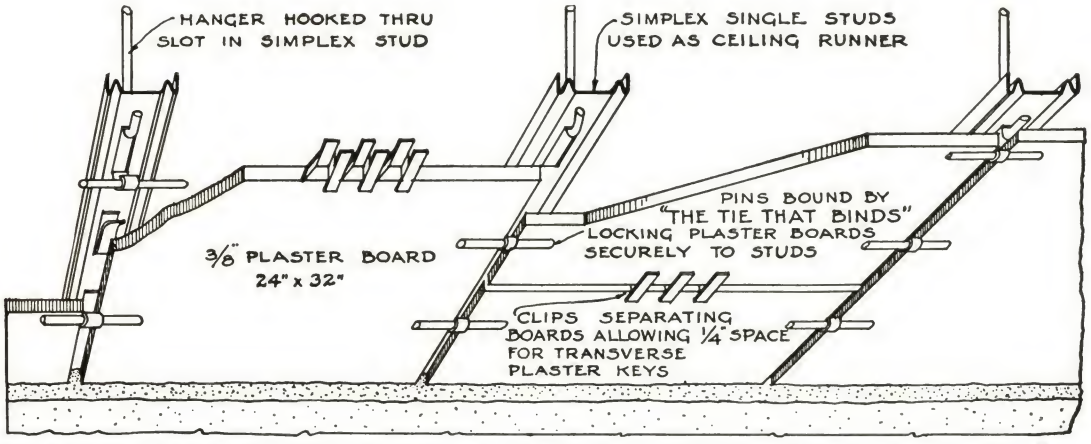
Under Steel Bar Joists—Where ceilings are attached to underside of bar joists, Simplex ceiling runners are to be tied to underside of joists transverse to joists, on 24½ to 24⅝-in. centers, using a double strand of No. 18 galvanized tie wire. Cross tie on each bar.

All Ceilings—After ceiling runners have been properly supported, attach ⅜x24x32-in. gypsum plaster boards, securing them to runners with 3-in. long wire pins, using Simplex tying tool to firmly lock pin in prong to hold board in place. Plaster board courses to be started with full and half size pieces alternated to provide broken joints. In center of each joint between plaster boards, place one Simplex cross clip to separate boards not less than ¼ in., which separation and slots in runners are to be used for plaster keys.

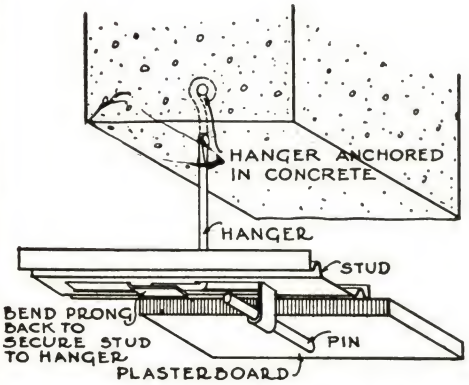
Note: For plastering specifications see Simplex Partitions.



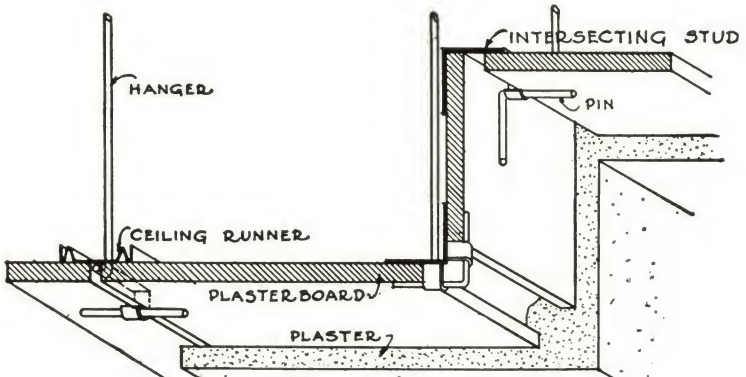
UPPER SURFACE OF SIMPLEX SUSPENDED CEILING SHOWING NETWORK OF PLASTER KEYS ALONG STUDS AND BETWEEN PLASTER BOARDS



PLASTERING SURFACE OF A SIMPLEX SUSPENDED CEILING



DETAIL OF METHOD OF FASTENING STUD TO HANGER



METHOD OF FURRING AROUND BEAMS OR PIPES IN CEILINGS

Details of Construction of Simplex Suspended Ceilings

HAMLIN CEMENT PRODUCTS, INC.

Commercial Avenue
GARDEN CITY, LONG ISLAND, N. Y.

Products

HAMLIN WATERPROOFED PORTLAND CEMENT STUCCO.
HAMLIN COLORED INTERIOR PLASTER.
HAMLIN PLASTIC PAINT for Interior Walls.
HAMLIN COLORED PORTLAND CEMENT PAINT (Waterproofing).



Guarantee

We guarantee all Hamlin Products to be of uniform quality—to contain the finest of materials—to be accurately proportioned and thoroughly compounded—this is your assurance of satisfaction.

HAMLIN PORTLAND CEMENT STUCCO OFFERS NO COMPROMISE WITH QUALITY

Hamlin stucco, while primarily an exterior stucco of the finest grade, is equally suitable for interior finishes over a portland cement, brick or unglazed tile base.

Of flintlike hardness and extreme durability, it is widely used where the finest stucco is demanded, such as fine residences and public buildings. Hundreds of such prominent buildings throughout the country stand as eloquent testimony to the unusual quality of Hamlin Stucco.

The required skill in manufacture is based upon many years' practical experience in laboratory and field, aided by researches and close relationship with scientists of national prominence in the portland cement industry.

Thoroughly Waterproof—

Water cannot penetrate a Hamlin Stucco surface applied according to specifications; as it excludes water, all destructive frost action is prevented and the permanence of the wall assured.

Color Selection—

Almost any conceivable shade is available. Permanent, non-fading mineral colors are used exclusively in the manufacture of Hamlin products, and color charts and samples of stucco will be cheerfully supplied to architects without obligation.

Also, complete details for tests, lists of prominent users and personnel of our directorate, etc., will be gladly mailed to any architect or builder.

How to Apply Hamlin Stucco

Scratch and Brown Coats—Shall be mixed in the proportions of 5 sacks of portland cement, one 50-lb. sack of hydrated lime and 16 cubic feet of clean sand.

Scratch Coat—Shall be troweled to a thickness of approximately ½ inch, heavily cross scratched. After it has set sufficiently (but not before 24 hours after application) it shall be kept moist by lightly sprinkling with a hose twice daily for one week.

Brown Coat—Shall be applied over scratch coat to an average thickness of ⅜ inch, troweled evenly and cross scratched somewhat more lightly than first or base coat. After setting (but not before 24 hours after applying) sprinkle with hose daily for one week.

Finish Coat—Shall be Hamlin Waterproof Stucco as it comes in the bag, of color and texture as specified by the architect. It shall not be applied sooner than one week after application of brown coat—and after setting (but not earlier than 24 hours after application) it shall be lightly sprayed with hose daily for one week. One ton of Hamlin finish coat will cover approximately 100 square yards.

Mortar Box Mixing for All Coats—Pour clean water into one end of mortar box and hoe mixture into it, a little at a time, until the entire mass is thoroughly mixed. Continue working with the hoe until proper consistency is obtained. Use same amount of water in each mix. Stucco should never be retempered.

Weather Protection—Colored finish coats shall be protected from rain, hot winds and driving storms with canvas tarpaulin for at least 24 hours after application.

HAMLIN COLORED KEENE'S CEMENT PLASTER

Hamlin Colored Plaster is particularly suited for auditoriums, and for wainscot work on public buildings where a wear resistant surface is required. Countless architects have learned through experience that not only does it make a beautiful and permanent interior wall, but its economy as contrasted with ordinary white coat plus decoration results in measurable savings to the owner.

Hamlin Plaster is composed of Best Brothers Keene's Cement, the purest of hydrated lime, permanent mineral coloring pigments, carefully graded aggregate, and two additional fireproof, chemically inert ingredients. This is then mill mixed and ground in the most modern equipment procurable.

In requesting samples, and also in writing specifications, be sure to specify whether a smooth or textured finish is desired, as different processes are used in the manufacture of the material, according to nature of finish desired.

Hamlin Colored Plaster is shipped in tough 95-lb. bags and after being mixed with clean water, according to directions, is ready to apply. Each bag contains sufficient material to cover from 7 to 15 square yards, depending upon texture and thickness.

Our laboratory can match any special color or shade.

Complete details, color chart and instructions on request.

ULTRATEX PLASTIC PAINT FOR INTERIOR WALLS

Ultratex Plastic Paint is a decorative medium of unlimited possibilities. It comes in powder form ready to be mixed with water and may be textured and glazed in an endless variety of antique and modern designs.

It may be brushed or troweled onto the wall—has a smooth velvetlike surface and is used and endorsed by leading decorators everywhere.

HAMLIN WATERPROOF PORTLAND CEMENT PAINT

This material is especially suitable for beautifying and waterproofing concrete swimming pools, cement block buildings, damp basement walls and old stucco surfaces.

Specifications and color samples supplied on request.

ARTSTONE PRODUCTS

INCORPORATED

Specialists in the Manufacture of Colored Finish Coat Materials

EXECUTIVE SALES OFFICE

52 Vanderbilt Avenue, NEW YORK, N. Y.

The Company and Its Products

ARTSTONE PRODUCTS, INC., is the largest independent manufacturer of colored finish coat materials in the United States. Each bag of material manufactured and sold represents more than thirty years of patient, scientific study of building materials both in the laboratory and in the field. Only the very best ingredients are used, mixed to carefully tested formulæ by modern scientific machinery under rigid, expert supervision.

The Company manufactures a complete line of finish coat materials in color for both exteriors and interiors. Various Artstone products are described in the following paragraphs.

ARTSTONE PRODUCTS
TRADE-MARK

Artstone Portland Cement Stucco

Artstone is a *true* portland cement stucco. It is a permanent material, beautiful in color and texture and *forever weatherproof*. Artstone is a complete material in itself, requiring only the addition of clean water for its application. Hazardous "home-mixing" of colors can be definitely eliminated with the use of Artstone, thus assuring the architect of absolute uniformity in color and in quality.

Artstone has stood the test of time and of all sorts of climatic conditions. In the south, west, north and east, in foreign countries, even in far-away Siam, Artstone has been used and stands supreme.

Artstone has been used economically and effectively on the exterior of thousands of important residences, churches, clubs, public buildings and on the interior walls and ceilings of swimming pool and shower rooms of hundreds of clubs and association buildings. Because of its highly water-repellent qualities, Artstone has been used for years as a surfacing material in color over poured concrete in public and private outdoor swimming pools.

American Concrete Institute Standards

Artstone is a quality product and, as such, has been consistently manufactured to even higher standards than those tentatively adopted by the American Concrete Institute. With Artstone, every effort is made to produce a stucco material of the utmost in quality. Its use is an insurance against the ravages of time and weather. Each Artstone job stands as a permanent testimonial of the architect's work and indicates forever his care in the selection of a lasting material.

Colors

There is animation to Artstone, its colors never fade or "die." The pigments used are absolutely permanent and are unaffected by weather, rain or the actinic rays of the sun.

The following list indicates the wide range of Artstone colors always available.

STANDARD ARTSTONE STOCK COLORS

53—Dark Buff	73—Pink Indiana Limestone
56—Snow White	95—Ivory Cream
58—Aligarh Buff Cream	99—Caenstone Color
59—Nepera Buff	102—Golden Yellow
60—Italian Travertine	106—Tappan Buff
62—Bedford Limestone Grey	114—Tawny Yellow
63—Old Rose	136—Fox Meadow Grey
64—Van Dyke Brown	142—Florentine Buff
67—Portland Stone	147—Norwalk Deep Cream
71—French Grey	246—Hollis Yellow

SPECIAL ARTSTONE STOCK COLORS

72—Yorkshire Stone	119—Raritan Brick Red
80—Boston Yellow	174—Parisian Blue
	201—Vernon Green

Note: Color and Textural Chart will be sent upon request.

Specifications for Artstone Portland Cement Stucco

Base Coats—There shall be two base coats: scratch and brown. Each shall be composed of one part grey portland cement and three parts clean, sharp, well-graded sand to which may be added, if desired, not more than eight (8) pounds of hydrated lime to each sack of portland cement used. Only water that is fit to drink shall be used in mixing.

The scratch and brown coat shall each be applied approximately ⅜ in. thick, making a total thickness of not less than ¾ in. Each base coat shall be troweled on hard and tight and, before it has set, cross-scratched to provide a mechanical key for the next coat.

Each base coat shall be kept damp for two days before the next coat is applied and then permitted to dry out for at least five days and, before the next coat is applied, the wall shall be evenly wet down to cut suction. All wetting down shall be done by means of a fog spray such as is obtained by the use of a garden attachment on hose.

Finish Coat—The finish coat shall be Artstone Portland Cement Stucco as manufactured by ARTSTONE PRODUCTS, INC., 52 Vanderbilt Avenue, New York, N. Y., color and texture to be selected by the architect.

Nothing but clean, drinkable water shall be mixed with Artstone. The Artstone finish coat shall be applied to a total average thickness of not less than ¼ in. A tight skim coat of Artstone shall first be troweled on, doubling up immediately for texture.

Curing—Twenty-four hours after the application of the finish coat the wall shall be dampened and shall then be kept damp for at least two days. A fog spray shall also be used for this work and the wall shall not be soaked down by means of an open hose at any time.

Note: During winter months, caution must be exercised in the application of the base coats and Artstone. Walls frozen or partially frozen are the cause of unsuccessful work—not the product. Close observation of weather conditions will insure uniformly perfect results. If perfect results are not obtained when application is made under bad weather conditions, it is solely because of improper selection of working days for which, of course, the manufacturer cannot assume responsibility. The use of a patent anti-freeze mixture is not recommended: responsibility for such use should be assumed by its manufacturer.

Prehydration Specifications—Prehydration of portland cement mixtures will eliminate shrinkage to a very large degree and whenever possible the architect should include in his specifications the following paragraph:

"Only sufficient water shall be added to permit the material to reach the consistency of damp earth. *Allow the mix to hydrate in this condition from one to two hours before tempering with additional water to reach the proper consistency for use or application."*

Prehydration must not be confused with re-tempering. Re-tempering is the addition of more water to a material which already has had enough. Re-tempering weakens the material whereas prehydration, properly conducted, strengthens it. Plasticity is also increased and when the water is measured for each mix color is unaffected. Prehydration is recommended for Artstone Stucco, Handball Plaster, Flooring and Mortar.

Coverage

Artstone is delivered to the job in 100-lb. bags ready for use after the addition of clean water. Each bag applied to an average thickness of ¼ in. over a true and level brown coat, lightly cross-scratched, will cover approximately 5 sq. yd. It is suggested that, in taking off quantities, the total yardage be divided by 5 to give number of bags required. If texture is to be a spatter dash, or other light finish, divided by 6 or 7; if a bag rubbed or heavily torn trowel texture, divide by 4.

Special Uses

Specifications for the use of Artstone for swimming pools, casting, running moulds and for all special purposes, will be sent upon request.

Distribution

All Artstone products are distributed over a wide geographical field by leading building supply dealers.

Write us for the nearest source of supply, stating requirements.

Tuckahoe Colored Interior Plaster

Tuckahoe is a colored interior wall finish that possesses a genuine Keene's cement base. It is extremely plastic and spreads like warm butter under the trowel. It is a complete product in itself requiring for use only the addition of clean water.

Tuckahoe produces a beautiful, colored, self-decorating, wear-resisting, sanitary surface that lasts indefinitely and can be readily cleaned. No paint, glaze or other wall treatment is required. Self-decorating, Tuckahoe is economical in first as well as last cost.

Tuckahoe has been in use for years in residences, housing developments, schools, churches, clubs and public buildings of all types. In the United States Military Academy at West Point, the Cuban Capitol at Havana and in hundreds of other prominent buildings, Tuckahoe has satisfied the most exacting demands.

Color and Textural Advantages—Smoky Buff Caenstone, Italian Travertine and any marked-off stone or tile effect may be easily simulated with Tuckahoe. Colonial fine felt float and pleasing polychrome and textural effects are as easily obtained. The material is adapted to an almost limitless variety of textures and some unusual and striking effects are possible with very little effort, and with Tint-Koat an almost endless combination of colors is possible.

The following indicates the range of Tuckahoe colors always available:

STANDARD TUCKAHOE STOCK COLORS

303—Smoky Buff Caenstone
304—Golden Yellow
306—Golden Tan
311—Coral Pink
331—Oyster Grey
342—Florentine Pink Buff
347—Deep Cream
356—Snow White
359—Travertine Buff
395—Ivory

SPECIAL TUCKAHOE STOCK COLORS

308—Pale Brown
319—Vernal Green
321—Light Orange
323—Green Gold
335—Robin's Egg Blue

Note: Color and Textural Chart will be sent on request.

Coverage—Tuckahoe is shipped in 100-lb. bags and has a coverage of from 100 to 300 sq. yds. to the ton depending upon the texture desired and the skill of the plasterer. Tuckahoe should be applied to an average thickness of ⅛ in. On this basis, one bag of Tuckahoe will cover 12 sq. yds. If the brown coat is uneven or the texture heavier than average, it is suggested that 9 or 10 sq. yds. to each bag be used in taking off quantities.

ARTSTONE PRODUCTS
TRADE-MARK

The Artstone Quality Line

Artstone
Portland Cement Stucco

Tuckahoe
Colored Interior Finish

Artstone
Textural Plastic Paint

Stoneite
Cement Paint

Audicoustone
Acoustical Plaster

Artstone
Mill-mixed Flooring

Chinawall
Colored Interior Plaster

Artstone
Plastic Marble

Artstone "700"
Handball Plaster

Mothite
Moth-repellent Plaster

Specifications for Tuckahoe Colored Interior Finish

Tuckahoe Colored Interior Finish shall be applied over the gypsum (lime or Keene's cement) brown coat on the walls and ceilings of (indicate).

Preparation of Base Coats—A good quality, well-graded, sharp sand, free from loam and organic matter, shall be used in the scratch and brown coats. Base coats shall not be oversanded.

The brown coat shall be broomed, lightly scratched or left rough under darby to provide a mechanical key for the finish coat. All loose particles and projections shall be removed to prevent showing through finish.

Note: Application of Tuckahoe is not recommended over a green brown coat. However, while the wall need not be bone dry, it should be hard and set. Generally, two or three days are ample but in poor drying weather a longer time should elapse. Exterior masonry walls should be furred or waterproofed before base coats are applied. Tuckahoe is not designed for application over hard white. For such use, see Artstone Tex (Textural Plastic Paint).

Finish Coat—The finish coat shall be Tuckahoe Colored Interior Finish as manufactured by ARTSTONE PRODUCTS, INC., 52 Vanderbilt Avenue, New York, N. Y., color and texture to be selected by the architect.

Note: Small metal mixing boxes should be used. The box should be raised at one end, the water placed in the lower end and the material in the upper end. Hoe material into water and permit to stand for at least 30 minutes. Then mix thoroughly, adding more water until proper consistency is reached. Whenever possible, material should be permitted to soak for two or three hours before it is used.

Application—Tuckahoe shall be applied to an average thickness of not less than ⅛ in. A tight skim coat shall be first troweled on and permitted to stand for a few minutes before doubling up for texture. If excessive suction is encountered, it may be cut by *uniformly* dampening down the base coat with clean water. A thorough dampening down with a light fog spray from a garden attachment on hose gives best results.

Note: Drafts from uncovered open windows in hot weather cause dryouts. This tends to weaken the material and, in some cases, causes an uneven color. On important work, the good old-time practice of tacking muslin or cheese cloth over all openings should be included in the specifications. If this is done, proper ventilation is secured and the plaster sets in a normal manner, neither too quickly nor too slowly.

During late fall, winter and early spring proper ventilation and artificial heat must be provided for the proper drying and setting of Tuckahoe as well as gypsum base coats.

Tint-Koat Polychrome Washes

Many beautiful and striking polychrome effects can be produced with the use of Tint-Koat. Tint-Koat is a semi-glaze and its use will not destroy the soft color value which is an inherent property of Tuckahoe. Tint-Koat is mixed with clean water and is thinly applied with sponge or calcimine brush after the Tuckahoe has set. All excess Tint-Koat is sponged off within a few minutes after application. After it has dried and set, Tint-Koat becomes a part of the wall and does not peel or flake off.

TINT-KOAT POLYCHROME WASHES

T-1—Brown
T-2—Travertine
T-3—Green
T-4—Yellow
T-5—Blue
T-6—Orange
T-7—Black
T-8—Buff
T-9—White
T-10—Red
T-11—Clear

Coverage of Tint-Koat—Tint-Koat comes in 1, 5 and 25-lb. packages; 1 lb. will make 1 gal. of material covering from 35 to 50 sq. yds. depending upon the texture and the water content used to regulate depth of color.

Note: Tint-Koat cannot be used as a paint. The material is only designed to produce multi-tone effects and has very little hiding power. Water content has an important bearing on depth of color, and if darker tones are required, less water should be used. Material should be stirred constantly while in use and all excess Tint-Koat should be sponged or wiped off within a short time after application.

Multi-tone effects are very easily produced with Tint-Koat and a little experimentation will produce the desired effect. Tint-Koat colors may be mixed with one another to produce other colors and white Tint-Koat may be used to lighten colors when necessary. Suction is best controlled by a thin application of clear Tint-Koat which should be permitted to dry out before colored Tint-Koat is applied. Tint-Koat can be used immediately after it is mixed and dries within an hour. Mix only sufficient Tint-Koat as will be used within six hours.

Other Artstone Products for Specific Purposes

Artstone "700" Handball Plaster—Familiarly known as the Artstone "700 line," Artstone Handball Plaster is a portland cement product designed for application in a smooth trowel finish for the walls and ceilings of handball, fives and squash courts, for gymnasiums and so forth.

Specifications are the same as for Artstone Stucco but the use of Artstone Handball Plaster for all three coats is particularly recommended for championship courts.

STANDARD COLORS OF ARTSTONE "700" HANDBALL PLASTERS

701—Light Grey
702—White
703—Ivory
704—Deep Cream
705—Red (for Fives and Squash Tennis Courts)

Artstone Plastic Marble—Artstone Plastic Marble is similar in composition to Artstone Stucco but with a different gradation of aggregate. Colors and specifications are the same as for Artstone Stucco.

An excellent material for wainscots in public buildings, Artstone Plastic Marble should be used wherever smooth washable interior surfaces in portland cement are required.

Artstone Mill-Mixed Flooring—A waterproofed portland cement product of tremendous strength, Artstone Mill-Mixed Flooring comes in six standard colors of great depth and beauty; Red, Green, Blue, Black, Brown and Golden Yellow.

Chinawall—An extremely hard and durable Keene's cement plaster for smooth trowel application. In white and five colors.

Stoneite—A waterproofed cement paint for masonry surfaces. In ten colors.

Brush-Koat—A waterproofed portland cement paint for application over extremely rough surfaces. In eight colors.

Artstone Tex—A textural plastic for application over almost any type of interior surface in old and new buildings. Artstone Tex is scientifically adjusted for brush, sponge or trowel application.

Mothite—A scientific moth repellent plastic material for application in closets, storage rooms, etc. Mothite gains its effectiveness from the characteristic yet pleasant odor which in combination with other moth repellent factors is the inherent property of the material. In cedar red color only.

Audicoustone—An acoustical plaster of high efficiency combined with ease of application. In a limited range of colors only.

CALIFORNIA STUCCO PRODUCTS CORPORATION

LOS ANGELES, CALIF. PHILADELPHIA, PA. PITTSBURGH, PA.

LICENSED MANUFACTURING DISTRIBUTORS

CAMBRIDGE, MASS., California Stucco Products Co., 4 Brattle St.
CARLSTADT, N. J., California Stucco Products Co., 11th and Division Sts.
CHICAGO, ILL., California Stucco Products Co. of Chicago, 74th Place and South Ashland Ave.
CINCINNATI, OHIO, California Stucco Products Co., 117 Sycamore St.
CLEVELAND, OHIO, Cleveland Gypsum Co., Builders Exchange Bldg.
COLUMBUS, OHIO, Columbus Builders Supply Co., 145 No. Front St.
HOUSTON, TEX., California Stucco Products Co., 903 Sampson St.
INDIANAPOLIS, IND., California Stucco Products Co., Troy Ave. at Pennsylvania R. R.
KANSAS CITY, MO., California Stucco Products Co., 2037 E. 19th St.
LOS ANGELES, CAL., California Stucco Products Co., 6135 So. Central Ave.
PHILADELPHIA, PA., California Stucco Products Co., 1316 Olive Street
PITTSBURGH, PA., General Cement Products Corp., 930 Grant Bldg.
PORTLAND, ORE., California Stucco Co., 210 Thompson St.
POTTSVILLE, PA., Pottsville Building Block Co.
ROCHESTER, N. Y., California Stucco Products Co., Inc., 1344 University Ave.
ST. LOUIS, MO., St. Louis Material & Supply Co., 314 No. Fourth St.
SALT LAKE CITY, UTAH, Utah Stucco Products Co., 907 Continental Bank Bldg.
SAN DIEGO, CAL., California Stucco Products Co., 536 L St.
SAN FRANCISCO, CAL., California Stucco Products Co., 340 Dore St.
SEATTLE, WASH., California Stucco Co., 4523 Shilshole Ave.
TOLEDO, OHIO, Toledo Plaster & Supply Co., Bancroft St. at Albion
VANCOUVER, B. C., Canadian Stucco Products, Ltd., Granville Island

CALIFORNIA STUCCO

A Material—a Method—and a Service

Products

EXTERIOR (PORTLAND CEMENT) STUCCO.

INTERIOR (KEENE'S CEMENT) COLORED PLASTER:

Travertine Plaster
Caenstone Plaster
Limestone Plaster

STUCOUSTIC (ACOUSTIC) PLASTER.
KROMWAX COLORED GLAZE.
STONITE INTERIOR SEALCOAT.

CALIFORNIA STUCCO
REG. U. S. PAT. OFF.

California Stucco for exterior and interior use is manufactured *only* by our authorized licensees from our original formulae and is sold under our trade-marks registered in the United States Patent Office.

General Information

California Stucco Products are manufactured by the above licensed manufacturers and are distributed through regular retail material dealers. Communication with the nearest licensed manufacturer will put you in touch with a local retail dealer.

National Service

Our material, method and service greatly assist the architect or builder in securing uniformly good results with the use of either Exterior or Interior California Stucco. Our service is available upon communication with one of our licensed manufacturers.

We maintain a national service organization with trained expert mechanics available to render any advice or assistance necessary to insure proper execution of stucco work.

Our engineers and decorators assist the designer to secure all the economies in the proper use of stucco. Experience gained on thousands of jobs under all conceivable climatic conditions, enables us to render the architect, the contractor and the owner a unique service.

Material

California Stucco for exterior and interior use and Stucoustic Plaster come to you complete in a sack, and require only the addition of water before application.

Stone material for exterior and for interior use is packed in the same way as regular Exterior and Interior California Stucco, and is mixed only with water before application.

Kromwax is applied as a glaze to produce a two-toned or multitoned wall over textured Interior California Stucco.

Stonite is a product applied with brush or spray to seal the surface of the wall, and render it impervious to the penetration of dirt or grease.



California Palace of the Legion of Honor, Finished in California Stucco, French Caenstone Texture. Erected 1922
GEORGE APPLEGARTH, Architect

EXTERIOR CALIFORNIA STUCCO

Materials and Mixes

Only materials and mixtures proven by years of successful use go into California Stucco.

Adaptability

Soft lines or clean cut detail, surfaces smooth or rugged, textures dignified or informal.



Sears, Roebuck Warehouse
NIMMONS, CARR & WRIGHT, Architects

Economy

Walls finished in a first class manner using a finish coat of California Stucco cost less than walls finished with many other standard building materials.

Color

Assurance that color selected in advance will be furnished. Additional material of the original color always available for additions or alterations. Color card showing a few standard colors will be mailed or samples of actual material will be made on request without obligation.

Permanence

All the permanence of superfine portland cement concrete *because* Exterior California Stucco *is* superfine portland cement concrete.

Combination of Colors

It is seldom desirable to use more than one color for exterior stucco. High lights and shadows generally produce two tones of a single color when the texture used is rugged or undulating. In special cases it may be desirable to blend two or more colors in the fresh plaster for accent.

Special treatments always require special consideration.

INTERIOR CALIFORNIA STUCCO

Materials

Interior California Stucco is colored plaster with a base of Keene's cement. It is applied as the third or finish coat of plaster over standard brands of hard wall brown coat, or a brown coat composed of a mixture of lime, sand and Keene's cement.

Economy

The cost of an interior finished with California Stucco is generally less than the cost of comparable finishes, such as plain plaster decorated to produce a similar effect.

Color

Practically any desired color from soft pastel tones to strong heavy colors for special use. All colors, of course, are permanent.

Beauty

All the beauty of individual hand rendering. Surface textures from glass-smooth to as rough as desired. Faithful reproduction of period plaster.

Maintenance

The surface is hard and resistant to abrasion. No painting required. Special treatments render California Stucco impervious to the penetration of dirt or grease.

Comparative Quality

Higher quality and more uniform materials are used than in ordinary white plaster finish.



Waiting Room, Union Pacific Station, Omaha, Neb.
GILBERT STANLEY UNDERWOOD, Architect

STUCOUSTIC (ACOUSTIC) PLASTER

Economy

Minimum cost per unit of sound absorbed.

Application

Applied to ordinary plaster brown coat in a thickness dependent on the required coefficient of absorption.

Appearance

Surface is stippled or may be finished in a variety of attractive textures.

Color

Six standard and a variety of colors for special requirements.

Efficiency

U. S. Bureau of Standards 1931 rating for ½-in. thickness over hard wall base coat:

Frequency	Coefficient of absorption
256	.14
512	.28
1024	.32
2048	.37

Higher efficiency available for other conditions. In general a lower efficiency and larger area gives better results. Data and samples to meet design requirements will be furnished.

EXTERIOR CALIFORNIA STUCCO SPECIFICATIONS

Exterior on Frame—Sheathed

Sheathing shall be covered with waterproof building paper weighing not less than 15 lb. per 100 sq. ft. and shall be applied in horizontal courses with each course overlapping the one below at least 4 in. Vertical joints shall overlap 16 in. The paper shall be held in place with large headed roofing nails. No wood strips shall be used in securing the building paper to the sheathing.

Metal Reinforcing—Metal for reinforcing of stucco shall be diamond mesh expanded metal cut from sheets not less than 18 gauge in thickness with openings not less than 1 in. x 2 in., nor greater than 1½ in. x 4 in. in size, and shall weigh not less than 1.8 lb. per sq. yd.; or welded wire fabric composed of wires not smaller than 18 gauge when used with openings not less than 1 in. square, nor greater than 1½ in. square, or with wires not smaller than 14 gauge, when used with openings not greater than 2 in. square.



First Church of Christ, Scientist, Wellesley, Mass.
ERNEST W. DEARING, Architect

Furring—Wood furring strips shall not be used. A metal furring device shall be used which will accurately hold the reinforcing in position not nearer than ¼ in. to the backing. Furring devices shall be spaced to accurately hold the metal taut and in position.

Base Coats—The first and second coats shall be mixed in the proportion of one 94-lb. bag of portland cement, 10 lb. of hydrated lime (one-fifth the volume of the portland cement), and *the equivalent of* 3 cu. ft. of *dry*, clean, sharp sand, graded from fine to coarse. Long fibre or goat hair may be added to the scratch coat over metal but is unnecessary in the brown coat.

All space between metal and paper shall be thoroughly filled with mortar and the surface heavily cross-scratched for bond.

The second coat shall be applied to a thickness of not less than ½ in. over the first coat, rodded straight and true in every direction. The surface shall be left slightly rough for bond with the finish coat.

Before beginning the application of the second coat or the finish coat, the surface of the first coat or the second coat, as the case may be, shall be uniformly sprayed with a hose to which a nozzle is attached, or with some other device which will throw a uniform fog spray. Under no circumstances shall the first or second coat be saturated with water.

Curing and Drying—The first, second and finish coats shall be wet down at the close of the day for at least three successive days following application.

The second coat shall not be applied before the seventh day following the application of the first coat.

The finish coat shall not be applied before the fourteenth day following the application of the second coat, a total of 21 days.

Note: These provisions are absolutely essential if good stucco work is to be secured. The wetting down or curing is necessary to properly hydrate and harden the cement. The drying time is necessary to secure proper suction and prevent the appearance of efflorescence (alkali) on the surface of the finish coat.

Monolithic Concrete Construction

The surface of the concrete shall be cleaned of all loose particles, laitance or grease used on the forms. The surface shall be dashed, using a special dash brush with a mortar of a "soupy" consistency, composed of 1 part portland cement and 1½ parts of clean, sharp sand. This shall be allowed to set thoroughly before the application of the first coat of mortar.

Note: Due to the fact that different materials have different suctions (different rates at which they absorb water), walls composed of brick, clay tile, concrete tile, cinder block or stone, or a combination of these materials, should always be finished with three-coat work, in order to prevent differences in color appearing in the finished wall. Failure to follow these recommendations may take the form of being able to see the position of the individual units after the application of the finish coat. Properly following these recommendations will prevent such a condition.

Masonry Construction Reinforcing—Reinforcing is not always necessary over masonry construction, but its use should be carefully considered and a specification written for each individual case. When used, reinforcing shall be as specified under Exterior Frame.

Base Coats—The same recommendations for scratch and brown coats shall be followed as for wood frame construction. A masonry wall shall be wet down, but not saturated, before the application of the first coat.

Third or Finish Coat for All Exterior Construction

The finish coat shall be Exterior California Stucco, manufactured by a licensed California Stucco manufacturer, and shall be delivered to the job in the original package bearing the trade-mark "California Stucco."

Notes: (1) Color and texture should be selected before bids are asked for, in order that the contractors may have an intelligent idea of the labor and material cost for the production of the selected texture.

(2) The local California Stucco Plants are ready to cooperate in the production of textures and assist in the selection of colors. Samples for a specific job will be made and delivered to the architect or builder prior to the time bids are received.

(3) Too much emphasis cannot be given to the provisions regarding accurate proportions, proper curing between coats and proper drying out before the application of succeeding coats. Following the application of the finish coat, wetting down each day for a period of two weeks will greatly assist in curing the stucco and in the production of a dense, hard non-absorbent concrete exterior.

INTERIOR CALIFORNIA STUCCO SPECIFICATIONS

Note: Interior California Stucco is a colored Keene's cement plaster and takes the place of the skim or white coat, or the sand finish, in ordinary plastered work. No further decoration is necessary. Interior California Stucco is applied over any base which would otherwise produce a satisfactory plaster job, properly applied metal lath of course being preferred.

Scratch and Brown Coats

Scratch and brown coats of plaster shall be any recognized brand of hard wall (patent) plaster mixed and sanded in manner and proportions recommended by the manufacturer, or lime and sand gauged with Keene's cement. Before applying finish coat of California Stucco, the brown shall be dry and show no wet spots.

Surface Preparation

The surface of the brown coat to which the finish coat of California Stucco is to be applied shall be true and straight in all directions and shall be free from all holes and depressions which will require the thickness of the finish coat to be more than $\frac{3}{32}$ in.

Finish Coat

Finish coat shall be Interior California Stucco, manufactured by a licensed manufacturer, and shall be delivered to the job in the original package bearing the trade-mark "California Stucco."

Note: Interior California Stucco is an extremely plastic material and should be applied in a thin, uniform coat or a succession of thin, uniform coats. Any holes in the brown coat which would produce a thickness of the finish coat greater than $\frac{3}{32}$ in. must be filled with gauged mortar prior to the application of the finish coat of stucco.

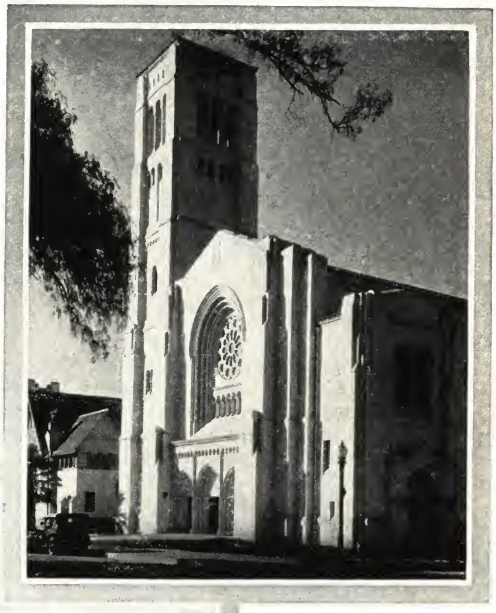
Before commencing the application of the finish coat, the surface of the brown coat shall be uniformly sprayed with a hose to which is attached a nozzle set to throw a fine fog spray. In the production of a textured wall, it is absolutely essential that suction of brown coat be uniform in order that uniform plasticity in finish coat may be maintained over all the wall.

Note: Texture samples will be prepared for the architect or builder before the taking of bids so that the contractors may have adequate knowledge of the cost of production of the selected texture.



Representative Examples of California Stucco Structures

The center illustration is one of the twenty-five California Stucco plants covering the country from coast to coast









ESTABLISHED 1897

THE AMERICAN HARD WALL PLASTER CO.

Manufacturers of Gypsum Wall Plasters and Blocks

GENERAL OFFICE AND MILL
UTICA, N. Y.

MINE AND MILL, OAKFIELD, N. Y.

Products



American Neat (Unsanded) Plaster.
American Wood Fiber Plaster.
American First Coat (Sanded) Plaster.
American Sanded Wood Fiber Plaster.
American Concrete Bonding Plaster.
American Putty Finish (White).
American Complete White Finish.
American Complete Grey Finish.
American Sand Float Finish.
American Colortex (a colored Plaster Finish).
American Stucco Kote (a Cement Stucco in colors).

American Hard Wall Plasters

American Hard Wall Plasters are manufactured from the best quality of gypsum rock from our own mine at Oakfield, New York. Our mill being equipped with the most modern machinery, a quality product is assured at all times. Prompt shipments can be made of any of the above plasters, as well as mixed carloads containing plaster of paris, finish hydrated lime, gypsum wall board, Keene's cement, plaster board, etc.

American Neat (Unsanded) Plaster—A fibered plaster to be mixed with clean sharp sand. Also manufactured with extra fiber for use on metal lath and without fiber for use on brick and tile walls and as a browning coat.

American Wood Fiber Plaster—Fibered with shredded wood. Can be used without the addition of sand, or, if desired, equal parts of clean sharp sand may be added. It is important that the wood fiber plaster be thoroughly mixed to avoid dry lumps.

American Concrete Bonding Plaster—Ready for use with the addition of water. Mix and let soak for about fifteen minutes. Then remix to proper consistency.

American First Coat (Sanded) Plaster—A sanded fibered plaster ready for use with the addition of water. Also manufactured with extra fiber for use on metal lath and without fiber for use on brick and tile walls and as a browning coat.

American Sanded Wood Fiber Plaster—Fibered with shredded wood and contains a small amount of carefully graded sand. Ready for use when mixed with clean water.

American Putty Finish—A hard white coat for finishing, requiring the addition of lime putty at the building. When using hydrated finishing lime for putty it should be soaked twenty-four hours, or longer. Putty made from lump lime should be cured for two weeks or longer before use, and must be thoroughly slaked. Add one part American Putty Finish to two parts lime putty by measure. Place putty and finish in opposite ends of mixing box, adding water to bring to proper consistency. Requires from one to one and one-half hours to set.

American Complete White Finish—Produces a white hard finish. Ready for use with the addition of water. Place finish in one end of box and water in other end, mix to proper consistency.

American Complete Grey Finish—Similar to the Complete White Finish above, but of a gray color. Suitable for walls requiring decoration.

American Sand Float Finish—Ready for use with the addition of water. Mix as directed for Complete White Finish. Finish walls with felt, cork or carpet float depending on coarseness desired.

American Colortex—A colored interior plaster finish, ready for use with addition of water only. Color card on request.

American Stucco Kote—A colored, waterproofed exterior cement stucco, ready for use with addition of water only. Color card on request.

Packages—American Plasters are furnished in 100-lb. burlap bags and 80-lb. paper sacks at option of customer.

General Directions and Requirements

Plaster must be kept in dry storage. Never on the ground or against damp walls.

In mixing, a clean, tight box, approximately, 3x6 feet should be used, raised about 4 inches on one end.

Mixing box to be thoroughly cleaned after each batch.

Only clean water free from alkali, salt or other impurities to be used.

Water in which tools are rinsed should never be used.

Tools to be kept clean.

Never mix one batch with another or attempt to retemper plaster after it has commenced to set.

Mix only a quantity which can be applied in one hour.

Should sand be added at the building, it must be clean, sharp sand, free from frost, loam, dirt, or other impurities and of good voidage. Avoid quicksand.

Plaster and sand to be thoroughly mixed dry to a uniform color before adding water.

Put plaster (or plaster and sand after being thoroughly mixed dry) in raised end of mixing box, water in other end, and hoe plaster into water slowly, mixing thoroughly. Mix thin at first, adding sufficient dry material to bring to proper consistency.

Specifications

Grounds—Wood lath ¾ inch. Metal lath ⅞ inch. Brick and tile ⅝ inch. Gypsum blocks ½ inch.

Wood Lath—Lath to be best obtainable, free from sap, bark, or knots, well nailed, joints broken every fifth lath with at least ¼-inch space at ends. They should be thoroughly soaked several hours before plastering, to absorb all the water possible. Apply plaster with sufficient pressure to obtain a good clinch. Screed, plumb, and leave back from face of grounds for finish coat. Do not float.

Metal Lath—Lath to be applied in accordance with manufacturer's directions. Apply plaster lightly—but with sufficient pressure to fill keys and cover lath with a thin coat of plaster, leaving rough to receive the second coat. When set, but before dry, apply second coat with strong pressure. Screed, plumb, and leave back from face of grounds for finish coat. Do not float.

Gypsum Blocks, Brick and Tile—Soak walls to reduce suction. Apply plaster with strong pressure. Screed, plumb, and leave back from face of grounds for finish coat. Do not float. In case walls are very uneven fill low spots first to prevent applying too heavy a coat at one time.

Concrete Surface—All concrete to be poured in forms using rought boards. All oil or dressed boards to be avoided. Concrete surface to be dry and free from dust, oil or efflorescence, before bonding plaster is applied. In case oil or grease should, through accident, show on the concrete surface, it must be burnt off with a torch and any efflorescence should be scrubbed off with a wire brush and a solution of muriatic acid, after which application the concrete should be thoroughly washed with clean water. Only water is to be added to the bonding plaster, which should be very thoroughly mixed. Do not apply any greater thickness of plaster than is absolutely necessary to bring work to a level surface.

ATLANTIC GYPSUM PRODUCTS COMPANY, INC.

Manufacturers and Distributors of a Complete Line of Gypsum and Related Building Products

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For Our Other Products, see Manufacturers' Index

ROCKWALL

(Reg. U. S. Pat. Off.)

TRADE-MARKS

Rockwall Gypsum Plasters

Since the earliest days of "hard" plaster, Rockwall Gypsum Plasters have been the choice of many leading architects for use in many of their finest buildings. Today Rockwall is better than ever. Improved machinery, frequent testing of each batch, and more than 40 years' experience in plaster manufacture insure a light, fluffy plaster, highly developed for easy working qualities, uniform set and greater spread.

Rockwall Gypsum Plasters are supplied in 100-lb. multiwall paper bags. The Rockwall trade-mark and directions for use are printed on the face of each bag.

Rockwall Neat Gypsum Plaster—A rich, easy spreading plaster, to be mixed with sand as directed, that can be depended upon for uniform set and great coverage. It makes a strong, white, good looking wall.



The Type of Bag Showing Identification Label

Rockwall Wood Fibre Plaster—A popular high grade plaster for one-coat work, carefully mixed with clean, tough wood fibre, flexible enough to stay well buried in the plaster. Only water need be added.

Rockwall Sanded Gypsum Plaster—A ready mixed, sanded plaster for use where clean, sharp sand is not obtainable. Ready for use when mixed with water.

Rockwall Concrete Bonding Plaster—A superior plaster for use on portland cement concrete surfaces, specially mixed and prepared to produce a strong bond where ordinary plaster would not stand up. To be mixed with water only.

Riverside Gauging and Moulding Plasters—A finely ground plaster, light and fluffy, very white. Makes an exceptionally hard, durable wall and is thoroughly dependable.

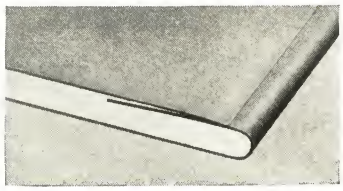
Rockwall Hydrated Finishing Lime—A high grade Ohio hydrated finishing lime, extremely white in color. It works easy, spreads far and does not pit. Supplied in 50-lb. paper bags.

Rockwall Hydrated Mason's Lime—A highly plastic building lime, excellent for use in cement mortar, on brickwork or for any purpose in place of old-fashioned lump lime. This lime has unusually great water carrying capacity. Supplied in 50-lb. paper bags.

Rockwall Gypsum Lath

Rockwall Gypsum Lath has every feature wanted in modern construction. The tough, smooth fibre surfacing (especially developed for Rockwall Lath) holds plaster with a bond so strong that the plaster cannot be pried loose without breaking the lath. The core is pure gypsum, light and strong. Edges are closed and the fibre surfacing is turned into the core a full inch to make the strongest possible nailing edge.

Rockwall Gypsum Lath makes strong, rigid, fire-safe walls and ceilings. It is easily applied, economical and permanent. Saves labor and plaster costs—no keys to make, no plaster lost between walls. Saves drying time since all the dampness is on the face of the lath—no saturated studs or boarding to dry out—no wet plaster back of the lath. Rockwall Gypsum Lath does not need to be wet before plastering. It makes a strong, smooth wall that does not shrink or warp. Rockwall Gypsum Lath is supplied, bundled and wrapped, 16 in. wide, 32 and 48 in. long—32 sq. ft. to the bundle.



Rockwall Gypsum Lath

Showing solid gypsum core, tough fibre covering, closed edge and reinforced nailing lap

Rockwall Gypsum Partition Tile

An ideal structural unit, light in weight, strong, durable and fireproof. An excellent plaster base, very adaptable, easily handled and laid in the wall. Can be easily cut with a saw for fitting around columns, beams, pipe chases, irregular surfaces, etc. Rockwall Gypsum Partition Tile fully meets the standard specifications for gypsum partition tile of the American Society for Testing Materials. Supplied in seven sizes 1½ in. split furring, 2 in. split furring, 2 in. solid, 3 in. solid, 3 in. hollow, 4 in. hollow, and 6 in. hollow. All thicknesses are 12 in. wide and 30 in. long.

Rockwall Metal Lath

A complete line of metal lath and metal plastering specialties. Every sheet of Rockwall Metal Lath is painted singly and baked dry—the sheets never stick together. Sheets are 27 in. wide—the "common sense" size. Saves time in erecting, requires fewer laps, and, as there are exactly 2 sq. yds. in each sheet, saves time in figuring and reduces chances of error. Supplied in sheets 27 in. wide, 96 in. long—10 sheets (20 sq. yds.) per bundle. All types can be supplied cut from galvanized steel or copper bearing steel sheets.

Quarries and Plants

The Atlantic Gypsum Products Company, Inc. controls and operates inexhaustible beds of the finest Nova Scotia gypsum rock, noted for its white color, strength and purity. Manufacturing plants are completely equipped with the most advanced and improved types of machinery, and are strategically located with respect to the source of raw material and the market for the finished products.

Direct Shipping Facilities

The location of our manufacturing plants makes possible prompt shipments to all points in the eastern section of the United States either by water, rail or truck.

Architectural Service

The Atlantic Gypsum Products Company, Inc. is ready at all times to co-operate with architects or their clients in any way possible regarding the application or use of any of its products. Manufacturing and distributing so many types of materials, we are in a position to make unbiased recommendations as to the products which will most satisfactorily meet your requirements.

Representative Rockwall Installations and Their Architects

New York, N. Y.

Lincoln Building, J. E. R. Carpenter, Architect
Hotel New Yorker, Sugarman & Berger, Architects
Bank of Manhattan, H. Craig Severance, Architect
Irving Trust Co., 1 Wall Street, Voorhees, Gmelin & Walker, Architects
Columbia University (18 Buildings), McKim, Mead & White, Architects

Boston, Mass

Boston Herald-Traveler Building, Henry Bailey Alden, Architect
North Station, B. & M. R. R., Funk & Wilcox, Architects
United Shoe Machinery Building, Parker, Thomas & Rice, Architects

Philadelphia, Pa.

Strawbridge & Clothier, Eighth and Market Streets, Simon & Simon, Architects
Aldine Trust Co., 20th and Chestnut Streets, Barthmaier & White, Architects

CERTAIN-TEED PRODUCTS CORPORATION

GYPSUM DIVISION

BEAVER AMERICAN CEMENT PLASTER DIVISION
ACME CEMENT PLASTER DIVISION
SOUTHERN DIVISION

Manufacturers of a Complete Line of Gypsum Plasters, Wall Board and Tile

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GYPSUM, OHIO

Products

"CERTAIN-TEED," "CERTAIN-TEED ACME," "SOUTHERN" and "BEAVER AMERICAN" GYPSUM PLASTERS, for base and finish coats.

"CERTAIN-TEED," "SATIN SPAR," "BLUE RAPIDS GAUGING," "SUNFLOWER MOLDING," "SUNFLOWER CASTING," etc., for special finishing, gauging and molding work.

For Our Other Products, see Manufacturers' Index

QUALITY, REPUTATION AND GUARANTEE

The CERTAIN-TEED PRODUCTS CORPORATION is one of the largest producers of gypsum products in the United States, having mills with modern equipment, strategically located at practically every gypsum producing center east of the Rocky Mountains.

Architects will find this line of plasters full and complete, and this company can at all times advantageously serve its trade in all principal markets with short hauls and low freight costs.

The plasters described on the following pages have a national reputation and meet every requirement of the American Society for Testing Materials as to quality, tensile and crushing strength, spreading and covering capacity, working qualities as well as fire resisting and endurance properties required by leading laboratories.

TRADE-MARKS

Guarantee

All the products listed and described herein are fully guaranteed as to quality. They will give the best results when used in accordance with the company's specifications.

GYPSUM PLASTERS—THEIR USE AND IDENTIFICATION

Many architects, builders, plastering contractors and general contractors of wide experience have shown a preference for *"Certain-teed" "Certain-teed Acme," "Southern,"* and *"Beaver American"* plasters wherever easy, economical spreading, uniform setting, hardness and durability of finished work, and other qualities of good plastering are desired to an exceptional degree.

For any type of building; for plastering over any approved plaster backing; for procuring any effect of finish; for any climatic conditions; for any local preference as to working characteristics, there is a *"Certain-teed," "Certain-teed Acme," "Southern,"* or *"Beaver American"* plaster whose superior fitness has been established by long experience.

Standardized Brands

The combined factory brands of the Certain-teed and Beaver divisions are numerous, and include many that are among the best known and the most popular in the trade, but irrespective of the brand, the same high standard of quality is maintained throughout the whole line.

Architects, builders, owners and plasterers may depend upon each product made in the Certain-teed-Beaver plants to give the most satisfactory results.

Containers and Weights

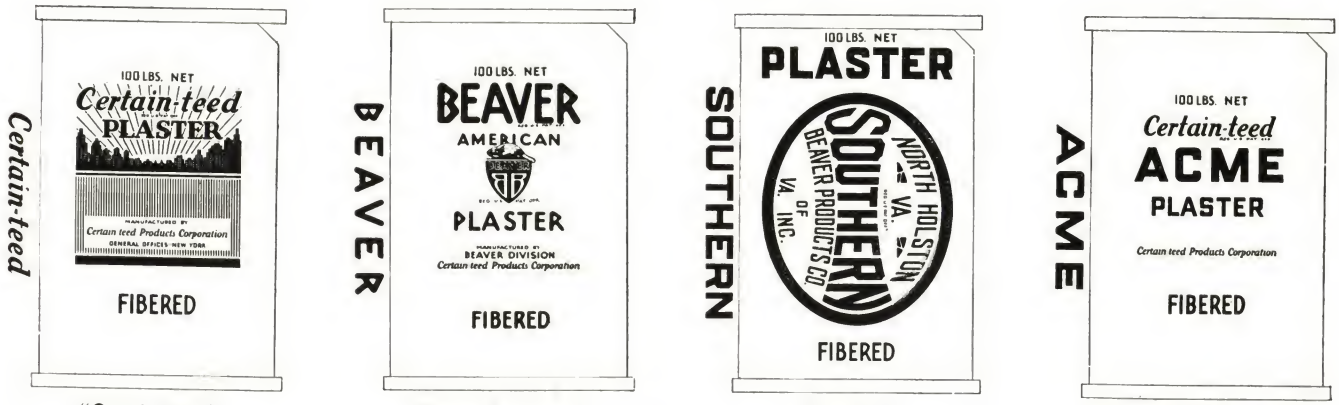
Our plasters are shipped in convenient containers, prominently labeled for identification.

Jute bags contain 100 lb. each (plaster and Keene's cement)—20 bags to the ton.

Paper bags contain 100 lb. each—20 bags to the ton. Also 80 lb. each—25 bags to the ton.

Wood barrels contain 235 lb. net—250 lb. gross—8 barrels to the ton. Wood kegs contain 115 lb. net—125 lb. gross—16 kegs to the ton.

Paper bags for lime contain 50 lb. each—40 bags to the ton.



"Certain-teed" "Beaver American" "Southern" "Certain-teed Acme"

Paper Bags in Which a Few of Our Well Known Brands of Gypsum Plasters Are Shipped

DESCRIPTION AND CLASSIFICATION OF CERTAIN-TEED GYPSUM PLASTERS

Gypsum Neat Plasters (Unsanded)

"Certain-teed," "Certain-teed Acme," "Southern," and *"Beaver American"* brands of gypsum neat plaster (sometimes called cement plaster or patent plaster) is the product of ground, calcined gypsum which is carefully selected and tested as to its plastering value, strength, hardness, resistance to heat and moisture, and other important physical and chemical properties. The word "neat," in connection with the name of the plaster, implies that the product, as shipped by the manufacturer, does not contain sand; the sand necessary is added at the building site.

These plasters are furnished with or without a small percentage of fiber. The fibered material is used for plastering on wood and metal lath, while the unfibered is usually used for plastering on brick, tile and similar solid surfaces. These plasters, with the addition of fine sand at the building site, are sometimes used for a sand float finish in place of lime putty. Any type of finishing coat may be used over the brown coat, including: Gypsum plaster finish, lime putty finish, sand float finish, Keene's cement finish, caen stone finish, etc.

Covering Capacity—The covering or spreading capacity of gypsum neat plaster depends to a large extent upon the quantity and quality of sand used, the character of base to which it is applied, and the thickness of the plaster coats. Under average circumstances gypsum neat plaster, mixed and applied in accordance with the specifications for same, and to the grounds specified will spread or cover about as follows:

One part of plaster to two parts of sand:
On gypsum lath—from 225 to 240 yards per ton.
On metal lath (expanded or wire)—from 105 to 135 yards per ton.
On wood lath—from 180 to 210 yards per ton.

One part of plaster to three parts of sand:
On gypsum tile—from 235 to 255 yards per ton.
On clay tile or brick—from 165 to 200 yards per ton.

Gypsum Ready-Sanded Plasters

"Certain-teed," "Certain-teed Acme," "Southern," and *"Beaver American"* brands of gypsum ready-sanded plaster (sometimes called prepared or sanded plaster) are the product of ground calcined gypsum which is carefully selected and tested as to its plastering value, strength, hardness, resistance to heat and moisture, and other important physical and chemical properties. The expression "ready-sanded," in connection with the name of the plaster, implies that the product, as shipped by the manufacturer, contains, intimately mixed, a suitable proportion of clean, sharp, dry sand, and that it is intended to be used without the admixture of additional sand at the building site.

Gypsum ready-sanded plaster, fibered or unfibered, is used for all of the purposes where a gypsum neat plaster with sand, fibered or unfibered, can be used. The fibered material is used for plastering on wood or metal lath, while the unfibered is usually used for plastering on brick, tile and similar solid surfaces. Gypsum ready-sanded plaster is especially desirable in

cases where a suitable grade of plastering sand cannot be economically procured, or during cold weather when local sand supplies are liable to contain frost.

Covering Capacity—The covering or spreading capacity of gypsum ready-sanded plaster depends to a large extent upon the character of the base to which it is applied, and the thickness of the plaster coats. Under average circumstances gypsum ready-sanded plaster, mixed and applied in accordance with specifications for same, and to the grounds specified, will spread or cover about as follows:

Plaster mixed with water only—no additional sand:
On gypsum lath—from 75 to 80 yards per ton.
On metal lath (expanded or wire)—from 35 to 45 yards per ton.
On wood lath—from 60 to 70 yards per ton.
On gypsum tile—from 65 to 70 yards per ton.
On clay tile or brick—from 45 to 55 yards per ton.

Gypsum Wood-Fibered Plasters

"Certain-teed," "Certain-teed Acme" and *"Beaver American"* brands of gypsum wood-fibered plaster are the product of ground calcined gypsum, which is carefully selected and tested as to its plastering value, strength, hardness, resistance to heat and moisture, and other important physical and chemical properties.

The expression "wood fibered," in connection with the name of the plaster, implies that the product as shipped by the manufacturer, contains, intimately mixed, a suitable amount of non-staining wood fiber made by the grinding or shredding of wood. When shipped this plaster contains no sand, and in general is intended to be used without the admixture of sand at the building site.

This plaster is extensively used where a high degree of fire resistance is necessary, and in some instances where sand of the desired quality is not easily obtained.

Note: Gypsum wood-fibered plaster *with but one part* of sand by weight can be used on gypsum and clay tile, brick and wood lath surfaces, and for the second (brown) coat upon gypsum lath and metal lath. It is important to bear in mind that the addition of sand to gypsum wood-fibered plaster will hasten its time of setting. *When it is intended to use sand the manufacturer should be advised so as to enable further retarding of this plaster at the mill before shipment.*

Covering Capacity—The covering or spreading capacity of gypsum wood-fibered plaster depends to a large extent upon the character of base to which it is applied, and the thickness of the plaster coats. Under average circumstances gypsum wood fibered plaster, mixed and applied in accordance with the foregoing specifications, and to the grounds specified, will spread or cover about as follows:

Plaster mixed with water only (no sand):
On gypsum lath—from 115 to 120 yards per ton.
On metal lath (expanded or wire)—from 55 to 65 yards per ton.
On wood lath—from 90 to 100 yards per ton.
On gypsum tile—from 90 to 105 yards per ton.
On clay tile or brick—from 75 to 85 yards per ton.

Bond Plaster for Concrete Surfaces

"Certain-teed" and *"Beaver American"* brands of bond plasters are made for direct application on interior concrete surfaces. Requires the addition of water only to prepare it for use, and its cohesive and adhesive properties make it an ideal plaster base and bonding coat on interior concrete surfaces.

Finishing Plasters

"Certain-teed" and *"Beaver American"* brands of prepared finish plasters are designated as *Sand Float, Smooth Trowel Finish,* and *Wainscot Finish.*

Sand Float—A prepared sanded finish to be used with the addition of water only.

Smooth Trowel Finish—A prepared finish to be used instead of ordinary lime putty finish. Ready for use with the addition of water only.

Wainscot Finish—This finish sets in from one to three hours when mixed with water only. On the job about 20 lb. of clean fine sand is generally mixed with 100 lb. of finish to improve its working quality. It is used for finishing wainscoting in kitchens, bath rooms, etc.

Covering Capacity—The covering or spreading capacity of gypsum finishes depends upon the condition of the surface or base coat of plaster to which the finishing coat is applied, and the thickness of the finishing coat. Under average circumstances gypsum finish plasters, mixed and applied in accordance with specifications, will spread or cover about as follows:

Gypsum Smooth Trowel Finish—from 350 to 400 yards per ton.

Gypsum Sand Float Finish—from 250 to 275 yards per ton.

Gauging Plasters for Lime Putty Finishes

"Certain-teed" and *"Beaver American"* brands of gauging plasters are made from carefully selected gypsum rock which is unexcelled for its purity and adaptability for manufacturing the highest grade finishing plaster. They are uniformly ground to the exact fineness for a finishing plaster to mix freely and quickly with lime putty.

Satin Spar Finish—This popular brand of gypsum plaster provides as fine a finish as is known to the plastering trade—a smooth, pure white, flawless surface of uniform texture. It is especially prepared for mixing with hydrated finishing lime on the job. One measure of dry finish to three measures of lime putty will set in about one-half hour; unless a particularly slow set is desired, retarder is unnecessary.

The natural, snowy-whiteness of Satin Spar Finish in itself forms a distinctive wall surface for hospitals, schools and all public buildings where an immaculate atmosphere and strictest sanitation are required.

Blue Rapids Gauging—This gypsum plaster furnishes the beautiful glasslike finish provided by Satin Spar Finish. These two plasters have practically the same high quality.

The only difference between these two plasters is that Blue Rapids Gauging Plaster usually requires retarder on the job—either commercial retarder or a small amount of retarded unfibered neat plaster should be added to obtain the desired set. For this reason it is preferred to the Satin Spar Finish in certain sections where the plasterers are accustomed to doing their own retarding of the lime putty finish.

Keene's Cement

A superior, pure white cement for high grade work, where an extremely hard material and very smooth surface are desired. Used on extra fine finished columns, pilasters, wainscoting, imitation tile bases, moldings, cornices, beading, figured cast work, etc.

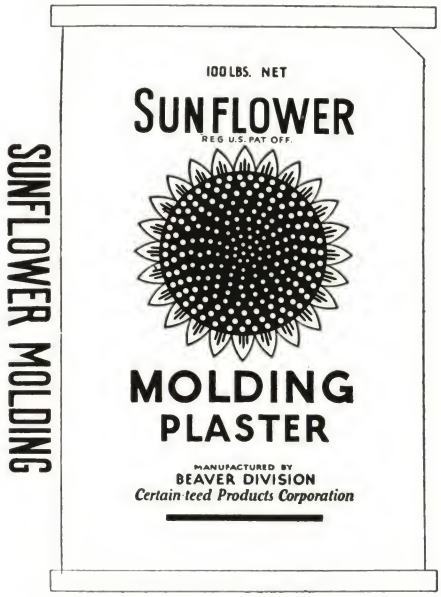
Also for high grade base-coat work, for plain plastering and finish. It can be troweled or floated to form any finish that may be desired.

SUNFLOWER MOLDING AND CASTING PLASTERS

Sunflower Molding Plaster

The architecture of many ages and many countries finds true and unerring expression through *"Certain-teed," "Certain-teed Acme," "Southern,"* and *"Beaver"* Sunflower Molding Plaster. This plaster has established a leading place as a decorative medium in architectural fields. Such distinctive, outstanding beautiful effects are obtained each year with this exceptionally fine plaster that the name "Sunflower Molding" has become famous among architects, contractors and workmen.

Sunflower Molding plaster is a smoothly working, pure white product, made from gypsum rock (98.5% pure), selected for its purity and ground exceedingly fine. This molding plaster obtains unusual qualities from a special process at the mill which insures that when mixed to plastering consistency it will result in a strong, hard, pure white plaster, setting in from 15 to 25 minutes on the job. When dry this plaster has a tensile strength of more than 350 lb., per sq. in., and a compressive strength of more than 2000 lb., per sq. in.



Sunflower Molding Plaster presents the added feature of economy. The water-carrying capacity of this product is so regulated that when the plaster is mixed at the usual plastering consistencies the wet bulk is several percentages greater—resulting in greater coverage and considerable economy to the user.

In hundreds of theaters and public auditoriums, hotels and palatial lobbies, and in other beautiful buildings throughout the country are found outstanding examples of plaster work achieved with Sunflower Molding Plaster. This gypsum plaster is used successfully for ornamental and run work, for marble setting, decorative relief work—and wherever a quick-setting, pure white plaster is desired.

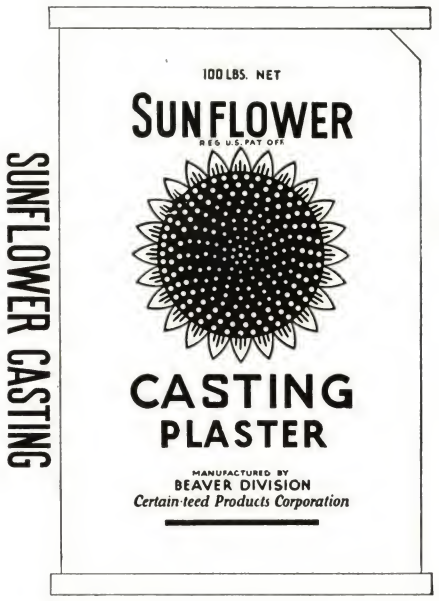
Sunflower Molding Plaster can also be mixed with finishing lime and in this way beautiful finishes may be obtained at much less than the usual cost.

Sunflower Casting Plaster

Sunflower Casting Plaster has special qualities which fit it for the making of molds, and for this purpose it is extensively used in many of the largest and best known casting shops, including statuary, decorators' supply houses, chinaware, sanitary ware, and many others. This plaster is finely ground, smooth and cool working, and is of normal set for calcined gypsum.

The purest, whitest gypsum rock—such as that used in producing Sunflower Molding Plaster—is ground extremely fine. It then undergoes an important process which enables the plaster to set to the densest and hardest cast possible to obtain, with the minimum of air holes.

Casts of varying thickness and tensile strength, that will satisfy the requirements of the largest casting shops, are easily made with Sunflower Casting Plaster. When mixed at ordinary plastering consistency, the dry cast will have a tensile strength of over 500 lb. per sq. in. and a compressive strength of over 2500 lb. per sq. in. Mixed at the thick, pouring consistency used in making the denser case molds, this plaster will develop a dry compressive strength of at least 2000 lb. If mixed to a thin pouring—such as the potter uses in making lighter, more porous dish molds—a dry tensile strength of at least 250 lb. will develop, and a compressive strength of at least 1600 lb.



Properly mixed and poured, the pure composition of this plaster and its special processing insure a smooth white product uniformly textured, free of large voids, and durable under extra long wear. The tests for hardness and strength met by Sunflower Casting Plaster have been equaled by only one other plaster on the market, and excelled by none. Furthermore, the heat generated during the set of other plasters may frequently melt the glue molds into which they are poured; whereas in the case of Sunflower Casting this heat is reduced to a minimum.

Sunflower Casting Plaster is used in many of the most important pottery and decorative supply houses throughout the country. It is highly satisfactory for making molds in the production of chinaware, terra cotta, porcelain, insulators, sanitary ware, metal castings, artificial stone, statuary, and hundreds of other articles. For many years, one of the most famous chinaware houses in this country has used Sunflower Casting Plaster exclusively in the making of their molds.

BASIC SPECIFICATION FOR LATHING AND PLASTERING

For the Lathing and Plastering of a Building of any Type of Construction—Using Certain-teed, Certain-teed Acme, Beaver American or Southern Neat Gypsum Plaster, to be Sanded at Building

Notes: This specification is arranged to cover an installation of plaster on all types of lath and masonry surfaces. After various paragraphs will be found interpolated notes—which offer information and suggestions. Notes included in ( ) refer directly to preceding paragraph.

Following this specification will be found general notes in explanation of various provisions of the specification which are referred to in the interpolated notes.

Alternate specifications are suggested and will be found in small type in [ ] inserted after the proper clauses or section of the main specification paragraphs.

Note for Specification Writer: When writing a specification for a project at hand it is only necessary to use the paragraphs that cover the type of construction contemplated. It may be necessary to slightly revise certain paragraphs to fit the individual requirements.

I. General

(a) The General Conditions of this specification are hereby made to constitute a part of the specification for Lathing and Plastering.

(See General Notes at end of specification, Pars. (e), (f) and (g).)

(b) The contractor for plastering shall furnish all materials, labor and scaffolding necessary to completely finish the building in accordance with the intent of the drawings and of the specifications.

(c) The contractor for plastering shall examine all walls, furring, partitions, ceilings, etc., and see that same are in every case secure, true, and plumb or level. He shall report any which are not so to the General Contractor for correction before proceeding to apply any lath, or plaster, on same. Failure to so report shall be taken as assumption of full responsibility for satisfactory conditions by the plastering contractor.

(For frame buildings all exterior and interior studding, all furring, joists, rafters, collar beams, etc., will, of course, be specified under Carpentry where it is assumed they will be required to be placed properly and on the centers mentioned under General Notes, paragraph (d)—namely: 16 in. for joists and studs and 24 in. for rafters and collar beams.)

II. Extent of Work and Exceptions

(a) Unless otherwise specified and indicated on the drawings, the entire interior of the building shall be lathed and plastered or plastered on masonry, as hereafter specified.

(If any plastering is to be included in an out building or elsewhere, it should be mentioned in Par. (a) unless to be separately contracted for.)

(The drawings should distinguish between furred and unfurred masonry and the specifications for Masonry, Carpentry, etc., should likewise provide for the furring or studding out where installed. See General Notes Par. (c). If there are no masonry walls to be plastered, strike out reference to same in Par. (a).)

(b) The plastering shall be the best three coat work on all lath and two coat elsewhere. The scratch and brown coats shall be carried down to the rough floor back of all bases, etc., and extended up on all walls of skylights, light wells, etc., unless otherwise provided under *Exceptions.* On ceilings or other surfaces where there are no grounds, the thickness of the lath and plaster shall equal the full thickness of the grounds specified for that lathing material.

(c) The wall surface in back of all tile wainscoting for walls shall be plastered with a scratch coat of cement mortar, consisting of 1 part Portland cement and 3 parts sand.

(In certain localities labor jurisdiction has allotted the scratch coat to the tile setters, in which case Par. (c) should be omitted. In this connection the "Basic Specification for Tilework" of the Associated Tile Manufacturers will be found very useful—2nd Edition 1924.)

(d) **Exceptions**—The only places not to be plastered are (list here locations) and all other spaces marked "not plastered" on the drawings (or, listed in schedule on drawings). No plastering will be required back of (list here such items as, marble, tile and brick wainscoting, etc.).

(In locations where the scratch coat in back of tile wainscoting or wall is conceded to the plasterers, the reference to tile in the list of exceptions should be omitted.)

III. Furring

Notes: For frame buildings the wood furring or wood suspended ceilings, to receive lath and plaster, should be included in the Specification for Carpenter Work.

For metal furring or metal suspended ceilings, see Standard Specifications issued by Associated Metal Lath Manufacturers, Inc., which cover all types of metal supports, furring, arches, beams, cornices and suspended ceiling construction. When the desired type of construction has been selected, the paragraphs should be inserted in this section of the Specification—(III Furring).

Masonry furring consisting of various types of hollow fireproof blocks or tiles, etc., is of course included in the specification for Mason Work.

IV. Lathing and Preparation of Surfaces

Wood Lath and Lathing

(a) Lath with wood lath all studs, joists, etc., and all wood furred masonry walls throughout all portions of the building specified to be plastered.

(In cases where any masonry is to be plastered direct or where exterior walls are entirely of frame, paragraph (a) above or in the specifications for "Gypsum Lath" or "Metal Lath" should be modified accordingly.)

(b) Wood lath shall be of good merchantable quality, non-staining, and free from loose knots. All lath shall be spaced not less than ¼ in. nor more than ⅜ in. apart and shall be laid at right angles to supports. All ends of lath shall have solid bearing and all lath shall be well nailed to each support with 3d lathing nails. A space of ¼ in. shall be left between abutting ends of lath. Joints shall be broken not more than every seven laths. No lath shall be carried through from one room to another.

(In some cases this specification for wood lath may not be considered sufficient and the architect should revise paragraph (b) in accordance with the Standard Grading Specifications issued by the Lumber Manufacturers Association functioning in the locality where the work is situated.)

(c) Over any heat pipes concealed in walls or partitions, furnish and install strips of gypsum lath at least ¼ in. thick or painted expanded metal lath or wire lath well secured, with good bearing, at nearest supports. Wherever any wood-lathed walls, partitions or ceilings abut unfurred masonry secure strips of painted expanded metal lath extending at least 8 in. on to wood lath and 8 in. on to masonry. Strips shall be cut from lath weighing not less than 2.5 lb. per sq. yd.

(In some localities it is customary to specify the lathing-in of heat pipes as a part of the heating contractors' work in which case provide accordingly and modify this paragraph. When gypsum lath or metal lath is specified, this paragraph should be stricken out.)

(d) Over the heating plant in basement and extending 3 ft. beyond the outlines of same, and of smoke pipe to wall, furnish and securely install gypsum lath ⅜ in. thick or painted expanded metal lath or galvanized wire lath weighing not less than 3.0 lb. per sq. yd.

(The Committee on Building Construction of the National Fire Protection Association recommend the protection of woodwork over heating apparatus and over fuel storage (other than anthracite). The above paragraph is suggested as a minimum.)

(e) (See note following.)

(For other uses of incombustible lath, if any are desired to replace wood lath in special locations, describe in this space.)

(f) All grounds for wood lath and lathing shall be three-quarters (¾ in.) inch thick and will be furnished and installed as specified under Carpentry. Thickness of grounds includes the thickness of the lath.

(Provisions for the furnishing and setting of all grounds should be made under Carpenter's Work.)

Gypsum Lath ("Plaster Board")

(a1) Lath with Gypsum Lath (Plaster Board) all studs, joists, etc., and all furred masonry throughout all portions of the building specified to be plastered.

(b1) All Gypsum Lath shall be Certain-teed or Beaver Gypsum Lath, ⅜ (or ¼, or ½) in. thick. Nailing edges shall have bearing not less than ⅞ in. on studs, joists, etc., with horizontal joints in walls and joints at right angles with ceiling joists broken at each board and with vertical joints on opposite sides of partitions not on the same studs. Nails shall be 3d or lathing wire nails, set not more than 6 in. apart into center joists and studs and 3 in. apart on edges of boards and shall be driven home. The center of the board shall be nailed first. The spaces between boards shall be well filled with mortar, either by pointing the joints with quick setting neat mortar before the first coat of plaster is applied, or by pressing mortar used for the first coat well into the joints when first coat is applied.

(c1) Wherever any gypsum lathed walls, partitions or ceilings abut unfurred masonry, secure strips of painted expanded

metal lath extending at least 8 in. on to gypsum lath and 8 in. on to masonry. Strips shall be cut from lath weighing not less than 2.5 lb. per sq. yd.

(d1) All ground for gypsum lath shall be seven-eights (⅞ in.) inch thick and will be furnished and installed as specified under Carpentry. Thickness of grounds includes the thickness of the lath.

(Provisions for the furnishing and setting of all grounds should be made under Carpenter's Work.)

Metal Lath

(a2) Lath with metal lath, all wood studs, joists, etc., back of all tile wainscoting (or, walls), and all furred masonry walls (or, all steel studs, beams, metal furring, metal suspended ceilings, etc.) throughout all portions of the building specified to be plastered, including all arches, beams, cornices, etc.

(b2) *For Walls, Furring and Partitions with Wood (or Steel) Supports Spaced 16 in. or Less on Centers.* Painted expanded metal lath weighing not less than 4.5 per sq. yd. shall be used.

For Ceilings with Wood Joists (or Wood Furring) (or Metal) Spaced 16 in. or Less on Centers. Painted expanded metal lath weighing not less than 3.0 lb. per sq. yd. shall be used.

For Ceilings with Wood Joists, Rafters or Collar Beams (or Wood Furring) (or Metal Furring) Spaced 24 in. on Centers. Painted expanded metal lath of the rib type weighing not less than 3.5 lb. per sq. yd. shall be used.

(c2) Metal lath shall be applied with the long dimension of the sheet across the supports. Sheets shall be lapped at sides not less than ½ in. and at ends not less than 1 in.

(d2) Sheets shall be attached to wood supports by not less than 6d nails or by 1¼ inch No. 14 gauge wire staples; either of these shall be driven to a penetration of not less than ⅞ in. and be spaced not to exceed 6 in. on centers. Nails shall be driven on a slant, alternating the slant of adjacent nails, and be bent over at least one strand of the lath.

Note: For fireproof building the following paragraph [d2a] *should be used instead of paragraph (d2).*

[d2a] Sheets shall be wired to all metal supports at intervals not exceeding 6 in., with not less than No. 18 gauge galvanized soft annealed wire.

(e2) All horizontal laps of sheets on sidewalls shall be tightly tied at least once between supports, and side laps on ceilings shall be tied twice between supports, with No. 18 gauge galvanized soft annealed wire.

End laps shall generally occur only over supports; if between supports, sheets shall be securely laced every 6 in. with wire just described. At internal angles the lath on one wall shall be extended on the adjoining wall not less than 15 in. beyond the corner (to the nearest support).

(f2) Wherever any walls, partitions or ceilings abut unfurred masonry the metal lath shall be extended at least 6 in. onto the masonry and be well secured at the edges into the joints.

(g2) All grounds for metal lath shall be three quarters (¾ in.) inch thick and will be furnished and installed as specified under Carpentry.

(Provisions for the furnishing and setting of all grounds should be made under Carpenter's Work.)

Other Lathing Backgrounds

Various types of woven wire lath, welded wire meshed materials and wood, with and without paper backgrounds, and other special patented lathing materials are on the market. No attempt is made to provide for these in this specification. When their use is considered, the manufacturer's data should be consulted.

Masonry Surfaces

Provision should be made under "Masons Work" for all joints to be rough struck in brick, hollow tile, gypsum or concrete block walls which are to be plastered direct.

(a3) The surfaces of all unfurred masonry to be plastered shall be brushed clean with a wire brush and shall be free from oil, grease, soot or projecting mortar.

(b3) Any low places shall be filled out and any unevenness of walls shall be straightened with unfibered plaster ahead of the base coat.

(c3) All grounds for brick, hollow tile and concrete block walls shall be five-eighths (⅝ in.) inch thick, and one-half (½ in.) inch thick for gypsum partition tile. Grounds will be furnished and installed as specified under Carpentry.

(When any of the masonry materials mentioned above are not to be used in the building being specified, the reference to same may be stricken out.)

V. Corners, Angles, etc.

(a) Furnish and securely set at all external or projecting angles a stiff galvanized metal corner bead, the same to run from top of base to ceilings, heads or beams, or to spring-lines in the case of any arches.

(If the architect's experience warrants a preference for any particular corner bead, its name can be inserted. If it is desired to have chamfered or rounded corners, strike out reference to corner beads and insert a new paragraph accordingly—and add the "cornerite" of metal lath mentioned in the following paragraph (b).)

(b) In all vertical internal or re-entrant angles and in all angles between ceilings, soffits, and walls, partitions or furring, lightly attach, over the wood lath, "cornerites" made from strips of painted expanded metal lath cut 12 in. wide from sheets weighing not less than 2.2 lb. per sq. yd. and bent into the shape of an "L" 6 in. on each side. "Cornerites" shall be fastened along each edge but shall not be fastened in the corner. All these angles shall be plastered square and straight.

(This reinforcement of angles by metal lath "cornerite" will tend to prevent or reduce cracks in the angles. When gypsum lath is specified, change the words "wood lath" to "gypsum lath." When metal lath is specified this paragraph should be stricken out.)

VI. Metal Base Screeds or Grounds, Picture Moulds, etc.

Notes: Special metal, base screeds, grounds, moulds, coves; complete metal bases with or without electric wire-ways; metal picture moulds, chair rails, door and window trim, etc. Where such items are desired they should be included in the proper trade specification as required by local trade jurisdictions.

Where the installation of any or all of the above products will cause special conditions or requirements in the plastering or lathing work, suitable paragraphs should be inserted in this section of the specification under a suitable heading.

VII. Materials and Mixing

Plaster

(a) All base plaster shall be Certain-teed or American Gypsum Neat Plaster and all finishing plaster shall be Certain-teed or American Gypsum Finishing or Gauging Plaster as manufactured by the CERTAIN-TEED PRODUCTS CORPORATION, or other plaster if approved in writing by the architect.

(If other than the types of Certain-teed or American plaster on which this specification is based are to be used modify Par. (a) accordingly.)

Sand

(b) All sand for base coats shall be clean and sharp, free from alkali, salt or quicksand, and from objectionable amounts of loam or clay and shall be graded from fine to coarse, and when dry all shall pass a No. 4 sieve, not more than 10% by weight shall be retained on a No. 8 sieve, not more than 80% nor less than 15% by weight shall be retained on a No. 30 sieve, not more than 95% nor less than 70% by weight shall be retained on a No. 50 sieve, and not less than 95% by weight shall be retained on a No. 100 sieve. These sieves shall meet the specifications given in the Bureau of Standards' Standard Screen Scale (see American Society for Testing Materials, Specifications for Gypsum Plastering Sand, Serial Designation C35-30).

(If any sand float finish is to be included (see Finishing Coat, Pars. VIII (b5) and (b5a)) the sand for same should be specified in Par. above.)

Mixing

(c) All plaster shall be mixed with clean water in clean, tight boxes and in accordance with best local practice, the intent of these specifications, and the directions of the maker on file in the office of the architect.

(Mixing and the importance of clean water and directions of the maker are of vital importance to good work.)

VIII. Proportions and Application

The specification below is for plaster of the regular thickness of the grounds applied in three coats.

In some parts of the country and under certain conditions, plaster is applied to the thickness of the grounds in two coats. Provision is therefore made at the end of this section VIII for such plastering under the heading "Two-coat Work."

Base Plaster on Wood Lath

(a) First or Scratch Coat shall be one part fibered plaster, to not more than two parts, by weight, of dry sand.

(b) Wood lath shall be thoroughly wetted 12 to 24 hours before plastering is started. First coat shall be applied with sufficient pressure to fill all spaces between lath and obtain good key, leaving a light coat over the lath and the surface shall be scratched or scored to provide a bond for the second coat.

(c) *Second or Browning Coat* shall be one part plaster, fibered or unfibered, to not more than three parts, by weight, of dry sand.

(d) Second coat shall be applied when the first coat is set firm and hard but before it is dry. Second coat shall be applied with strong pressure and straightened to a true even plane. The surface shall be broomed or otherwise roughened to receive the finishing coat.

On Gypsum Lath

(a1) *First or Scratch Coat*—(Same as Par. (a) above for Wood Lath).

(b1) The boards shall not be wetted before plaster is applied. First coat shall be thoroughly applied and the plaster worked well into the joints and the surface shall be scratched or scored to provide a bond for the second coat.

(c1) *Second or Browning Coat*—(Same as Par. (c) above).

(d1) Second coat shall be applied when the first coat is set firm and hard but before it is dry. Second coat shall be straightened, keeping back sufficiently from the grounds to allow for finishing coat and the surface shall be broomed or otherwise roughened to receive the finishing coat.

On Metal Lath

(a2) *First or Scratch Coat*—(Same as Par. (a) above for Wood Lath).

(b2) First coat shall be applied with sufficient pressure to fill all meshes and obtain good key, leaving a light coat of plaster over the lath and the surface shall be scratched or scored to provide a bond for the second coat.

(c2) *Second or Browning Coat*—(Same as Par. (c) above for Wood Lath).

(d2) Second coat shall be applied when the first coat is set firm and hard but before it is dry. Second coat shall be applied with strong pressure and straightened, keeping back sufficiently from the grounds to allow for finishing coat and the surface shall be broomed or otherwise roughened to receive the finishing coat.

Base Plaster on Masonry

(a3) *Base Coat* shall be one part plaster, unfibered, to not more than three parts, by weight, of dry sand.

(b3) The surface of all unfurred brick, hollow tile or concrete block walls shall be wetted before plastering is begun when necessary to kill excessive suction. The plaster shall be applied to a thickness of ⅝ in. beyond the wall face in two operations. A thin layer shall first be applied with strong pressure to secure a good bond and shall be followed immediately with a second layer which shall be straightened to a true, even plane. The surface shall be broomed or otherwise roughened to receive the finishing coat.

(Provision is not made in the above specification for plastering on rubble masonry or on poured concrete. The first it is presumed will never be done without furring and the latter is covered in the following paragraphs.)

Base Plaster on Poured Concrete

All concrete surfaces which are to be plastered, should be put in condition to receive and retain the plaster coats.

(a4) All concrete surfaces to be plastered shall be treated as follows: Remove with a wire brush all dust and loose particles. Grease, oil or efflorescence shall be washed off with a solution of one part of commercial muriatic acid to four parts of water, and the surface so treated, washed again with clean water.

(b4) Smooth and dense surfaces shall be hacked so as to provide a rough base or background for the plaster. Plastering upon smooth concrete surfaces, which are first covered with so-called waterproof paints or compounds will not be allowed.

(c4) *Base Coat* shall be Certain-teed or American Bond Plaster used neat with only the addition of water. The base coat shall consist of one or more thin coats sufficient to straighten the walls and ceilings. It shall be applied with great pressure and shall be heavily scored and allowed to set hard before applying the second coat.

(If Bond Plaster is to be used as specified above, revise Par. VII (a) to include the name of manufacturer and brand.)

(d4) *Second or Browning Coat*—(Same as Par. VIII (c)).

(e4) (Same as Par. VIII (d).)

Finishing Coat

(a5) *Smooth White Finish* shall be one measure of dry gauging plaster or gypsum finishing plaster to not more than three measures of finishing lime putty thoroughly and uniformly mixed. If lump lime is used it must be perfectly slaked. Hydrated lime should be soaked for 24 hours before using.

If it is desired, a prepared gypsum finishing plaster may be used for the smooth white finishing coat in which case substitute the following paragraph and revise Par. VII (a) accordingly.

[a5a] *Smooth White Finish* shall be Prepared Gypsum Finishing Plaster mixed to the proper consistency with clean water only.

(b5) Finishing coat shall be applied throughout the building except behind base and any place under *Exceptions* in Par. II (d) and shall be smooth white finish troweled to a dense true surface.

Note: If "Sand Float Finish" is desired in some locations instead of "Smooth White" add the following paragraph after, at end of Par. (b5), noting the exceptions and giving the locations.

[b5a] *Sand Float Finish* shall be four measures Gypsum Cement Plaster unfibered, one measure of perfectly slaked fresh burned plasterers' lump lime putty or standard finishing hydrated lime and five measures of clean sharp sand. A prepared sand float finish may be used. This requires only the addition of water.

(c5) (See note following.)

Note: This specification does not contemplate that colored, textural or special effects will be required as a finish in any portion of this building. If so, insert here the required paragraphs giving the location and description.

(d5) Finishing coat shall be applied when the base coat is set firm and hard and nearly dry. The surface of the base coat shall be sprinkled with water before the finish coat is applied when necessary to kill excessive suction.

(e5) All finishing coats throughout shall be applied and finished in the most workmanlike manner and shall be left plumb or level and true and even planed, free from trowel marks, blotches and without joints showing.

(f5) All finished plastering shall be protected from wind until set. In freezing weather, the contractor shall arrange with the General Contractor that plastering shall be protected from frost until set hard and thoroughly dry.

(In windy hot dry weather openings should be screened but not closed. In all clear weather after plastering has set, doors and windows should be kept open as fully as possible.)

Two-coat Work

For cautionary notes regarding "Two-coat Work" and its undesirability on certain backgrounds read the following:

Circular No. 151 of the Bureau of Standards entitled "Wall Plaster, Its Ingredients, Preparation and Properties" states in part regarding two-coat work:

" 'Doubled-up', 'laid-off', or 'laid-on' work, as it is variously called in different localities, means the application of the scratch and brown coats together, or at least without permitting the usual time to elapse between them. The scratch coat is applied in the way specified above, but it is not permitted to harden, nor is its surface scratched. The application of the brown coat is started immediately after finishing the application of the scratch coat. This method is obviously cheaper than straight three-coat work, but certain precautions are essential to its successful use. The brown coat must be applied before the hardening of the scratch coat has progressed far enough to produce a glazed surface. The backing must be sufficiently rigid of itself that it will not yield under pressure of the trowel, and will not sag under the weight of the combined coats. If it deflects to any appreciable extent, the keys which hold the scratch coat to it will probably be broken, and if it sags, it will be found extremely difficult to bring the brown coat out to a true plane surface. For these reasons, doubled-up work shall not be applied to metal lath. Its use on wood is not recommended, particularly if the plaster is to be ⅞ in. thick. On masonry backings the use of doubled-up work is largely a question of application—if the plasterer succeeds in making the plaster stick and is able to form a true and plane surface, the work will be satisfactory. This depends on the thickness of the plaster and the nature of the backing. It is difficult to apply a doubled-up coat of a thickness greater than ⅝ in. The great suction exerted by gypsum tile makes the application of doubled-up work easy; on clay tile it is almost impossible."

Two-coat Work on Wood Lath

If "two-coat work" on wood lath is desired, specify as follows substituting the proper paragraphs as noted.

(a6) (Same as Par. VIII (a).)

(b6) Wood lath shall be thoroughly wetted 12 to 24 hours before plastering is started. Base coat shall be applied in two operations—a thin layer of plaster shall first be applied with sufficient pressure to fill all spaces between lath and obtain a good key and shall be followed immediately with a second layer which shall be straightened to a true even plane. The surface shall be broomed or otherwise roughened to receive the finishing coat.

(c6) *Finishing Coat*—(Same as Pars. VIII (a5) to (f5)).

Two-coat Work on Gypsum Lath

For two-coat work on "Gypsum Lath" specify as follows substituting the proper paragraphs as noted:

(a7) (Same as Par. VIII (a).)

(b7) The boards shall not be wetted before plaster is applied. Base coat shall be applied in two operations—a thin layer of plaster shall first be spread under pressure over the boards and the plaster worked well into the joints. This shall be immediately followed with a second layer which shall be straightened to a true and even plane keeping back sufficiently from the grounds to allow for the finishing coat. The surface shall be broomed or otherwise roughened to receive the finishing coat.

(c7) *Finishing Coat*—(Same as Pars. VIII (a5) to (f5).)

Two-coat Work on Masonry

(a8) For two-coat work on brick, hollow tile or concrete block walls, same as Pars. VIII (a3) and (b3).

(b8) *Finishing Coat*—(Same as Pars. VIII (a5) to (f5).)

IX. Arches, Beams, Cornices, Moldings, etc.

(a) Wherever any arches, beam effects, corbels, etc., are indicated on the drawings, the same shall be fully formed with plaster in strict accordance with detailed drawings. All to have sharp arrises.

(If arches, beams, etc., are to be included, they will, of course, be specified to be built or formed by the Carpenter for wood frame construction. If not they should be built of metal lath and fully described in Par. IV (a2). If more ornamental features are intended, amplify. If not to have sharp arrises, change to chamfering or rounding.)

(b) Wherever any cornices, mouldings or other ornamental plastering features are shown or indicated on the drawings, they shall be run straight and true, as detailed, with Certain-teed or American Moulding and Casting Plaster, or may be precast, securely set and anchored without joints showing. All mouldings and lines shall make true intersections and be neatly mitered at angles. The girths of cornices and sizes of moulds shall be as follows:

(Here allocate and describe) .....

(If no cornices, mouldings, etc., are to be included, strike out this section in specification. If to be included, and if large enough in girth or size to require forms, mention the same for cornices, beams, etc., in Carpenter's Work or Metal Furring and Lather's Work.)

X. (Blank Heading)

(This space is suggested so that the architect may include provisions for plastering of window jambs or reveals where not of wood, any special plastering or finishing in toilet rooms, bathrooms, kitchens or laundries, etc., the plastering of any out building, any "waterproofing," etc., and clauses regarding guarantee or conduct of work or such other special items as may apply to the particular structure in hand which are not provided for under other headings.)

XI. Patching and Completion

(a) The contractor for plastering shall at all times keep the premises clean of loose mortar and rubbish resulting from his work and shall neatly patch or otherwise make good any damaged plaster after the various trades have left the building.

(It has been found in practice and as a matter of justice that both patching and waste can be avoided if provision is made for the plastering contractor to be paid for patching by the trade causing the damage. This paragraph can be amplified as desired by the architect to conform to his experience or trade custom of the locality.)

(b) The whole of the work shall be completed to the satisfaction of the architect and all shall be left perfectly straight, true and level or plumb, free from waves, cracks, blisters and defects of any kind, or be replaced until it is.

XII. Stucco

(If any exterior plastering is to be done, here enumerate and describe.)

(For exterior plastering, or Stucco, the Specifications for Lime Stucco of the National Lime Association and for Cement Stucco of the Portland Cement Association will be found very useful.)

General Notes Regarding the Provisions of the Preceding Basic Specification

(a) This specification, if used as herein given, will provide for all lathing and plastering required to make a complete interior "job" in a building of any type of construction, as follows:

Furring Lath—Wood throughout, except over heating pipes, heater, etc. Metal furring and lath throughout.

Corners—Metal corner beads.

Angles—Metal lath strips, or "cornerites."

Masonry Walls—Furred and unfurred.

Base Coat Plaster on Lath—

First Coat—Certain-teed, Certain-teed Acme, Beaver American or Southern Neat Gypsum Plaster, fibered.

Second Coat—Certain-teed, Certain-teed Acme, Beaver American or Southern Neat Gypsum Plaster, unfibered.

Base Coat Plaster on Unfurred Masonry—One coat Certain-teed, Certain-teed Acme, Beaver American or Southern Neat Gypsum Plaster, unfibered (in two applications).

Base Coat Plaster on Poured Concrete—Certain-teed, Certain-teed Acme, Beaver American or Southern Bond Plaster.

Sand—As specified, added to scratch coat or base coat plaster at the site.

Finishing Coat—

Smooth White Finish—Certain-teed, Certain-teed Acme, Beaver American or Southern Finish, or Satin Spar Finish or Blue Rapids Gauging Plaster used with lime putty, or Prepared Gypsum Finishing Plaster.

Sand Float and Trowel Finishes—Certain-teed, Certain-teed Acme, Beaver American or Southern Sand Float, Sand Float Finish—Gypsite, or Wainscot Finish.

(b) It has been the aim to so prepare this specification as to include all items which might be required in any kind of a building and yet to eliminate in-so-far as possible all extraneous matter from the specification proper. Through this means and the interpolated notes it is hoped that the time in research and writing required of the architect and in examination by the plastering contractor will be reduced to a minimum. To carry out this idea and to make possible the reference to it as a standard to be followed, the Basic-Specification definitely calls for certain materials and finishes, as listed above. To meet conditions when these provisions do not apply, specifications for plaster board, now better known as gypsum lath, and for metal lath and for various types of plaster finishes are included, also interpolated notes so that the architect may rewrite into his own specification those paragraphs descriptive of the work he desires to incorporate in the particular building at hand.

(c) It is the intent of the compilers of this specification and notes to suggest that which they cannot cause to be a requirement, namely; that the interior of all exterior masonry walls be furred with either fireproof tile blocks or wood furring according to type of construction. In a wood frame building the masonry of interior chimneys and fireplace backs, etc., should be studded out and that chimney breasts, etc., be studded out or furred. The drawings of the architect and the provisions in his specification under Carpentry, Masonry and Metal Work or Fireproofing will control such feature.

(d) In this specification for lathing and plastering it is assumed that the joists and studding—and the furring strips in the case of masonry walls—and the fireproof tile furring blocks, etc.—will be specified elsewhere in the architect's specification under the proper trade and will be satisfactorily and securely placed. Any wood rafters and collar beams, where plastering occurs, are assumed to be set 24 in. o.c., and floor joists and studding, set 16 in. o.c.

(e) This specification does not include General Conditions (except by reference) or items relative to administrative matters such as usually form the first part of an architect's specification. In such items would be included fire, compensation, liability or other insurance, watchman service, if any, and the use of hoists, water, telephone, temporary heat and light, and storage, etc.

(f) Attention is called to this fact in order that, in the absence of an Architect's General Conditions pro-rating such items, the plastering contractor may arrange for the proper disposition of them with the owner when the contract is direct or with the GENERAL CONTRACTOR when his status is that of a sub-contractor.

(g) The use of the "General Conditions" and other Standard Documents of the American Institute of Architects is recommended to architects and plastering contractors and to the latter especially, the "Standard Form of Sub-Contract," a form of agreement between the General Contractor and the Sub-contractor. The items mentioned in the two preceding paragraphs are, however, only covered in a general way in the "Standard Form" of the A.I.A.

STRUCTURAL GYPSUM CORPORATION

Manufacturers of Gypsteel Gypsum Plasters

GENERAL OFFICES AND FACTORY

LINDEN, N. J.

NEW YORK OFFICE, 535 Fifth Avenue
BRANCH OFFICES IN THE PRINCIPAL EASTERN CITIES

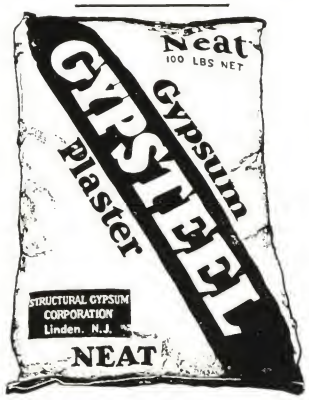
Products

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For Gypsteel Gypsum Partition Tile, and Gypsteel Pre-cast Roofs and Floors, see Manufacturers' Index.

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The central location of our plant at Linden, N. J., in the New York Metropolitan Area, makes rapid and prompt deliveries to all parts of that area possible. Gypsteel Plasters are delivered by truck within fifty miles of New York, N. Y., the morning following the receipt of orders. Deliveries to points beyond are made by rail.



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Gypsteel Gypsum Plasters are supplied for all uses—Neat, Sanded, Woodfibred, Gauging, Moulding, Bond Coat for application to concrete, Colored Finishing Plasters and Finishing and Masons Hydrated Limes.

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The STRUCTURAL GYPSUM CORPORATION is glad to consult with the architect, owner or contractor on any special plastering problem. Our long experience as gypsum manufacturers enables us to offer co-operation and service of a creative and constructive character.

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Quality

Gypsteel is a gypsum plaster made by a process in which the purity of the gypsum is at all times under complete control, thereby guaranteeing a purer, more uniform product.

The Gypsteel Process, representing a great improvement in the manufacture of gypsum plasters, is used only by the STRUCTURAL GYPSUM CORPORATION, among plaster manufacturers. It is unique and patented.

The exclusive Gypsteel Process of making gypsum results in a product of great purity and uniform quality. One batch of gypsum made by our process is just the same as another, for *it does not depend for its uniformity upon the percentage of gypsum found in gypsum rock in nature,* which varies greatly.

The great purity of Gypsteel Gypsum Plasters and their absolute uniformity impart unusual qualities of strength and plasticity.

Identification

All Gypsteel Gypsum Plasters are shipped in strong paper bags or jute sacks marked with a large diagonal green stripe for easy identification. Unless otherwise specified all shipments are made in paper bags. These afford ample protection in ordinary usage against breakage or damage from moisture.

Advantages of Gypsteel Gypsum Plasters

(1) **Great Slip and Spread**—The high purity of the gypsum imparts to Gypsteel Gypsum Plaster great spread and easy working qualities.

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Some Outstanding Gypsteel Plaster Jobs

New York, N. Y.

BUILDING	ARCHITECT	PLASTERING CONTRACTOR
Empire State Building	Shreve, Lamb & Harmon	Martin Conroy & Sons, Inc.
Standard Oil Building Addition, 26 Broadway	Shreve, Lamb & Harmon	H. W. Miller, Inc.
Hotel Carlyle, 76th to 77th Streets and Madison Avenue	Rosario Candela	Frank Morell Co.
Apartment, 1040 Fifth Avenue	Rosario Candela	Frank Morell Co.
895 Park Avenue	Sloan & Robertson	P. J. Durcan
Apartment, 21 E. 79th Street	Van Wart & Wein	C. H. Meyn, Inc.
Apartment, 133 E. 80th Street	Peabody, Wilson & Brown	Klee-Thompson Co.
New York Trust Co., Fifth Avenue and 57th Street	Cross & Cross	Architectural Plastering Co.
N. Y. County Trust Building, 14th Street and 8th Avenue	Wm. Whitehill	Duffy Bros.
Barbizon Hotel, 58th Street and 6th Avenue	Murgatroyd & Ogden	Volpe Plastering Co.
Hotel Edison, 47th Street and Broadway	Herbert Krapp	P. J. Durcan
1100 Park Avenue Apartment Hotel	DePace & Justen	Parisi & Gagliano
Chatham & Phenix Bank in Lincoln Building	L. S. Weeks	H. W. Miller, Inc.
Salisbury Hotel	Jardine, Hill & Murdock	Circle Plastering Co.
River House, 52nd to 53rd Street and East River	Bottomley, Wagner & White	Duffy Bros.
Telephone Building, 6th Avenue and Church Streets	Voorhees, Gmelin & Walker	Duffy Bros.
R. C. A. Tower, 50th to 51st Streets and Lexington Avenue	Cross & Cross	H. W. Miller, Inc.
Lenox Hill Hospital	Hegeman-Harris Co.	Frank Morell, Inc.
National Red Cross Building, 38th Street and Lexington Avenue	Delano & Aldrich	Owen Evans & Co.
Nelson Tower, 7th Avenue, 34th to 35th Streets	H. Craig Severance	Jas. Conroy & Son

Other Cities

Peekskill High School, Peekskill, N. Y.	Wilson Potter	Joseph Cuddihy
Knoll Club, Boonton, N. J.	Starrett & Van Vleck	Dittman & Co.
Pelham Memorial High School, Pelham, N. Y.	Tooker & Marsh; Hart & Shape; Wm. B. Ittner Asso.	Johnson & Miller
American Insurance Building, Newark, N. J.	J. H. & W. C. Ely	Duffy Bros.
The Lexington, Forest Hills, N. Y.	Theo. Englehardt	John Comolli & Co.
Medical Center, Jersey City, N. J.	John T. Rowland	Edw. DeForge
Princeton University, Dickinson Hall, Mathematics Building	Chas. G. Klauder	Matthews Const. Co.
New State Normal College, Hillwood Lakes, Trenton, N. J.	Guilbert & Bettelle	Jas. Morris, Inc.
Church of the Holy Child, Philadelphia, Pa.	Geo. I. Lovatt	Anstedt & Regan
Market Street National Bank, Philadelphia, Pa.	Ritter & Shay	Wm. Armstrong & Sons
Loughran Apartments, Philadelphia, Pa.	Carl F. Otto	Miller Plastering Co.

Gypsteel Gypsum Plasters

Gypsteel Neat Plaster

Requires addition of sand on the job. Most economical on large operations where a good clean sharp sand is available. Is well fibered for scratch or brown coats over wood lath, metal lath, brick or gypsum and clay surfaces. May be supplied unfibered when desired.

When mixed according to directions, one ton with sand added will cover as much surface as three tons of ready sanded plaster.

Specifications—Grounds should be ¾ in. for two coat work and ⅞ in. for three coat work.

Wood Lath—Good quality and free from sap, bark and knots, spaced about ⅜ in. apart, joints broken every seventh lath. Lath should be wet before application of plaster. Use two parts of sand to one part of plaster by weight. Lath should be well nailed and ¼ in. allowed between ends.

On Plasterboard—Do not wet board. Plastering to be three coats. Scratch coat should be allowed to set before application of brown mortar. Plaster to be ½ in. thickness. All angles and base should be straightened ready to receive finish.

On Metal Lath—Apply a light scratch coat to cover lath and fill meshes. After the scratch coat has set firmly but before it is dry apply the second coat and bring to straight and even surface with rod and darby ready to receive the finish coat.

Gypsum Tile, Brick or Clay Tile—Spray dry walls to reduce suction. Use three parts sand to one part of plaster by weight. Apply sufficient material to fill out to grounds.

Mixing—The dry plaster and sand should be thoroughly mixed before adding water, then mix with sufficient water to make the mortar plastic.

Gypsteel Bond Plaster

A material especially manufactured for application to interior concrete ceilings and walls. Gypsteel Bond insures the greatest adhesion to concrete surfaces. Used with the addition of water only. Walls must be clean and free from dust, oils or efflorescence. It is advisable to clean the concrete surface with a weak solution of muriatic acid, using a wire brush.

Grounds to be of sufficient thickness to bring to a true and even surface—usually ¼ in. Dries to a light gray surface, ready for application of white finish coat or it can be finished by troweling to its natural gray color.

Gypsteel Sanded Plaster

Is ready for use with addition of water only. Sand is clean and sharp, assuring a mortar that is smooth and easily worked. Especially recommended in localities where good sand is not available at reasonable prices.

For use on wood lath, metal lath, gypsum tile, brick or clay tile.

Specifications—Grounds and lathing to be same as neat plaster.

Directions for Mixing—Nothing is to be added to sanded plaster but water and under no circumstances will the contractor be allowed to add more sand. Plaster is placed at one end of mortar box, then hoe material into water mixing thoroughly; work to proper consistency for application.

Application—Apply same as specified for neat plaster.

Gypsteel Wood-Fibered Plaster

Contains finely shredded wood fiber giving the plaster toughness, flexibility and bulk. Spreads easily and is especially suitable for two coat work. Comes ready to apply with the addition of water only. If desired, equal parts of good clean sand may be added at the job. Wood-fibered plaster is more bulky than other grades and will cover a slightly greater area.

Specifications—Grounds and lathing same as for neat plaster. Is to be used with or without sand. If sand is added at the job it will accelerate its set, consequently, the mill should be notified how the material is to be used so that proper retardation can be made.

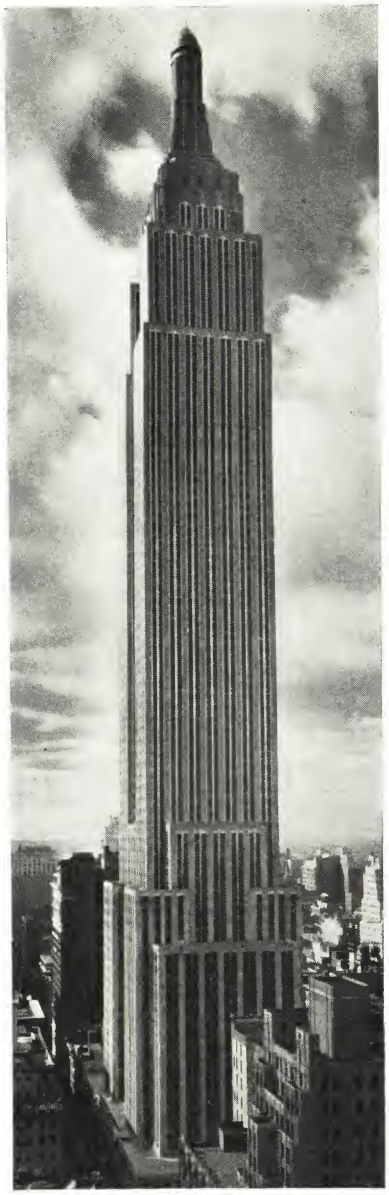
Plasterboard—Do not wet board. Plaster should be applied not less than ⅜ in. thickness for best results, giving total grounds of ¾ to ⅞ in. May be left rough to receive finish, or troweled smooth to a gray finish.

On Wood Lath—Lath should be thoroughly wet before application of plaster. First apply a thin coat of mortar and before it sets follow with sufficient material to fill out to grounds. Where wood-fibered plaster is to be troweled down for a smooth finish it should be used without addition of sand, otherwise surface should be left rough to receive finishing coat. If a finish is to be applied, scratch or broom the wood-fiber plaster well before it sets.

On Wire and Metal Lath—Apply the mortar a little stiff and scratch a thin coat on the lath. After this has set hard apply a second coat, rough or broomed to receive the finish.

For Brick or Clay Tile—Mix equal parts, by weight, of plaster and clean sharp sand applying material in usual way.

Mixing—Wood-fibered plaster should be placed in upper end of mixing box and hoe plaster in water and allowed to soak for approximately ten minutes. Mix thoroughly to right consistency. As indicated above, when sand is added material must be specially retarded.



Empire State Building, New York, N. Y.
A Gypsteel Plaster Job Throughout
Photo by Techni-Photo, New York, N. Y.

Gypsteel Gauging Plaster

Is manufactured from selected gypsum. It is cool and smooth working and has uniform setting qualities.

For Trowel Finish—Mix approximately three parts of lime putty, by measure, with one part of dry gauging plaster; equal to two parts of dry hydrated lime and one part of dry gauging plaster, by weight. Mix thoroughly and apply in the usual manner.

Gypsteel Moulding Plaster

Is an exceptionally high grade and finely ground material. Possesses cool working qualities and assures a clean sharp definition in finished cast.

Gypsteel Prepared Finishes (In Colors)

A ready prepared finish requiring only the addition of water. Comes in various colors and tints. Color chart furnished upon request. Permits a wide variance in decorative schemes in textured and stippled finishes of all kinds. Colors are lasting.

Specifications—Gypsteel colored finishes require only the addition of water to make them ready for application. Mix thin and in small batches as required. Base coat should be well scratched or broomed before applying finish and walls should be dry.

COVERING CAPACITY OF GYPSTEEL PLASTERS (APPROXIMATE)

Plastering base	Neat, yd. per ton	Wood-fiber, yd. per ton	Sanded, yd. per ton
Wood lath	190 Sanded 2 to 1	115 Unsanded	65
Metal lath	110 Sanded 2 to 1	90 Unsanded	40
Plaster board	200 Sanded 2 to 1	60 Unsanded	75
Gypsteel tile	200 Sanded 3 to 1	140 Sanded 1 to 1	65
Clay tile and masonry	175 Sanded 3 to 1	110 Sanded 1 to 1	50

RYBER MANUFACTURING COMPANY

167 North Curtis Street, CHICAGO, ILL.

PRONTO PARTITIONS (FIREPROOF—WITHOUT PLASTER)

Patented October 19, 1926

PRONTO PARTITIONS are designed to supply the increasing demand for a method of constructing incombustible non-bearing walls that will give satisfactory and permanent results *without the use of plaster.*

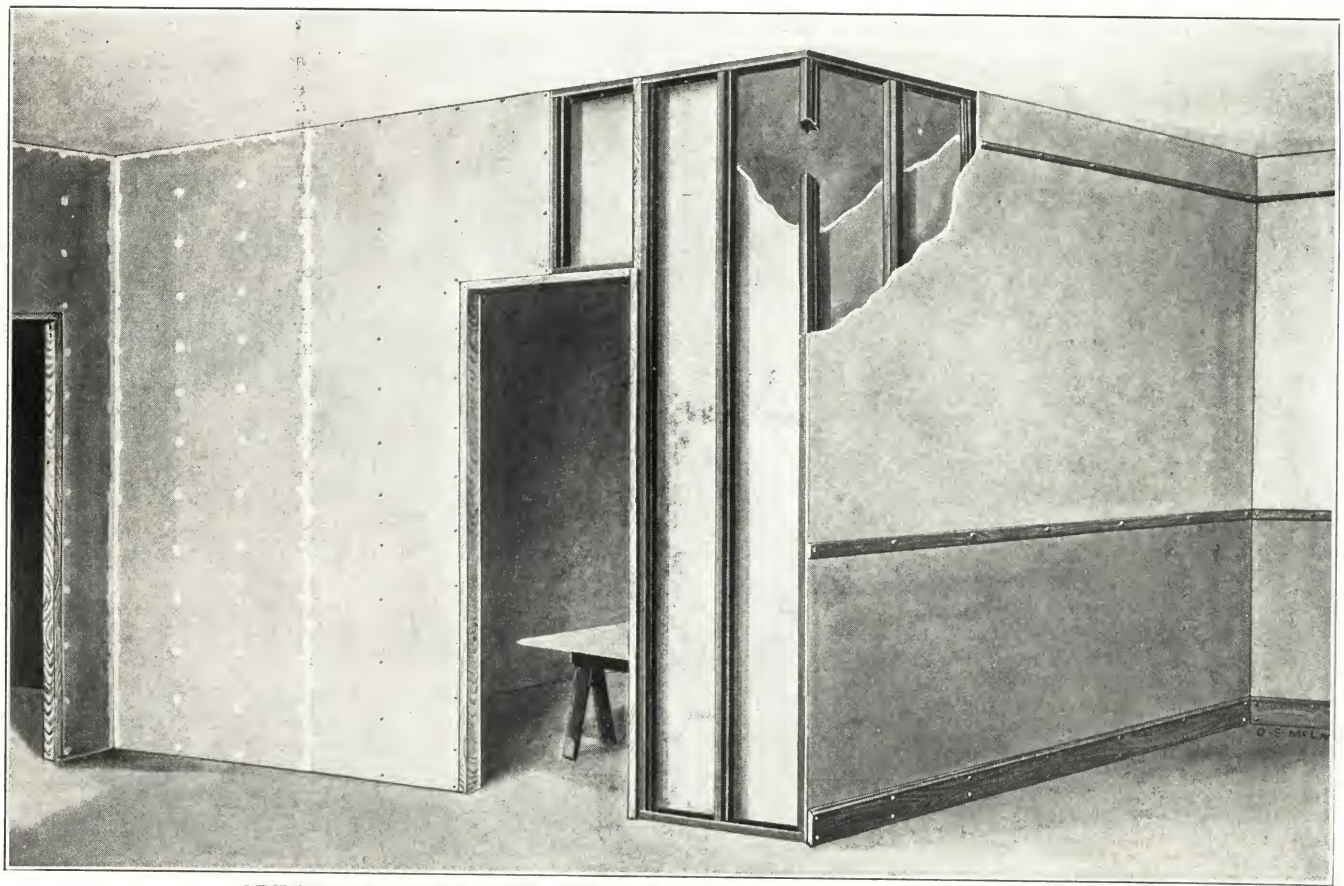
PRONTO box-shaped steel studs make possible the application of gypsum wallboard direct to the face of the studs with special screws, and leave nothing protruding to mar the finished surface. All joints between wallboards and the screwheads are filled with joint finisher, making a perfectly smooth surface. Any form of decorative material, such as wallpaper, calcimine, flat paint, gloss paint, plastic paint, etc., may be used.

PRONTO PARTITIONS are strong, rigid and light weight, giving a straight, smooth wall surface which can be decorated immediately. The speed and ease with which they can be erected, decorated and the space made ready for occupancy, and the very small amount of dirt to be cleaned up, are important advantages.

PRONTO steel studs and gypsum wallboards will not shrink, warp, buckle nor burn. PRONTO PARTITIONS make possible the installation of a non-plastered construction under the heading of *incombustible* or *fireproof.* By using a reasonable amount of care in the erection and in filling the joints the finished result will satisfy the most critical. PRONTO PARTITIONS have been installed in office buildings, apartments, hotels, hospitals, nurses' homes, store buildings, etc. *Carpenters do the entire job; erect studs, set bucks, attach wall boards and trim.*

PRONTO whole studs are 1⅝ in. face by 2¾ in. thick. When ⅜-in. gypsum wall boards are attached to both faces of the PRONTO studs the finished partition is 3½ in. thick. This finished partition weighs less than 5 lb. per sq. ft.

PRONTO materials can be *salvaged* and *re-used,* and there is scarcely any dirt made in doing it. In office buildings, where partition changes are relatively frequent, these advantages of PRONTO PARTITIONS are particularly worthy of consideration.



SPECIFICATIONS FOR PRONTO PARTITIONS (CARPENTRY)

Lay out the partitions, marking the door openings. The channel shaped floor and ceiling plates are to be nailed to the floor and ceiling, using hardened nails where the floor is concrete. PRONTO steel studs are set vertically into the floor and ceiling plates, and as they fit snugly it is not necessary to secure the studs to the plates. Half studs are used against permanent walls or columns; whole studs are used for all other locations, except for external corners where corner studs are used. PRONTO studs are to be set on 16-in. centers; *for low ceilings, booth construction or temporary work 24-in. center to center spacing is satisfactory.*

Rough wood door or window bucks to be made of regular 2x4-in. stock. Rabbet the vertical pieces to receive the seam in the PRONTO whole stud so the pieces will fit flat against the whole stud. Nail through the PRONTO stud into the wood buck. Door and window bucks are placed before wall boards are attached.

Gypsum wall boards, 4 ft. wide and full ceiling height—cut to exact height when necessary—are set in place against the PRONTO studs and plates. Factory folded edges of wall board are to be butted tight; cut edges are to be sandpapered to a bevel to leave an open joint for filler.

Using the PRONTO punch, small holes are made through the wall boards and in the studs at the same time. The special PRONTO screws are inserted in these holes, securely attaching the wall boards to the studs. At the floor and ceiling lines the screws go through the wall boards, the legs of the floor and ceiling plates, into the studs, tying together the whole partition. Wall boards are to be screwed to intermediate studs first and edges last, spacing screws on 12-in. centers on intermediate studs and 9-in. centers on vertical edges.

After wall boards have been completely attached, properly countersinking the screws, fill all joints and screwheads with joint filler or finisher. Decoration to be as desired.

The Red Book of Building Material



United States Gypsum Company
300 West Adams Street, Chicago

UNITED STATES GYPSUM COMPANY

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Buffalo, N. Y., 636 Ellicott Square Bldg.
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Cincinnati, Ohio, 1009 Atlas Bank Bldg.
Cleveland, Ohio, 1514 Builders' Exchange Bldg.
Dallas, Tex., 1310 Santa Fe Bldg.
Denver, Colo., 830 Continental Oil Bldg.
Detroit, Mich., 1327 Majestic Bldg.
Indianapolis, Ind., 417 Architects' Bldg.
Kansas City, Mo., 505-6-7 Fairfax Bldg.
Los Angeles, Calif., 507 Architects Bldg., 5th St. at Figueroa
Memphis, Tenn., 1500 Bank of Commerce Bldg.
Milwaukee, Wis., Oregon and Grove Sts.
Minneapolis, Minn., 2510 Foshay Tower
New York City, N. Y., 220 E. 42nd St.
Omaha, Neb., 925 Woodmen of the World Bldg.
Philadelphia, Pa., 1616 Walnut St.
Pittsburgh, Pa., 1604 Law and Finance Bldg.
St. Louis, Mo., 1604 Continental Life Bldg.
San Francisco, Calif., 480 Second St.
Washington, D. C., Investment Bldg., 15th and K St., N. W.

MILLS, MINES, QUARRIES AND DEALER SERVICE WAREHOUSES—See Map

1. Alabaster, Mich.
2. Arden, Nev.
3. Blue Rapids, Kan.
4. Boston, Mass.
5. Bronx, New York City
6. Buffalo, N. Y.
7. Centerville, Iowa
8. Chicago, Ill.
9. Cleveland, Ohio
10. Cordova, Ill.
11. Detroit, Mich.
12. East Chicago, Ind.
13. Falls Village, Conn.
14. Eldorado, Okla.
15. Farnams, Mass.
16. Fort Dodge, Iowa
17. Genoa, Ohio
18. Grand Rapids, Mich.
19. Great Barrington, Mass.
20. Greenville, Miss.
21. Gypsum, Ohio
22. Harrison, N. J.
23. Heath, Mont.
24. Hollywood, Calif.
25. Kansas City, Mo.
26. Lancaster, Ohio
27. Laramie, Wyo.
28. Los Angeles, Calif.
29. Loveland, Colo.
30. Midland, Calif.
31. Milwaukee, Wis.
32. New Brighton, S. I., N. Y.
33. No. Kansas City, Mo.
34. Oakfield, N. Y.
35. Oakland, Calif.
36. Philadelphia, Pa.
37. Piedmont, S. D.
38. Plasterco, Va.
39. Portland, Ore.
40. Quincy, Ill.
41. Sacramento, Calif.
42. San Francisco, Calif.
43. Seattle, Wash.
44. Southard, Okla.
45. Sweetwater, Tex.
46. Warren, Ohio
47. Wentworth, N. S.
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PRODUCTS DESCRIBED IN OTHER CATALOGUES

See Sweet's Manufacturers' Index for:

(1) Econo Expanded Metal.
(2) Sheetrock—Pyrofill; Marks T System of Roof Construction; Reinforced Roof Tile; Monolithic Floors and Roofs; Pyrobar Partition and Furring Tile; Pyrobar Beam and Column Fireproofing.
(3) Chromite—Sheet Metal Wall Tile.
(4) Insulation Products.
(5) Sound Control Service—Architectural Acoustics and Noise Abatement.
(6) Dry Paint Products.

UNITED STATES GYPSUM COMPANY GENERAL COMMODITIES

Plastering Bases—Plastering Systems—Plasters —Exterior Stucco

Experience

THE UNITED STATES GYPSUM COMPANY is a pioneer in the gypsum industry in America. For more than twenty-eight years, the company—through its laboratories, experimental departments and field investigations—has closely studied the requirements of the building industry. Its formulae and mechanical equipment have been painstakingly designed to adapt each of its gypsum and other products to meet comprehensively these requirements.

Complete Diversified Line of Products

Wherever gypsum is adapted to building uses there is a U.S.G. product specially designed to fulfill the particular requirement.

The broad scope of the company's gypsum and other products is indicated by the Products Index.

Manufacturing and Distributing Facilities

The superiority of U.S.G. products is based upon high grade raw material, perfected processes of manufacture and one control of the gypsum products from mining to shipping.

The fifty mines, mills and warehouses, strategically located throughout the United States, assure exceptional national distribution facilities and a product specially manufactured to fulfill variable local climatic conditions.

The map below shows the location of the fifty U.S.G. centers and visualizes these important service facilities. In Canada, these commodities are sold exclusively by the Canadian Gypsum Company, Ltd.

U S G

TRADE-MARK

Sales and Service Facilities

The twenty-two sales offices in the important building centers guarantee adequate service to architects.

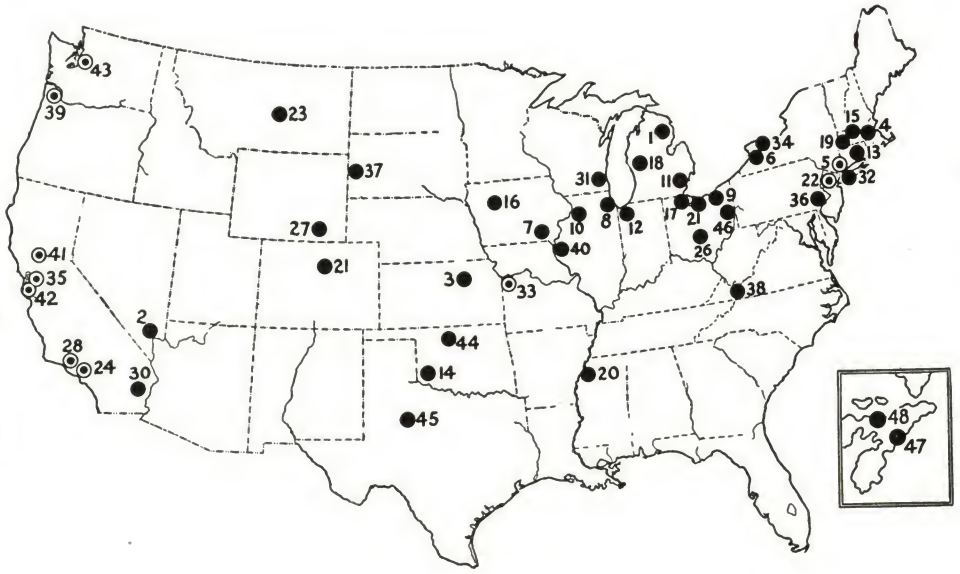
The Trade-mark

Products bearing the trade-mark of the UNITED STATES GYPSUM COMPANY are safeguarded against imperfections. They are rigidly inspected by experts at every stage of production, from the selection of the raw materials to the shipment of the finished products.

Any variation from the highest U.S.G. Standard means rejection.

This rigid maintenance of quality over a long period of years has established the name and trade-mark of the UNITED STATES GYPSUM COMPANY as synonymous with the highest standard of excellence in building materials.

United States Gypsum Company Mines, Mills and Dealer Warehouses



Mines and Mills are Solid Dots See Foreword For Key

GYPSUM—TECHNICAL DATA

Gypsum—Chemically, Gypsum is hydrous calcium sulphate $CaSO_4.2H_2O$. It is a widely distributed mineral found in rock formation. The rock gypsum is crushed, ground and then calcined, which drives off a part of the molecular water, forming the hemi-hydrate or plaster of paris. This product, when mixed with water, recrystallizes or sets.

Fireproof—The superior qualities of gypsum as a fireproof building material have been definitely established by numerous tests made by the Underwriters' Laboratories, Inc., The Bureau of Standards, Columbia University, and by the bureau of buildings in many of the larger cities. (Authentic test data furnished on request.)

The temperature on the unexposed side of the gypsum slab cannot exceed 212° F. while there is any water of crystallization in the gypsum. This is due to the fact that the water of crystallization in the gypsum must be vaporized during the application of fire to it, and as the gypsum slowly calcines, the cellular structure fills with steam. It is this barrier of calcined material which stubbornly resists the progress of the fire.

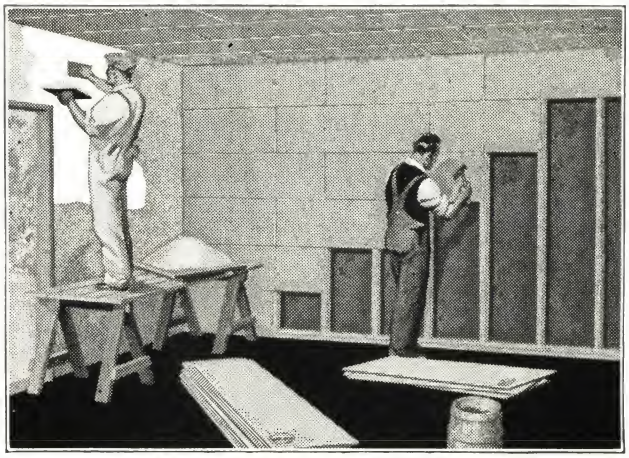
PLASTERING BASES

RED TOP ROCKLATH

Description

Red Top Rocklath is a solid sheet of gypsum encased in a tough fibrous covering, forming a uniform, strong, fire-resisting plaster base. It is made in convenient, practical-size units. The fibrous covering affords uniform suction, insuring a permanent, strong bond with gypsum plaster. Red Top Rocklath is easily nailed to wood studding, furring or joists.

Red Top Rocklath has the U.S.G. patented rounded reinforced folded edge which gives maximum strength. The rounded edge, beside protecting the boards, does not injure the hands as does a square edge.



Applying and Plastering Red Top Rocklath

Sizes, Weights, Etc.

Red Top Rocklath is made ⅜ in. thick and in two sizes—16 x 32 in. and 16 x 48 in. The boards are packed in bundles for easy handling and stacking—6 sheets to the bundle. Each bundle of 32-in. boards contain 21⅓ sq. ft. and weighs about 40 lbs.; each bundle of 48-in. boards contains 32 sq. ft. and weighs about 60 lbs. Each 32-in. unit weighs 6½ lbs., the 48-in. size, 10 lbs.

Either size provides the usual vertical joint break (similar to that of wood lath) without cutting.

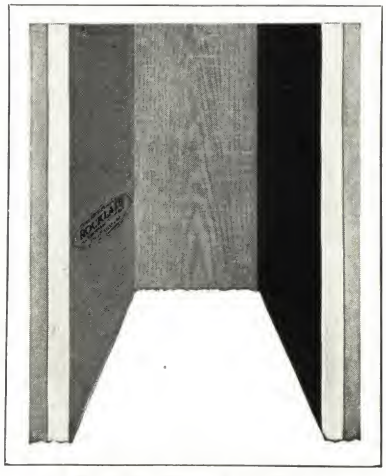
Advantages

Fireproof—Does not burn or readily transmit heat. It interposes a continuous fireproof sheet of substantial thickness over the wood-frame construction, thus tending to confine the fire to the room in which it originates.

Enduring—Does not disintegrate or corrode.

No Expansion or Contraction—Does not expand, warp or buckle when wet plaster is applied, consequently will not shrink when plaster dries out.

An Ideal Plaster Base—The strong fiber covering with its uniform suction prevents the plaster from "slipping" when applied. Gypsum plaster is easily applied and the bond is strong and permanent. Tests show that plaster bonds more firmly to Rocklath than to any other type of lath. The uniform, dense structure of Rocklath effectively eliminates plaster discoloration.



Rocklath Does Not Burn

Replaces combustible material between walls; prevents waste of plaster

Economy in Erection—Compared with ordinary lath, Red Top Rocklath bundles are stacked and carried and the light weight units handled and erected quicker and with greater ease—there are no splinters. One piece of Rocklath equals 9 wood laths and requires 20 nails instead of 36. One man will erect an average of from 125 to 150 sq. yds. a day compared with 100 to 115 sq. yds. with wood lath. It scores and cuts cleanly and easily without waste. May be applied vertically in closets, corners or on pilasters.

Uniform Thickness—Since no plaster is lost through droppings pushed through the lath and the ragged keying plaster behind the back of the lath is conserved, the thickness is uniform throughout.

The job may be said to be both plastered and back plastered in one operation.

Eliminates Moisture—Red Top Rocklath needs no wetting before plaster is applied. The continuous dry gypsum sheet, ⅜ in. thick, eliminates its proportionate part of the usual wet plaster moisture and at the same time seals off the applied plaster moisture from contact with the absorptive wood framing, preventing much of the usual swelling and subsequent shrinkage.

Due to there being less moisture present, the plaster and building are dry and ready for the application of interior wood trim and decorating in the minimum time.

Sound Deadening—Gypsum is a poor conductor of sound. As compared with wood lath and plaster, tests show that Red Top Rocklath and plaster walls are superior in effectively resisting sound transmission.

Comparative Cost—The completed wall (Red Top Rocklath and plaster) costs less than metal lath and plaster, and about the same as wood lath and plaster.

Specifications

See Master Specifications, page 17.

RED TOP INSULATING LATH

Red Top Insulating Lath has an average low conductivity of .32 B.t.u.'s per hour, per sq. ft., per degree F., per inch thickness. It is made in 18 x 48-in. units, ½ and 1 in. thick. The longitudinal edges are matched to insure insulation continuity and strengthen this unsupported joint (an exclusive U. S. G. Co. feature). The weight is but 650 lbs. per 1000 sq. ft. of half-inch material.

Authentic tests show that to rupture the bond between gypsum plaster and Red Top Insulating Lath requires over 1350 lbs. per sq. ft. Even then, the rupture occurs in the board itself and not at the bond surface.

For complete data, see the U. S. G. Co.'s catalogue on "Insulation Products."

PYROBAR PARTITION TILE

Pyrobar Partition and Furring Tile are 30 in. long, 12 in. high and of various thickness from 1½ to 6 in. Pyrobar Tile meets fully the standard specifications for Gypsum Partition Tile or block of the American Society for Testing Materials. All Pyrobar Gypsum Tile bear the trade-mark. Column fireproofing is accomplished either with 2-in. solid or 3-in. hollow Pyrobar Partition Tile.

Pyrobar Beam and Girder Fireproofing is made from the same materials as Pyrobar Partition Tile. Pyrobar Shoe Tile, which fit over the lower flanges of the steel, in combination with Pyrobar Partition Tile are used for side protection.

For complete data, see the U. S. G. Co.'s "Contracting Division" Catalogue.

RED TOP METAL LATH AND ACCESSORIES

Introductory

That the UNITED STATES GYPSUM COMPANY may furnish all materials required for lathing and plastering, it has acquired the metal lath division of the Youngstown Pressed Steel Company and the North Western Expanded Metal Company, both for many years well and favorably known in the industry. As a result, those whom the company serves have the advantages of mixed car shipments and of centralized responsibility.

The high quality products of the two metal lath companies will be found in the Red Top Line of Metal Lath Products. In addition, the Red Top Line includes many special accessories.

Note: *For application of lathing and accessories, see Master Specifications.*

Red Top Diamond Mesh Lath (Junior Mesh)

Description—A small ($\frac{5}{16}$-in.) diamond mesh expanded metal lath (patented). The stiff, square sheets are easy to erect. The small mesh enables the lather to engage a greater number of strands in nailing or tying, yet the "diamonds" are amply large to freely admit the tie wire. Mortar spreads easily on the smooth, stiff surface, without waste; the small mesh affords a superbly keyed bond.

Weights—2.2, 2.5, 3.0, 3.4 lbs. per sq. yd.

Materials—(1) Open hearth steel, painted black. (2) Galvanized steel. (3) Copper bearing steel, painted black. (4) Armco Ingot Iron, painted black.

Self-furring and Corrugated—All above weights and materials furnished in the Self-furring and Corrugated types.

Sheet Size—24x96 in., packed 9 sheets (16 sq. yds.) per bundle.

Red Top ⅛-in. Flat Rib Lath

Description—A distinctive type of flat rib lath for nailing on wood construction or tying on metal furring. The narrow "Z" ribs (⅛ in. deep, 1½ in. O. C.) add exceptional rigidity and provide shelves which hold the wet plaster in place, both front and back, without waste.

Weights—2.75, 3.0, 3.4, 4.0 lbs. per sq. yd.

Materials—(1) Open hearth steel, painted black. (2) Copper bearing steel, painted black. (3) Armco Ingot Iron, painted black. (4) Galvanized steel in 3.4 lb. weight only.

Sheet Size—24x96 in., packed 9 sheets (16 sq. yds.) per bundle.

Red Top ⅜-in. Rib Lath

Description—A very rigid reinforcement for use in floor and ceiling construction with steel joists, also ceilings under steel tile construction and where wide spacing of supports are desired. It provides for nested lap or one-diamond lap with no lumps. Its use assures a permanent, economical and absolutely satisfactory result in every way.

Weights—2.5, 3.0, 3.4, 4.0 lbs. per sq. yd. Galvanized only in 3.4 lbs. per sq. yd.

Materials—(1) Open hearth steel, painted black. (2) Copper bearing steel, painted black. (3) Armco Ingot Iron, painted black. (4) Galvanized steel in 3.4 lb. weight only.

Sheet Size—24x96 in., packed 9 sheets (16 sq. yds.) per bundle.

Red Top ¾-in. Rib Lath

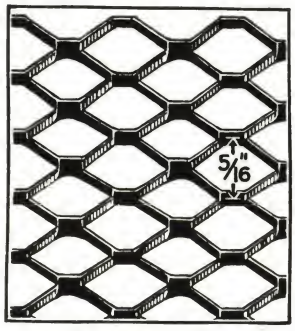
Description—The exceptional stiffness (ribs ¾ in. 4.8 ft., O.C.) of this heavy weight, self-furring, expanded metal lath adapts it particularly for centering and reinforcement for concrete roofs and floors, and for plaster partitions and ceilings on extremely wide spacing of supports. Advantageously used on many forms of special work, such as column and beam protection, balconies, concrete tanks and fences, etc.

Weights—.50, .60, .75, lbs. per square foot.

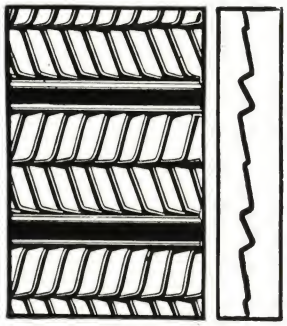
Note: *¾-in. Rib Lath is sold by the square foot. All other lath types sold by the square yard.*

Materials—(1) Open hearth steel, painted black. (2) Copper bearing steel, painted black (on special order only).

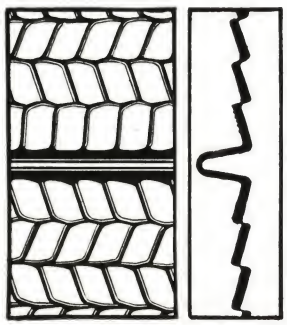
Sheet Size—24 in. wide, 8, 10 and 12 ft. long (other lengths on special order).



Red Top Diamond Mesh Lath



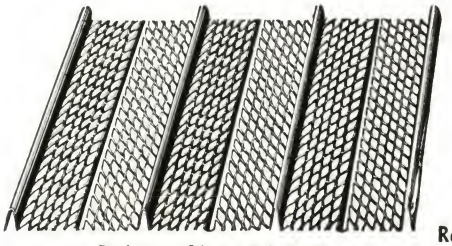
Red Top ⅛-in. Flat Rib Lath



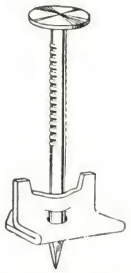
Red Top ⅜-in. Rib Lath



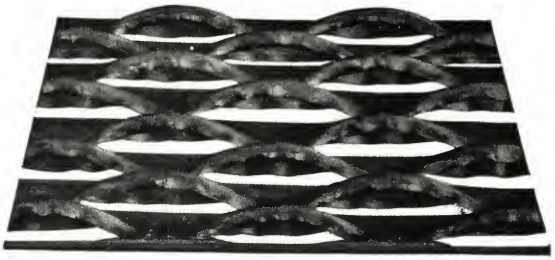
Red Top Metal Stuccomesh
(See page 4)



Red Top ¾-in. Rib Lath



Red Top Economy Stucco Furring Nail
(See page 4)



Red Top Sheetlath
(See page 4)

Red Top Sheetlath

Description—A stiff, heavy weight sheet lath particularly adapted to reinforcement of plaster, cement reinforcement for tile, marble, etc.

Weight—4.5 lbs. per sq. yd.

Material—Open hearth steel, painted black.

Sheet Size—24x96 in., packed 9 sheets (16 sq. yds.) per bundle.

Red Top Expanded Metal Stuccomesh

Description—An expanded metal reinforcement for exterior stucco, cold-drawn from the highest grade of copper bearing steel into diamond mesh 1⅜ x 3⅛ in. wide. Its diagonal strands provide a correct distribution of steel to overcome the initial shrinkage, temperature changes and wind stresses, and a positive protection against unusual shocks. Apply with Red Top Economy Stucco Furring Nails.

Weights—1.8, 3.6 lbs. per sq. yd.

Materials—Copper bearing steel, painted black.

Sheet Size—1.8 lbs.—39¼x99 in., 3.6 lbs.—48x99 in. Packed 10 sheets to the bundle.

Red Top Economy Stucco Furring Nails

Description—A convenient furring device with sliding spacer and rib, which securely holds reinforcing mesh in the center of the stucco slab.

Sizes—No. 5, 1½ in., ¼-in. spacer.

Packed—Packed 850 nails per box, 10 boxes (8500 nails) per case. One box is estimated as sufficient for 50 sq. yds.

Red Top Cornerite

Description—Diamond Mesh Lath with special selvage edge.

Weight—2.2 lb. per sq. yd. basis—140 lbs. per 1000 ft.

Size—3x3x96 in., packed 504 ft. per bundle.

Red Top Strip Lath

Description—Diamond Mesh Lath with special selvage edge.

Weight—2.2 lb. per sq. yd. basis—75 lbs. per 1000 ft.

Size—3x96 in., packed 504 ft. per bundle.

Red Top Metal Arches

Description—A ready-formed plastering arch for doorways, etc. Eliminates two difficult operations—the construction of curved wooden forms and the forming of corner beads around these curves. They are made for standard 2x4-in. partitions. The various units have many obvious combination possibilities. (See illustrations on next page.)

Sizes—

No. 11—10-in. radius (true quarter circle) for 20-in. opening (21½-in. stud space).

No. 22—15¾-in. radius (true quarter circle) for 31½-in. opening (33-in. stud space.)

No. 33—Gothic design for 31½-in. opening (33-in. stud space).

No. 44—Gothic design for 49½-in. opening (51-in. stud space).

No. 55—Elliptic design for 61½-in. opening (63-in. stud space).

No. 66—Elliptic design for 70½-in. opening (72-in. stud space).

Material—"Galvannealed" sheet steel.

Packed—In large size cartons containing 5 sets of one style and in small size cartons containing one individual set. Shipped only in full cartons.

Manufactured under License of Merryweather Patent No. 1782147 granted Nov. 18, 1930.

Red Top Corner Beads

Description—A complete line of standard type, high grade corner beads adapted to every construction need.

Types and Weights—

No. 1A—Expansion Flange Type; 230 lbs. per 1000 lin. ft.

No. 2A—Scalloped Flange Type; 208 lbs. per 1000 lin. ft.

No. 4A—Standard Type; 200 lbs. per 1000 lin. ft.

No. 5A—Bullnose Type (¾-in. radius); 273 lbs. per 1000 lin. ft.

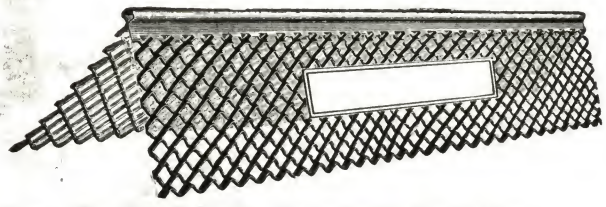
No. 9A—Clips for Bullnose and Standard bead.

No. 10A—Bullnose Expansion Type (¾-in. radius); 375 lbs. per 1000 lin. ft.

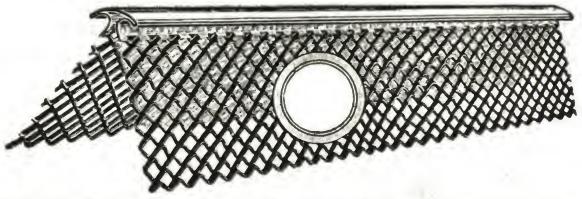
No. 12A—Wide Flange Type; 330 lbs. per 1000 lin. ft.

Material—Galvanized steel.

Packed—Crated approximately 500 and 1000 lin. ft. per crate, sold only in full crates.



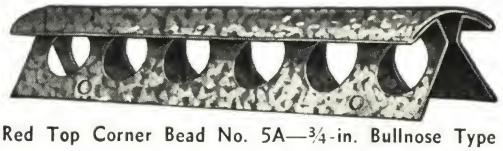
Red Top Bead No. 1A—Expansion Flange Type



Red Top Corner Bead No. 10A—¾-in. Bullnose Expansion Type



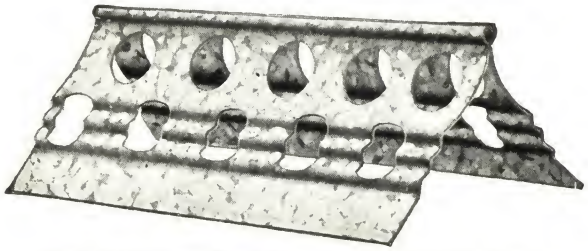
Red Top Corner Bead No. 2A—Scalloped Flange Type



Red Top Corner Bead No. 5A—¾-in. Bullnose Type



Red Top Corner Bead No. 4A—Standard Type



Red Top Corner Bead No. 12A—Wide Flange Type

Red Top Base Screeds and Picture Mould

Description—Standard base screeds to form dividing line and screed between plaster walls and cement or composition base. A concealed picture mould and screed.

Material—Galvanized steel.

Types and Weights—

No. 3A—Expansion Flush Screed; weight 230 lbs. per 1000 lin. ft.

No. 6A—Plain Screed; weight 202 lbs. per 1000 lin. ft.

No. 7A—Curved Point Screed; weight 195 lbs. per 1000 lin. ft.

No. 8A—Picture Mould; weight 220 lbs. per 1000 lin. ft.

Packed—Crated, approximately 500 and 1000 lin. ft. per crate, sold only in full crates.

Red Top Innerwall Furring Brackets

Description—A patented bracket for furring outside masonry walls for rapid metal lath erection. They provide an innerwall clear air space. These brackets are installed in the mortar joint as the work is laid up, approximately 6 in. on centers vertically and 12 in. on centers horizontally.

Sizes and Shipping Weights (Weights Approximate)—

No. 1—1¼-in. furring space, 3-in. anchorage flange, 144 lbs. per 1000 brackets.

No. 2—2¼-in. furring space, 3-in. anchorage flange, 175 lbs. per 1000 brackets.

No. 3—3¼-in. furring space, 3-in. anchorage flange, 203 lbs. per 1000 brackets.

No. 4—4¼-in. furring space, 4-in. anchorage flange, 255 lbs. per 1000 brackets.

Material—16 gauge copper bearing steel, painted black.

Package—100 brackets to the carton.

Red Top Cold Rolled Channels

Description—A complete line of cold rolled channels for furring, suspended ceiling and partition construction. The legs and webs are true and have square corners. They can be readily spliced and formed.

Material—Open hearth steel.

Stock Lengths—14, 16, 18, 20 ft.

Sizes and Weights—***Note:*** *Sold only in full, unbroken bundles.*

¾ in.—276 lbs. per 1000 lin. ft.; packed 20 pieces to bundle.

1 in.—332 lbs. per 1000 lin. ft.; packed 10 pieces to bundle.

1½ in.—456 lbs. per 1000 lin. ft.; packed 10 pieces to bundle.

2 in.—552 lbs. per 1000 lin. ft.; packed 10 pieces to bundle.

Pencil Channel—$\frac{7}{16}$x$\frac{7}{16}$ in., 113 lbs. per 1000 lin. ft., packed 20 pieces to bundle. (12 and 14-ft. lengths only).

Box Channels—$\frac{9}{16}$x$\frac{11}{16}$ in., 270 lbs. per 1000 lin. ft.; packed 20 pieces to bundle. (16 and 20 ft. lengths only.)

Red Top Lathing Sundries

General—The following sundries supplement the Red Top Line of Lathing and Lathing Accessories. In addition, practically any other sundry item necessary for lathing can be furnished.

Hot Rolled Shapes—

Flats—1x⅛ in., 1x$\frac{3}{16}$ in.

Angles—1½x1½x⅛ in., 1½x1½x$\frac{3}{16}$ in.

Channels—¾ in., 1 in., 1½ in.

Round Rods—$\frac{3}{16}$ in., ¼ in. and $\frac{7}{32}$ in. in diameter.

Clips—

No. 1—Lath Clips for attaching diamond mesh or flat lath to ¾-in. channels.

No. 2—Lath Clips for attaching ⅜-in. Rib Lath to ¾-in. channels.

No. 3—Lath Clips for attaching ⅜-in. Rib Lath to steel joists.

No. 1½A—Channel Clips for attaching ¾-in. channels to 1½-in. channels.

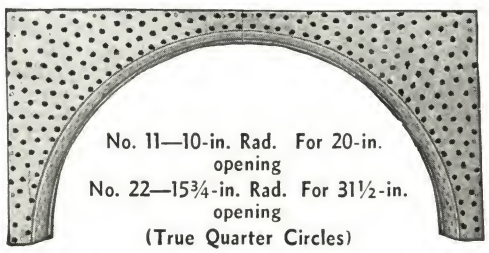
No. 1½B—Channel Clips for attaching 1-in. channels to 1½-in. channels.

No. 2A—Channel Clips for attaching ¾-in. channels to 2-in. channels.

No. 2B—Channel Clips for attaching 1-in. channels to 2-in. channels.

Tie Wire—18, 16, 14 and 9 gauge, galvanized annealed.

Nails and Staples—4d Blued Nails; ¾-in. Concrete Stub Nails; 1 and 1¼-in. Blued Staples.



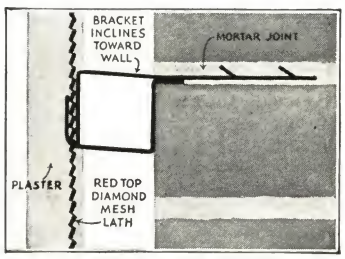
No. 11—10-in. Rad. For 20-in. opening
No. 22—15¾-in. Rad. For 31½-in. opening
(True Quarter Circles)



No. 6A—Plain Screed



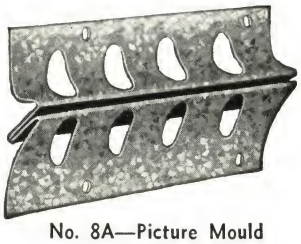
No. 7A—Curved Point Screed



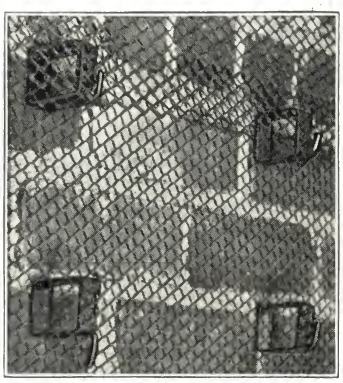
RED TOP INNERWALL FURRING BRACKETS

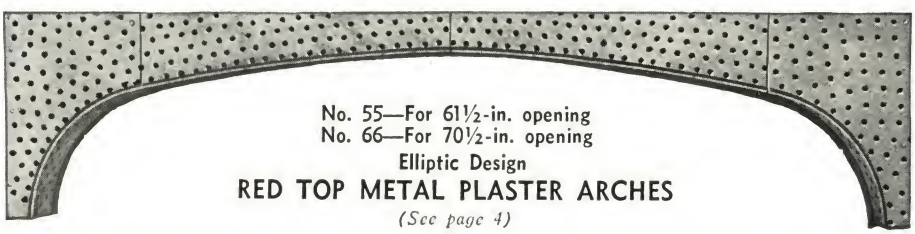


No. 33—For 31½-in. opening
No. 44—For 49½-in. opening
Gothic Design



No. 8A—Picture Mould





No. 55—For 61½-in. opening
No. 66—For 70½-in. opening
Elliptic Design

RED TOP METAL PLASTER ARCHES

(See page 4)

PLASTERING SYSTEMS

STANDARD X PLASTERING SYSTEM

Introductory—Trouble-free Plastering

Through its twenty-nine years' experience in the manufacture and sale of lathing and plastering materials, the UNITED STATES GYPSUM COMPANY has had forcibly impressed upon it the fact that unsatisfactory plaster work is usually the result of thinness ("skimping") of plaster coats, oversanding of plaster, or both. Exhaustive investigation has disclosed that these difficulties are eliminated with the Standard X Plastering System.

As a result, the UNITED STATES GYPSUM COMPANY in 1929 purchased the patents, good will and the sole privilege of manufacturing and marketing the Standard X Plastering System. The purchase was made only after an investigation of some hundreds of buildings in which Standard X had been used, after consultation with architects, plastering contractors and building owners, and after extensive laboratory tests.

The Standard X System has been extensively used in Detroit and other cities for more than seven years. It has been used in buildings of all types. Owners, architects and plastering contractors have, without modification, declared it to be the solution of the plastering problem where trouble-free wall and ceiling finishes are sought.

The Standard X Plastering System adequately provides all the factors for a satisfactory plastering job—namely, a fireproof, verminproof, non-deteriorating lath with a strong plaster bond; a fire resisting plaster of great structural strength; a controlled system of installation. With good construction added, the ideal is accomplished.

Has Passed the One-hour Fire Test

This system has successfully withstood the Standard One-hour Fire Test in accordance with specifications of the American Society for Testing Materials, conducted at Columbia University, New York City, on June 20 and July 18, 1929. A copy of the signed abstract covering this test report will be furnished on request.

Deflection Tests

Recent tests showing the strength or resistance to cracking of Standard X Plastering System as compared with standard metal lath and gypsum plaster laid to ¾-in. grounds, show conclusively the superiority of the Standard X System. Complete abstract of these tests will be sent on request.

Tests were conducted on 2 ft. 10 in. x 8-ft. ceiling panels constructed of 2x4-in. structural members 16 in. on center. The accepted formula of allowable deflection in a plastered surface is 1/360 of the total span—on this basis the allowable deflection on the test panels (7 ft. 10-in. span) would be .261 in. Three panels of each type were tested and the deflection at first crack accurately determined as follows: metal lath and plaster—¼ in. (average); Standard X Plastering System—$\frac{15}{16}$ in. (average).

Standard X System—Description

General—The Standard X Plastering System is formed of Standard X Lath, Standard X Metal Fabric, Standard X Base Coat and UNITED STATES GYPSUM COMPANY Finish Plaster. It provides all the necessary requisites for a satisfactory plastering job—lath, quality of plaster, assured thickness of plaster, and adequate joint reinforcing. It further provides more fire protection and more insulation than does the ordinary lath and plaster wall or ceiling.

Standard X Lath—Standard X Lath is a special gypsum lath ⅜ in. thick, 16 in. wide and 48 in. long, finished on the back with a moisture-resisting fiber of a distinctive red color. It is shipped in bundles (a patented feature) to prevent injury. Standard X Lath is nailed and fitted with the ease of wood. It is fireproof, verminproof and non-deteriorating. Plaster, according to authoritative tests, bonds more tightly to it than to any other type of lath. In short, all the qualities necessary for a satisfactory lath are found in Standard X Lath.

Standard X Metal Fabric—Standard X Metal Fabrics, applied over all joints and corner angles after Standard X Lath has been erected, are composed of strips of expanded galvanized metal 3 in. wide, and made with a patented selvage edge. The fabrics are easily applied. They assure adequate thickness of base coat, a very important factor.

Standard X Base Coat—Standard X Base Coat is a gypsum plaster scientifically compounded for use as part of the Standard X Plastering System. It is entirely factory-mixed. Nothing is added to Standard X Base Coat, before application, but water. This base coat plaster is exceptionally plastic. It bonds tightly with Standard X Lath, and over the Standard X Metal Fabric, to form a hard, dense, unit plaster construction that will be more resistive to cracking than other plastering.

Standard X Base Coat is much more resistive to fire than an equal thickness of ordinary sand-mixed plaster. It also has greater tensile and compressive strength and provides a much more durable wall and ceiling finish. Authentic test data will be furnished on application.

Installation—To assure maximum good workmanship where the Standard X Plastering System is installed, installation is by licensed plastering contractors only. In each locality the UNITED STATES GYPSUM COMPANY issues licenses for the erection of the Standard X Plastering System to reliable contractors, who bind themselves to install the Standard X System according to complete specifications. Further, the Standard X Plastering System is sold only by dealers to whom licenses are issued because of known reliability.

Special Stapling Hammer

To reduce the cost of installation the U.S.G. Co. has developed an automatic hammer for stapling the fabric. The hammer carries 165 staples at one loading—one blow drives the staple. It pays for itself in a few hours.

Moderate Cost

Although Standard X Plastering System is a unique product and each of the component parts is of the highest quality, it is not expensive. Its cost is such that it is adaptable to the small home as well as the most pretentious building.

PRELIMINARY SPECIFICATION PROVISIONS

Note: *The following provisions should be made in the proper specification divisions to assure the best installation of Standard X Plastering System.*

(1) Carpentry Work

(1a) Furring—All masonry surfaces shall be furred.

(1b) Framework—All studding, joists and furring shall be set plumb, level and true, and where possible, spaced accurately on 12-in. or 16-in. centers.

(1c) Bracing—Place horizontal 2x4-in. bracing on line with headers at all openings for doors and arches and at headers and sills for all window openings. Bracing shall extend from the stud to which headers and sills are attached to the next stud, driven tight and securely nailed.

(1d) Backing—Where backing plates are necessary in framework provide 2x4-in. studding instead of the usual ⅞-in. boards.

(1e) Grounds—All grounds shall be standard *(specify)* thick (face of stud to face of finished plaster).

(2) Electrical Construction

(2a) Outlet Boxes—All outlet boxes, etc., shall be accurately set with faces *(specify)* in front of the studding and joist line (flush with face of Standard X Plaster when applied).

STANDARD X PLASTERING SYSTEM—MASTER SPECIFICATIONS

Note: *Notes are explanatory or advisory only and should not be included in the specifications.*

Note: *For items such as ornamental plaster work, etc., not included here, see Master Specifications, page 17.*

(1) Work Included

The following shall be lathed and plastered with Standard X Plastering System.

Note: *List and locate here all work covered by this contract and after each item note the finish, whether "trowel," "sand float," "Oriental Interior floated or textured." See pages 13 to 16.*

(2) Examination

This Contractor shall examine all framing, grounds and provisions for electrical construction and other equipment provisions and shall report to the architect in writing any defects which will detrimentally affect the installation of Standard X Plastering System. The starting of work without such notification will be construed as acceptance of the building construction.

(3) General

All materials shall be as made by the UNITED STATES GYPSUM COMPANY. Installation shall be made only by an approved contractor, licensed by the UNITED STATES GYPSUM COMPANY. All workmanship shall be of the highest character.

(4) Materials

(4a) Lath—Standard X Lath (⅜x16x48 in.).

(4b) Metal Fabric—Standard X Galvanized Metal Angle Fabric (internal angle—2x2 in. x 48 in.) and Standard X Galvanized Flat Metal Fabric (3x48 in.).

(4c) Metal Corner Beads—Standard X Galvanized Expanded Metal Corner Beads.

(4d) Nails—Nails for application of Standard X Lath shall be Standard X Lath Nails (1⅛ in. x 13 gauge—$\frac{7}{16}$ in. heads blued, painted).

For the application of metal fabrics use Standard X Staples (or large size thumb tacks). Staples shall be automatic hammer driven.

(4e) Metal Lath—Red Top Diamond Mesh [*Painted*] [*Galvanized*] [*Copper Bearing*] [*Armco Ingot Iron*].

Note: *Used on extremely curved surfaces in lieu of Standard X Lath.*

Note: *See pages 3, 4 and 5 for complete data on U.S.G. Metal Lath and Accessories.*

(4f) Base Coat—Standard X Base Coat.

(4g) Finish Coat.

Note: *Specify Red Top Trowel Finish, Oriental Interior Finish, Gypsum Prepared Finish, or Red Top Gauging Plaster or Keene's Cement with Lime, as described on pages 13, 14, 15 and 16.*

Note: *If more than one finishing material is required, specify each separately under subheads "Trowel," "Sand Float," "Oriental Interior," etc.*

(5) Lathing

(5a) Application of Standard X Lath—Cover all walls, ceilings and partitions, so specified, with Standard X Lath.

Place lath with trade-mark side against the studs, furring or joists. Break joints on studding, furring and joists. Perpendicular joints shall not occur on the opposite sides of the same stud. Boards shall be fitted tightly together at all angles.

In cutting—first score the lath with a pointed hatchet or knife and then break over a straightedge. Lath with chopped edges shall not be used.

Each full size lath (16x48 in.) shall be nailed to the bearings with ten (10) Standard X Nails—three (3) nails along each 16-in. edge and one (1) nail at each longitudinal edge at all intervening bearings. Nails shall be kept at least ⅜ in. and not more than ¾ in. from edges of board. Drive nails home flush, without breaking the lath surface. Nails shall be placed only around edges of lath (not in the field) except when lath is applied over curved surfaces.

All holes through lath for outlet boxes, etc., shall be cut and trimmed, clean and true, to fit snugly around opening.

(5b) Application of Metal Lath—Lath all extremely curved surfaces with metal lath substantially secured with ⅞-in. lathing staples or nails driven and bent to hook over lath.

Note: *Omit if not required.*

(5c) Application of Standard X Metal Fabrics and Corner Beads—Apply angle fabric in all internal angles, butting ends so as to make a continuous reinforcement before applying fabric over joints.

Apply flat metal fabric over all lath joints and nail heads, centering the fabric over the joint. Horizontal and continuous joints shall first be covered, using the 48-in. long fabric, then cover the short or end joints along studs or joists with 12-in. long fabric, obtained by cutting the 48-in. strips into quarters.

All openings at doors, windows, arches, etc., shall be reinforced diagonally at each corner with two (2) 3x12-in. pieces of flat fabric.

All fabrics shall be secured with one (1) staple at each corner. Place staples 12 in. apart, staggered along both edges. Fabric shall be stretched tight with all edges flat. *Do not lap fabric.* Apply fabrics with bow outward.

All external corners shall be reinforced for their full height or length with Standard X Corner Beads securely nailed over the Standard X Lath.

(6) Plastering

(6a) General—Use only clean water, free from alkali and impurities. Keep tools clean. Do not wash tools in mixing water.

Do not mix more material than can be handled easily in about one (1) hour.

Do not mix one batch with another, and never retemper Standard X Base Coat.

Clean the mixing box after each batch.

For best results in browning, rodding, darbying, and finishing, apply Standard X Base Coat in two coats. Scratch the first coat and allow it to set and partly dry before applying the brown coat.

During summer months all openings in building should be screened with cloth to prevent plaster drying out before it has set. Should white or chalky spots appear, spray with clean water.

In winter keep plaster from freezing. After plaster has set and become hard, allow free circulation of air so it will dry quickly. If plastering is done in cold, damp, or rainy weather, provide artificial means for drying after plaster has set. If artificial heat is used, care must be taken to prevent overheating of plaster surfaces.

(6b) Application of Standard X Base Coat—The base coat shall be used neat (water only added).

Hoe plaster into the water. Let it soak from 10 to 15 minutes and mix thoroughly—thin at first, then add sufficient plaster to obtain the proper consistency.

Apply Standard X Base Coat over the surface of Standard X Lath *(and metal lath applied over curved surfaces)* in the usual manner, embedding the metal fabrics, filling out plumb and level to grounds. Leave the surface of the base coat raked or broomed to give a good key for the finish coat.

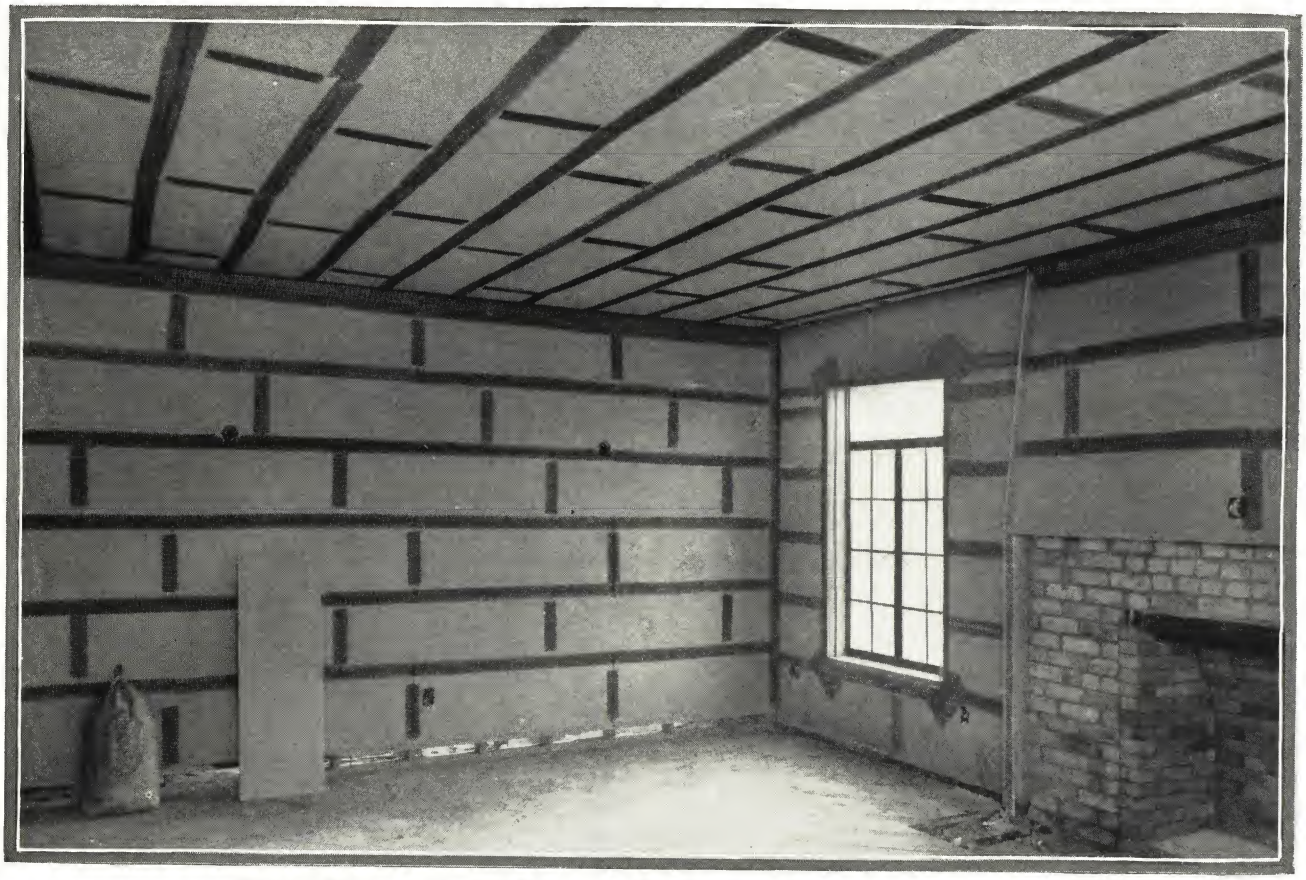
(6c) Application of Finish Coat—Over the Standard X Base Coat shall be applied the finish coat specified.

Application shall be in strict accordance with the manufacturer's standard specifications. Finished surfaces shall be brought to a true plane, finished in a manner to meet the architect's approval.

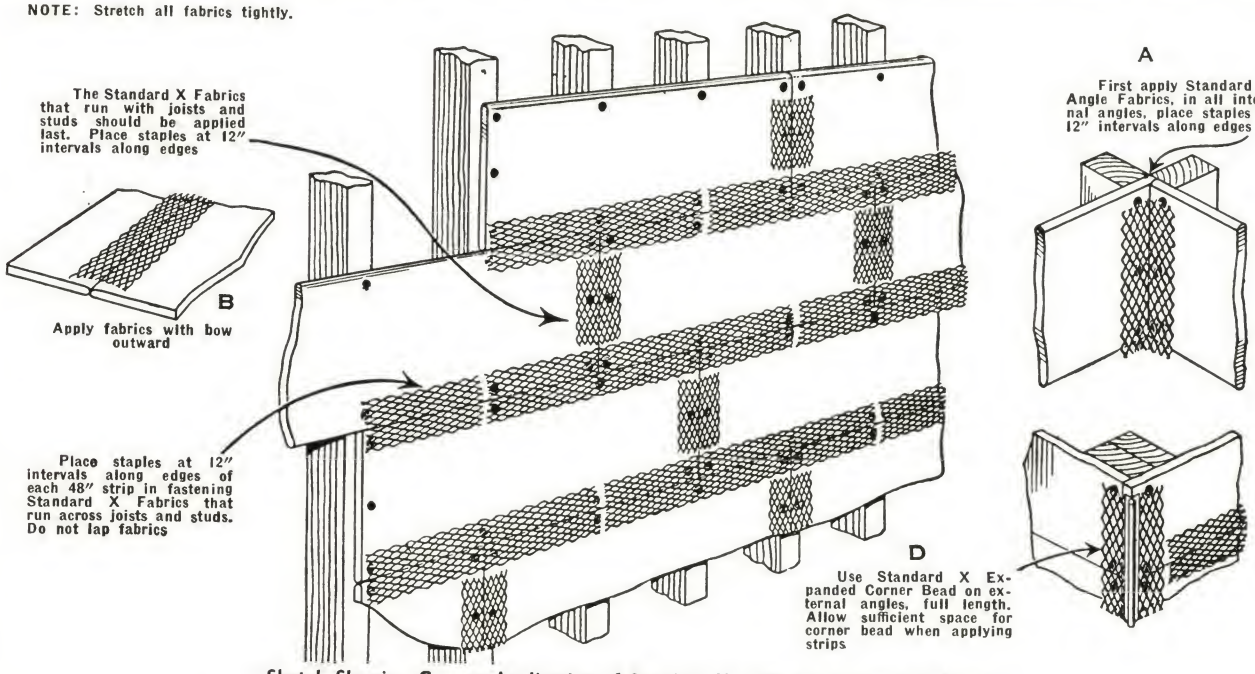
ESTIMATED QUANTITY OF STANDARD X MATERIALS FOR 100 SQUARE YARDS

Based on Actual Area to be Covered After Openings Have Been Deducted

Grounds, in.	Lath, sq. ft.	Nails, lbs.	Base coat	Flat fabric	Angle fabric	Corner bead
¾	900	12½	20-23 (100 lb. bags)	752 lin. ft. (1 bdl.)	180 lin. ft. (1 bdl.)	As indicated on plans
⅞	900	12½	26-29 (100 lb. bags)	752 lin. ft. (1 bdl.)	180 lin. ft. (1 bdl.)	



Standard X Lath and Standard X Metals in Place Ready for Standard X Base Coat Plaster
Note method of reinforcing all openings, fabric never lapped



Sketch Showing Correct Application of Standard X Lath and Standard X Metals

DETAILS—STANDARD X PLASTERING SYSTEM

STANDARD X SUSPENDED CEILINGS

Standard X Suspended Ceiling System provides a strong, rigid and economical ceiling construction for any type of building requiring a suspended or attached ceiling.

Standard X Suspended Ceilings are hung in the manner regularly employed for supporting suspended ceilings, following standard lathing practice.

MASTER SPECIFICATIONS

Note: *Notes are explanatory or advisory only and should not be included in the specifications.*

(1) Work Included

The following ceilings shall be furred, lathed and plastered with Standard X Suspended Ceiling construction.

Note: *List and locate here all work covered by this contract and after each item note the finish, whether "trowel," "sand float," "Oriental interior floated or textured."*

(2) Materials

(2a) Hangers—

(2a1) Minimum size for attaching main channels to supports—¼-in. round steel or 1x$\frac{3}{16}$-in. flat steel—spaced not to exceed 4 ft. in each direction.

(2a2) Minimum size for attaching ¾-in. runner channels direct to supports—No. 8 galvanized wire—spaced not to exceed 2 ft. 6 in. in each direction.

(2b) Tie Wire—Minimum size No. 16 gauge galvanized annealed wire.

(2c) Main Channels—Minimum size 1½ in.—minimum weight 456 lbs. per 1000 lin. ft.—maximum spacing not to exceed 4 ft. center to center.

(2d) Runner Channels—Minimum size ¾ in.—minimum weight 276 lbs. per 1000 lin. ft.—maximum spacing 2 ft. 6 in. center to center.

(2e) Lath Channels—⅜-in. Standard X Lath Channels—minimum weight 113 lbs. per 1000 lin. ft.—spacing per pair 16 in. on centers.

(2f) Lath—⅜x16x48-in. Standard X Lath—weight approximately 1850 lbs. per 1000 sq. ft.

(2g) Metal Fabrics—2x2x48-in. Standard X Angle Fabrics. 3x48-in. Standard X Flat Fabrics.

(2h) Staples—Special ⅞-in. Standard X Staples.

(3) Erecting Channels

(3a) Standard main channel hanger spacing not to exceed 4 ft. on center in both directions, properly install ¼-in. pencil rod or 1x$\frac{3}{16}$-in. steel hangers to support 1½-in. main channels. Level and fasten main channel to hangers, and anchor channel ends at walls in an approved manner. Tie ¾-in. runner channels, spaced not to exceed 2 ft. 6 in. apart, to main channels.

Note: *Use above clause when the type of construction requires main channels.*

(3b) Concrete joist and floor arches shall have hangers spaced not to exceed 2 ft. 6 in. on center throughout the length of joists or arches. Level and fasten runner channels to hangers, and anchor channel ends at walls in an approved manner.

(3c) *(Concrete slabs) (hollow tile floor slabs)* shall have hangers spaced not to exceed 2 ft. 6 in. on centers in both directions. Level and fasten runner channels to hangers, and anchor channel ends at walls in an approved manner.

(3d) Under bar joist construction, wire ¾-in. runner channels, spaced 2 ft. 6 in. apart, to lower chords of joists. Level and fasten runner channels to hangers, and anchor channel ends at walls in an approved manner.

Note: *In the types of construction included in (3b), (3c) and (3d), ¾-in. runner channels may be fastened directly to hangers without the use of main channels.*

(4) Erecting Lath

After *(main channels and)* ¾-in. channels are in place, erection of Standard X Lath Channels and Standard X Lath shall be started.

Clip in position at right angles to runner channels and tight against the wall, across the full width of room, one pair of ⅜-in. Standard X Lath Channels, back to back. Use No. 2 Standard X Clips for attaching lath channels to runner channels.

Note: *See top view, page 10.*

Then place in position a row of Standard X Lath with trade mark up. Insert one edge of the lath into the ⅜-in. channels and support the opposite edge temporarily with No. 3 Standard X Clips, fastened to the ¾-in. runner channels.

Note: *See detail at start, page 10.*

Next place another pair of Standard X Lath Channels, back to back, in position across the full width of room. Place one channel securely over the No. 3 Clips and 48-in. lath edges, and support both channels with No. 2 Clips.

Note: *See top view, page 10.*

Erect successive rows of Standard X Lath and Standard X Channels as above.

Break joints at ends of lath.

Fill in any small places next to the wall with metal lath strips, securely fastened and completely covering adjacent lath channel joints.

Note: *See detail at finish, page 10.*

(5) Reinforcing

Apply Standard X Metal Fabrics in all angles and over all joints, butting ends to form continuous reinforcing. Do not lap ends of fabrics. Fasten fabrics to Standard X Lath with special ⅜-in. Standard X Staples (or large size Thumb Tacks), approximately 12 in. apart, staggered.

First apply Standard X Angle Fabrics in all ceiling angles, nailing one edge to wall and fastening the other edge securely to the lath.

The flat fabrics have a natural curvature. To obtain best lathing and plastering results, apply the fabrics with bow out.

Next apply Standard X Flat Fabrics over all continuous lath channel joints and then cover the remaining lath joints with 12-in. lengths of Standard X Lath Fabric, securely fastening fabrics to lath with Standard X Staples.

Note: *See bottom view, page 10.*

(6) Plastering

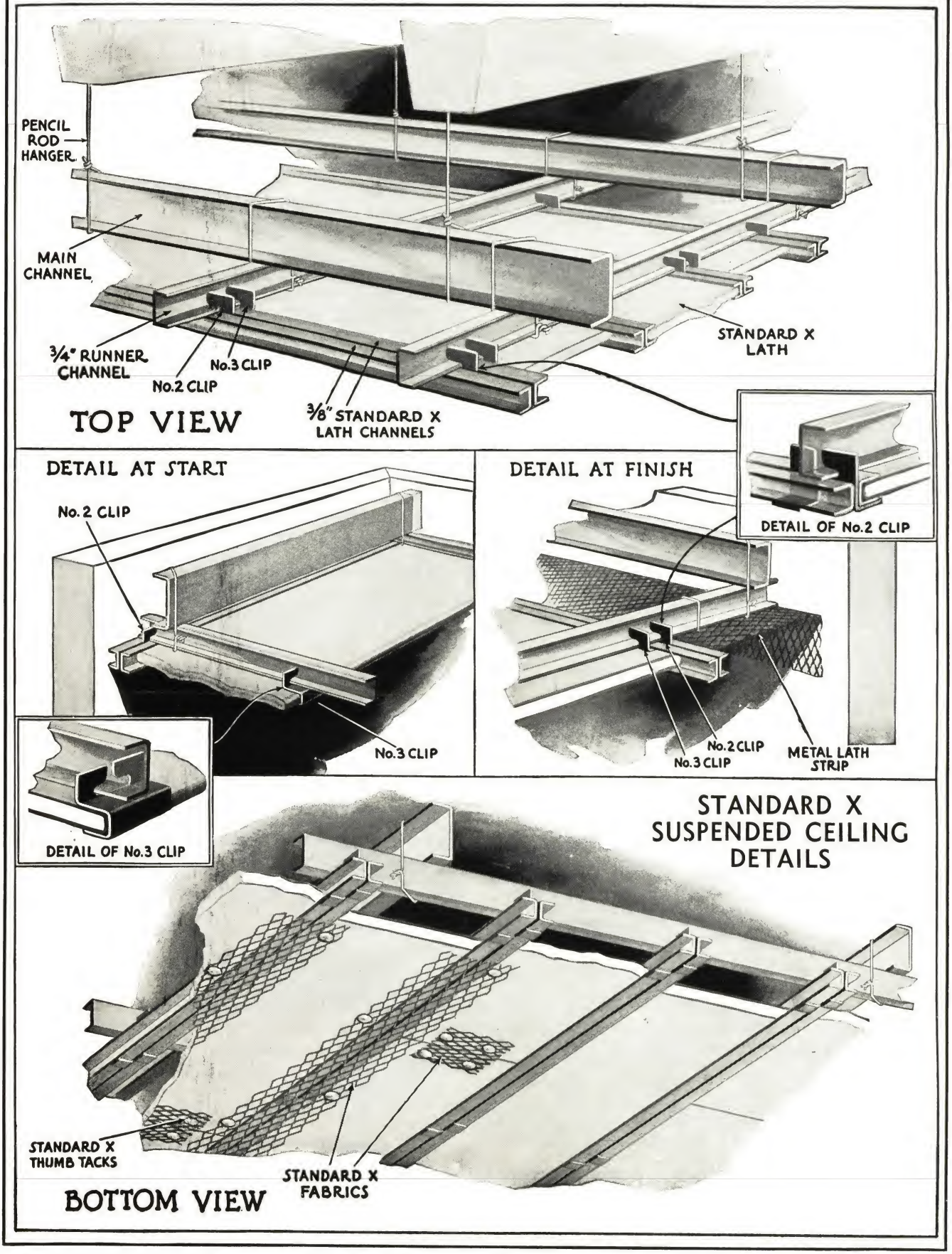
Note: *Specify plastering as given in paragraph (6), page 7, for Standard X Plastering System.*

ESTIMATED QUANTITIES OF MATERIAL REQUIRED FOR 100 SQUARE YARDS

(Based on Total Thickness of Plaster and Solid Yardage Measurements of Ceilings, Before Erection of Partitions)

One square foot of completed ceiling, including plaster, weighs approximately 5 pounds

1½-in. Main [s 4 ft. spacing 250 lin. ft.	¾-in. Runner [s 2 ft. 6 in. spacing 400 lin. ft.	⅜-in. Standard Lath Channels 1400 lin. ft.	No. 2 St. X Clips for 2 ft. 6-in. [spacing 310 pieces
No. 3 St. X Clips for 2 ft. 6-in. [spacing 250 pieces	Standard X Lath 900 sq. ft.	2x2x48-in. Standard X Angle Fabric Depends on partition layout	
3x48-in. Standard X Flat Fabric 825 lin. ft.	Standard X Staples 1500	Standard X Base Coat 20-22 100-lb. bags	Finish Coat Depends on type used


PENCIL ROD HANGER
MAIN CHANNEL
3/4" RUNNER CHANNEL
No.2 CLIP
No.3 CLIP
3/8" STANDARD X LATH CHANNELS
STANDARD X LATH
TOP VIEW
DETAIL OF No.2 CLIP
DETAIL AT START
No. 2 CLIP
No.3 CLIP
DETAIL AT FINISH
No.2 CLIP
No.3 CLIP
METAL LATH STRIP
DETAIL OF No.3 CLIP
STANDARD X SUSPENDED CEILING DETAILS
STANDARD X THUMB TACKS
STANDARD X FABRICS
BOTTOM VIEW

PLASTERS

GYPSUM PLASTERS—GENERAL DATA

General Features

Description—Gypsum Plasters are made by driving off water of crystallization from gypsum rock through calcination, or heat treatment. The addition of water to this basic product (calcined gypsum rock) forms a plastic mass which unites with the same amount of water as was driven off during calcination. When this plaster is mixed with water it re-crystallizes or sets.

Quick Set—Fast Drying—Gypsum Plaster sets up uniformly hard and homogeneous within two to six hours after application. Inside of thirty-six hours, under proper drying conditions, the plaster dries and there is no further dampness or sweating.

Advantages

Adaptability—Gypsum Plaster adheres satisfactorily to gypsum, wood or metal lath; gypsum or clay tile; brick or other approved plastering surface.

Fire Retarding—Made of gypsum, it is fire-resistant.

Exceptional Adhesiveness—Its exceptional adhesiveness greatly increases structural durability.

Does Not Expand or Contract—It does not expand and tear itself loose from the surface to which it is applied, even when subjected to fire. It will not crack of itself, shrink or stain.

Durable—Gypsum Plaster will withstand the wear and tear of occupancy during the life of the building. It affords a substantial foundation for the finish coat and applied decoration.

Saves Time—It sets in two to six hours and dries within 36 hours—interior trim and finish may thus, reasonably soon, follow the plastering without danger from moisture.

Plasticity, Richness and "Slip"—U.S.G. Plasters have been developed as much for the convenience of the plasterer as for the above qualities. The result is an unusual richness and "slip" which is appreciated by the competent mechanic. They mix easily at the mortar box; they go on quickly and spread far, resulting in maximum coverage with minimum labor.

Uniformity

The quality of U.S.G. Plasters is rigidly controlled by repeated chemical tests, physical tests, and by effective inspection in every stage of manufacture, from the crude gypsum rock to the finished product. Samples from every shipment are retained for future reference.

All U.S.G. Plaster meets the standard specification for Gypsum Plaster of the American Society for Testing Materials.

The "Red Top Process" assures the maximum in economy, easy workability and bulk.

Identification—Red Top Bag

In addition to the U.S.G. trademark on each bag of plaster, the UNITED STATES GYPSUM COMPANY'S Plasters are contained in the standard *Red Top* bag, which provides a positive means of identification that discourages substitution.



A Corner in the U.S.G. Laboratory, Chicago

The red top is assurance that the material in the bag has been made and tested according to most rigid specifications.

Plaster Package

General—Every package of U.S.G. Gypsum Plaster bears the familiar trade-mark (see page 1), and bags have the *Red Top*. Each bag bears the brand and the mixing directions.

Reinforced Paper Bag—The "multi-wall" bag, made of multiple layers of strong kraft paper with air spaces between, is the standard "paper" bag of the UNITED STATES GYPSUM COMPANY.

This bag gives adequate protection—the several layers of paper keep the plaster *dry* in the warehouse, and a sudden shower while the material is in transit or unprotected at the job will do little if any damage. It is light in weight, easily handled and stored. The dealer and contractor have no investment tied up in bags which are to be returned for credit; nor do they lose the value of sacks stolen from the job or damaged.

In view of these advantages we recommend the multi-wall bag as the most satisfactory plaster package both from an economic as well as a practical viewpoint.

Jute Bags—When plaster is ordered in jute bags, these are sold with the plaster and credited when returned in good condition, freight prepaid, to the mill from which the plaster shipment was made. Return of bags must be made in accordance with our standard shipping directions and our customary terms.

Cloth or jute bags are of 100-lb. capacity.

Brands

The standardization nationally of U.S.G. plasters under the "Red Top" brand is a protection to the architect and a convenience to the trade.

The architect is assured that the quality of the plaster, from whatever mill shipped, will be identical.

When specifying "Red Top" for use in a distant city, the architect is assured (1) that the plaster will be the same as that with which he is familiar; (2) that a shipping mill is in close proximity; (3) that the plaster will be recognized as standard by the local mechanics.

Covering Capacity

The covering capacity of U.S.G. Plasters is as great for each type of material as it is possible to attain.

Covering capacity necessarily depends upon conditions under which the plaster is applied—upon the mechanic, thickness of grounds, kind and trueness of the surface to be plastered, spacing or voids of lath, quality of sand, etc.

The covering capacity given hereinafter with each type of material and for the various surfaces to receive the plaster is based on average conditions, and may thus be accepted as a safe basis for calculating the quantity of each class of material that is required according to the Master Specifications given on pages 17 to 22 inclusive.

CEMENT PLASTERS

Use

Use for scratch and brown coats.

Brands

Note: See "Brands," page 11.

Red Top Cement Plaster.
Red Top Eldorado Cement Plaster (Gypsite).

Note: Gypsite plasters, popularly known as "dark plasters," are well adapted to the climatic and building conditions of the Southwest.

Description

Cement Plasters are "neat" materials—sand to be added at the job.

Characteristics

These materials are unusually rich, spread well under the trowel and, when mixed properly with a good grade of sand, are uniformly satisfactory both in working qualities and ultimate results in the finished wall.

The "Red Top Process" assures the maximum in sand carrying capacity, easy workability and bulk.

Directions

Mixing—(a) For scratch coat on gypsum, wood and metal lath, mix 2 parts by weight of dry sand with 1 part of plaster.

(b) For brick, gypsum and clay tile scratch coat and for second (brown) coat, mix 3 parts by weight of dry sand with 1 part of plaster.

Application—*(a) On Wood Lath*—Soak lath. Apply in 2 coats. Apply scratch coat with sufficient pressure to obtain a good key. Darby brown coat lightly—use water sparingly.

(b) On Gypsum Lath—Do not wet lath. Apply in 2 coats. Scratch coat shall be well scratched in to fill interstices between lath units. Darby brown coat lightly—use water sparingly.

(c) On Metal Lath—Apply in 2 coats. Apply scratch coat lightly, covering lath and filling meshes. Scratch first coat and allow to set before applying brown coat. Darby brown coat lightly—use water sparingly.

(d) On Brick and Gypsum or Clay Tile—Soak brick or clay tile walls. Sprinkle gypsum tile lightly. Apply in 2 coats. Darby lightly—use water sparingly.

Package

Shipped in full weight 100-lb. paper and jute bags. Kings Windsor also supplied in 320-lb. (300 lb. net) barrels.

Covering Capacity

Note: See "Covering Capacity," page 11.

Basis—Under average conditions Gypsum Cement Plaster mixed and applied in accordance with standard specifications will cover about as follows:

Plastering surface	Wood lath	Metal lath	Gypsum lath	Brick and clay tile	Gypsum tile
Sq. yds. per ton	180–210 (Sanded 2 to 1)	105–135 (Sanded 2 to 1)	225–240 (Sanded 2 to 1)	165–200 (Sanded 3 to 1)	235–255 (Sanded 3 to 1)

WOOD FIBER PLASTERS

Use

Use for scratch and brown coats.

Brands

Note: See "Brands," page 11.

Red Top Wood Fiber Plaster.
Red Top Eldorado Wood Fiber Plaster (Gypsite).

Note: Gypsite plasters, popularly known as "dark plasters," are well adapted to the climatic and building conditions of the Southwest.

Description

Wood Fiber Plasters are shipped ready to use, requiring only the addition of water. The base is Gypsum Plaster, to which is added finely shredded wood fiber, uniformly distributed.

Characteristics

Wood fiber plaster avoids the handling of sand, the dangers of poor sand and oversanding. The smooth and fatty nature gives easy spreading and excellent working qualities.

Composed of gypsum and shredded wood fiber. When applied it is about two-thirds the weight of sanded cement plaster.

The plaster is practically pure gypsum, wood fiber serving as reinforcement and is extremely tough, strong, dense and durable.

It is superior to sanded plaster in fire-resisting, insulating and sound-deadening qualities. Its greater flexibility better adapts it to withstand vibrations and strains.

It is especially adaptable to alterations and is desirable for winter use. Wood Fiber Plaster may be sawed like wood.

It is nearly as economical in cost as Cement Plaster.

Directions

Mixing—*(a) Neat*—For wood and gypsum lath and scratch coat on metal lath, hoe plaster into water and allow to soak from 10 to 20 minutes. Then mix to proper consistency.

(b) Sanded—For brown coat on metal lath and for all plaster on brick and gypsum or clay tile, mix as above in (a) with equal parts by weight of plaster and dry sand.

Application—*(a) On Wood Lath*—Soak lath. Apply in 2 coats. Apply scratch coat with sufficient pressure to obtain a good key and scratch the surface. Before brown coat begins to set, broom surface.

(b) On Gypsum Lath—Do not wet lath. Apply in 2 coats. Scratch coat shall be well scratched in to fill interstices between lath units. Scratch first coat and allow to set before applying brown coat. Before brown coat begins to set, broom surface.

(c) On Metal Lath—Apply in 2 coats. Scratch coat shall be applied a little stiff, covering lath and filling meshes. Before brown coat begins to set, broom surface.

(d) On Brick and Gypsum or Clay Tile—Soak brick or clay tile walls. Sprinkle gypsum tile lightly. Apply in 2 coats. Before the brown coat begins to set, broom surface.

Package

Shipped in full weight 100-lb. paper and jute bags.

Covering Capacity

Note: See "Covering Capacity," page 11.

Basis—Under average conditions Gypsum Wood Fiber Plaster mixed and applied in accordance with standard specifications will cover about as follows:

Plastering surface	Wood lath	Metal lath	Gypsum lath	Brick and clay tile	Gypsum tile
Sq. yds. per ton	90–100 (Unsanded —water only added)	55–65 (Unsanded —water only added)	115–120 (Unsanded —water only added)	150–170 (Equal parts sand to be added)	180–210 (Equal parts sand to be added)

PREPARED PLASTERS (SANDED)

Use

Use for scratch and brown coats.

Brands

Note: See "Brands," page 11.

Red Top Sanded Plaster.
Red Top Sanded Plaster for Brick or Tile.
Red Top Sanded Wood Fiber Plaster.

Description

Prepared Plasters are shipped ready to use, requiring only the addition of water. The base is Gypsum Plaster to which is added nothing but sharp, clean plastering sand, thoroughly graded and screened.

Correct proportions and mixing are accomplished by automatic machines at the factory.

Characteristics

Prepared plasters are especially desirable in localities where good sand is difficult to obtain.

Since they are ready to apply with the addition of water only, they are particularly well adapted for use in winter when unfrozen sand is difficult or expensive to obtain.

Since these plasters may be readily mixed inside the building, they are useful for repair and remodeling work in all seasons.

Directions

Mixing—Add nothing but water. Hoe plaster into water, mixing thoroughly. Mix thin first, then add dry material to bring to proper consistency.

Application—Apply as specified for Cement Plasters.

Package

Shipped in full weight 100-lb. paper or jute bags.

Covering Capacity

Note: See "Covering Capacity," page 11.

Basis—Under average conditions Gypsum Prepared Plaster mixed and applied in accordance with standard specifications will cover about as follows:

Plastering surface	Wood lath	Metal lath	Gypsum lath	Brick and clay tile	Gypsum tile
Sq. yds. per ton	60 to 70	35 to 45	75 to 80	45 to 55	65 to 70
	(Plaster mixed with water only—no sand added)				

BONDCRETE—FOR INTERIOR CONCRETE SURFACES

Use

Use for both scratch and brown coats applied over concrete.

Description

Ordinary gypsum or lime plaster does not adhere properly to concrete—consequently the use of Bondcrete, a specially made plaster for concrete surfaces, is recommended.

Characteristics

Bondcrete permits moisture, expelled from concrete for approximately a year, to be carried through and evaporated on the surface, whereas with ordinary plaster there would be a condition approaching a sweat-out. Any plaster finish can be used over Bondcrete. Oil paint decoration should be deferred for a year.

Bondcrete Plaster adheres strongly to dry concrete because of its cementitious qualities and because it maintains a practically unchanging volume during setting and hardening.

It needs only water to make it ready for use.

Bondcrete must not be applied over smooth, oily or efflorescent surface.

Bondcrete must not be covered with a sanded brown coat.

Directions

Mixing—Add nothing but water. Hoe plaster into water. Allow to soak at least 10 minutes. Mix thoroughly and break down to a smooth, even creamy consistency.

Application—Apply in two (2) coats. Before the plaster begins to set, broom the surface to receive the finish coat.

Package

Shipped in full weight 100-lb. paper or jute bags.

Covering Capacity

Usually from 90 to 120 sq. yds. to the ton coverage depending upon regularity of concrete surface and thickness applied.

Note: See "Covering Capacity," page 11.

RED TOP TROWEL FINISH

Use

Use for white trowel finish coat only.

Description

Of exceptionally fine quality is this prepared trowel finish, which works as easy and covers approximately as much surface as lime putty. The admixture of water fits it for immediate use. Numerous field tests have convinced us that this is the ideal prepared finish.

Characteristics

It mixes easily to a light, creamy consistency and can be applied in two coats. Because no slaking or soaking of lime is necessary and because the finish is mixed in the box instead of on the board, it is economical. It contains no talc, clay or other objectionable ingredient. The alkalinity of the lime content is reduced by chemical action, so that the walls may be safely decorated as soon as thoroughly dry.

It sets in from 1¼ to 1½ hours.

Directions

Mixing—Add 8 to 9 gal. of water to the 100-lb. bag. Let soak for at least 10 minutes.

Mix thoroughly. Add water if necessary to bring to a light, creamy consistency.

Application—Apply in 2 coats over dry walls. Scratch in a thin coat well ground into base, then apply second coat filling imperfections. Trowel to a smooth finish, applying water with a damp brush. Complete troweling before finish has set.

Package

Shipped in full weight 100-lb. paper bags.

Covering Capacity

Coverage approximates that of lime putty and is more than any other prepared finish—450 to 500 sq. yds. per ton, according to conditions.

RED TOP TEXTURE COTE

Use

Use as a finish plaster for texture work.

Description

Red Top Texture Cote was developed for texture work on new buildings. It is markedly superior to lime putty for texture work, both in working qualities and hardness. It is to be applied over gypsum brown coat properly darbied and cured for finish coat work.

Characteristics

Red Top Texture Cote mixes easily, taking the water readily and working up easily into a material of light, creamy consistency. It seals off the suction of the base so that the texturing coat can be laid on and finished with sufficient time for the most intricate textures. It sets in from 1¾ to 2½ hours.

Directions

Mixing—***(a) Neat***—Put water in box first—8 to 9 gals of water to the 100-lb. bag. Let soak for 15 minutes. Mix thoroughly. Add water if necessary to bring to a creamy consistency. Mix only enough for two hours' use—do not retemper after material has set.

(b) Sand Float—Add 1½ to 3 parts of fine sand to 1 part of plaster depending on type of float finish desired. Add retarder dissolved in water to lengthen time of set, if required. Mix as in (a).

(c) Color—Tinted effect may be obtained by adding Lime Proof Colors. Use extreme care to reproduce the same color in successive batches by accurate gauging of amount of color and mixing water and thorough mixing.

Application—Apply in 2 coats over half dry walls. First apply a thin coat well ground into base and allow to draw a few minutes. The second time over, lay the material on level and work it into the desired texture.

Package

Shipped in full weight 100-lb. paper bags.

Coverage

A coverage of 400 to 500 sq. yds. per ton is obtained depending on the type of texture used, condition of base, etc.

Oriental Glaze

Oriental Glaze is a colored glaze specially adapted for use over textured surfaces. It produces two-tone or polychrome effects, drying with a soft sheen and giving a finish that can be readily washed with a light soap solution. It may be applied to the texture cote as soon as the latter is dry. Directions are on can. Shipped in 5-gal., 1-gal., quart and similar cans down to ⅛ gal.

PREPARED GYPSUM FINISHES

Use

Use for finish coat only.

Brands

Note: *See "Brands," page 11.*

TROWEL FINISHES

Red Top Universal White Trowel Finish.
Red Top Adamant White Trowel Finish.
Red Top Adamant Slate Colored Trowel Finish.
Red Top Badger Gray Trowel Finish.

SAND FLOAT FINISHES

Red Top Silica White Sand Float Finish.
Red Top Adamant Gray Sand Float Finish.
Red Top Adamant White Sand Float Finish.
Red Top Sand Float Finish (Light Gray).

Description

Prepared Gypsum Finishes require only the addition of water to make them ready for use. Made of gypsum, they form a perfect and natural bond with any gypsum plaster base coat. The sand float finishes contain selected sharp clean silica sand, properly graded, screened and thoroughly dried.

Characteristics

These finishes are ready to use when water is added, assuring a uniform mix of correct proportion. The sand float finishes are especially recommended in winter when unfrozen sand of the requisite quality is difficult to obtain. Decorations may safely be applied as soon as the finish dries out.

Directions

Mixing—Hoe plaster into water (using approximately 1 part of water to 2 parts of plaster measured by volume). Allow to soak for at least 10 minutes. Mix thoroughly to break down to a smooth, even, creamy consistency. Add water to bring to a very thin consistency. Transport in buckets.

Application—***(a) Trowel Finish***—Base coat should be half green before finish is applied. Sprinkle lightly with water if suction is too great. Apply in 3 coats. Apply a thin coat well ground into surface. Allow to draw a few moments. The second time over, lay the material on level. The third time, use thin material and fill all imperfections; allow to draw a few moments; trowel to a smooth finish, applying water with a damp brush. Complete troweling before finish has set.

(b) Sand Float Finish—Apply after base coat has set firm and hard, but while still green (within 12 hours after application). Lay on with a trowel, then use a float working the material to a true, even surface, free from float marks. Use as little water as possible—use damp brush only. Complete floating before finish has set.

Package

Shipped in full weight 100-lb. paper or jute bags.

Covering Capacity

Under average conditions Gypsum Trowel Finish, if mixed and applied in accordance with standard specifications, will cover about 350 to 400 yds. per ton; Gypsum Sand Float Finish about 250 to 275 yds. per ton.

ORIENTAL INTERIOR—COLORED FINISH PLASTER

Use

Use for textured or floated plaster finish coat.

Description

Oriental Interior is a colored finish plaster. The material is made in thirteen standard shades and white. Tints are produced with mineral colors, great care being taken to assure absolute uniformity of shade.

Oriental Interior is ready for use with the addition of water only. It is used as a finish coat over the regular base coat of plaster and can be floated or textured.

Characteristics

With ordinary tools, attractive, tinted, float or textured finishes may be obtained with Oriental Interior in perfect accord with modern decorating practice. Tile or stone unit effects may be produced by scoring walls before Oriental Interior has hardened.

Change of color scheme may be accomplished at any time by the application of paint or other decorative materials.

Unvarying uniformity in both color and quality is assured. The material is scientifically mixed at the mill—the addition of water only is required for immediate use.

The positive regulation of color insures walls with the minimum amount of "joinings" and avoids the danger of inaccurate mixing.

Directions

Mixing—Hoe material into water, using approximately 1 part of water to 2 parts of plaster, by volume. Let soak overnight (not over 24 hours). Mix thoroughly to a smooth, creamy consistency. Transport in buckets.

Application—Base coat must be set firm and hard. On masonry or tile, base must be thoroughly dry—on lathing base should be 90% dry. Wet down lightly if suction in base is too great. Use as little water as possible—use damp brush only. Complete troweling or floating before finish has set.

(a) Float Finish—Apply in 2 coats. First apply a thin coat well ground into base. The second time over, lay the material on perfectly level and float to a true, even surface, free from float marks.

(b) Texture Finish—Apply in 2 coats. Base coat should be half green. First apply a thin coat well ground into base and allow to draw a few moments. The second time over, lay the material on perfectly level, working it into the desired texture. Provide proper drying condition—failure to provide protection may result in color difficulties. Tile or masonry effects may be obtained by marking off while material is green (4 to 5 hours after application).

Oriental Glaze

Oriental Glaze is a colored glaze specially adapted for use over textured surfaces. It produces two-tone or polychrome effects, drying with a soft sheen and giving a finish that can be readily washed with a light soap solution. It may be applied directly to the Oriental Interior as soon as the latter is dry. Directions are on can. Shipped in 5-gal., 1-gal., quart, and similar cans down to ⅛th gallon.

Package

Shipped only in full weight 100-lb. paper bags. Order by color name designated on color cards or samples.

Covering Capacity

The covering capacity of Oriental Interior finish is approximately 250 to 300 sq. yds. per ton, varying according to textures.

GAUGING PLASTERS

Use

Use for finish coat only in conjunction with lime putty described below.

Brands

Note: See "Brands," page 11.

SLOW SET

Red Top Slow Set Gauging Plaster (Gray).
Red Top Star Gauging Plaster (White).
Red Top Superfine Finishing Plaster (White).
Red Top Plaster Paris for Painters.

QUICK SET

Red Top Quick Set Gauging Plaster (Gray).
Red Top Champion Gauging Plaster (White).
Red Top Kings Diamond Gauging Plaster (White).
Red Top NYC Mills Gauging Plaster.

Description

These plasters are made of raw materials carefully selected from gypsum deposits unusually well suited for the manufacture of calcined plasters for this particular purpose.

Aside from saving time, gauging plasters are far more satisfactory than screened cement plaster.

Characteristics

They are made in both "slow set" and "quick set," and are uniformly ground to just the right fineness to insure easy working and mixing qualities.

Directions

Full directions for mixing and application are given under Finishing Lime.

Package

Shipped in full weight 80-lb. and 100-lb. paper bags; 100-lb. cloth sacks; 100-lb. paper-lined jute sacks; 250-lb. (230 lbs. net) barrels and 320-lb. (300 lbs. net) barrels.

Covering Capacity

Under average conditions one ton of Gauging Plaster, mixed with two tons of dry hydrated lime by weight, will cover about 1600 sq. yds.

FINISHING LIME

Use

Use finishing lime for finish coat only in conjunction with gauging plaster described below.

Brands

Note: See "Brands," page 11.

HYDRATED FINISHING LIME

Red Top Ivory Finish Lime.
Red Top Grand Prize Finish Lime.
Red Top Finish Lime.
Blue Label Cheshire Hydrate.

FINISHING QUICK (OR COMMON) LIME

Blue Label Cheshire Finish Quick Lime—in Lump, Pulverized, Granular and Superfine.

Berkshire Hills Finish Quick Lime—in Granular and Pulverized.

Description

These limes are specially prepared for finishing purposes. They possess a rich plasticity that makes them spread easy and far; hence they save time and labor.

Characteristics

Hydrated lime saves the time and trouble of slaking and screening lime on the job. The famous Ohio dolomite from which Red Top hydrated lime is made, together with U.S.G. standards of manufacture, make this lime unexcelled for finishing purposes.

It is uniformly burned and thoroughly hydrated, is of a snowy white color, and is absolutely free from "pops" and "pits."

It meets the standard specifications for hydrated lime of the American Society for Testing Materials.

Farnam Cheshire and Berkshire Hills Limes are burned from selected high calcium rock and are of exceptional quality. Because of their exceeding purity and the physical characteristics of the stone, these limes are unusually quick slaking. They have a high putty yield.

Directions

Mixing—*(a1) Hydrated Lime*—Fill watertight box one-half to two-thirds full of clean water. Add dry lime gradually (sift through a ¼-in. mesh screen, preferably) until water is dried up. Allow to soak overnight with 1 in. to 2 in. of water over lime. Do not hoe or screen after soaking unless lime is dirty or lumpy.

(a2) Quick Lime—Add water and lime gradually while mixing, constantly agitating mixture to prevent burning of unslaked portion. Mix to a thin consistency and screen. Run into ageing box.

(b) Mix 3 parts of lime putty by measure with 1 part of dry Gauging Plaster. Mix thoroughly.

Application—Same as Red Top Trowel Finish.

Package

Hydrated Finishing Lime is shipped in full weight 50-lb. paper bags. Quick Lime is shipped in 180-lb. and 280-lb. net weight wood barrels and steel drums, also in bulk. The Blue Label Cheshire Superfine Finish Lime is shipped also in 80-lb. Multi-Wall paper moisture-proof bags.

Covering Capacity

Under average conditions one ton of Red Top Hydrated Lime, when used in proportion of two parts of dry lime to one part of dry gauging plaster by weight, should finish from 500 to 700 sq. yds.

A ton of Quick Lime, when mixed in the above proportions, should finish about 1000 yards.

RED TOP KEENE'S CEMENT

Use

Use for high grade plasterwork, particularly to receive fine decorative treatment and where the utmost in hardness, density and sanitation is desired.

Description

Red Top Keene's Cement is the hardest and densest gypsum material that is applied with a trowel. It is manufactured from specially selected gypsum mined at Southard, Oklahoma. Red Top Keene's Cement excels in smooth, uniform working qualities and in tensile strength, due to the selected material and the U.S.G. improved methods of manufacture and rigid mill inspection.

Beside the standard Keene's Cement, Red Top Keene's Cement is made in two special types: Red Top Casting Keene's and Red Top Scagliola Keene's.

Characteristics

Keene's Cement is ground to extreme fineness, is pure white in color and takes a very high, glass-like polish. Its extremely hard surface is impenetrable to rodents and vermin and affords no lodgment for disease germs. It is easily cleaned. It contains no alkali to stain delicate wall tints or saponify the oil in paints, hence it is an ideal base for fine decorating.

Red Top Casting Keene's has minimum expansion. It is white, non-staining, non-corrosive, non-acid. It has a final set of two hours.

Red Top Scagliola Keene's is made expressly for the purpose. Initial set is 3 to 6 hours; final set, 15 to 20 hours.

Directions

Mixing—Add water only, mix thoroughly and bring to working consistency. Add 1 pail of lime putty to each 100-lb. bag of Keene's Cement where extra plasticity is required.

Application—Same as Red Top Trowel Finish.

Package

Shipped in 100-lb. jute and paper-lined jute sacks.

Covering Capacity

Under average conditions one ton of Keene's Cement, when used neat and in accordance with specifications, will cover about 400 to 500 sq. yds.

RED TOP (ARIDIZE) MOULDING PLASTER

Use

Use for ornamental moulded plaster work.

Brands

Note: See also "Brands," page 11.

Red Top Moulding Plaster.
Red Top No. 1 Moulding Plaster (White).

Description

The requirements for moulding plaster are distinctly different from any other class of plaster.

Gypsum deposits suitable for making this material are exceedingly rare.

These plasters are produced by a manufacturing process, patented by the United States Gypsum Company, which artificially ages the plaster, giving it those desirable characteristics of easy mixing and great hardness not obtainable in ordinary plasters until 8 to 12 months' ageing.

Heretofore, plasters have been aged by storing in warehouses but the results could not be uniform because of variations in temperature and humidity conditions. The production of Aridize Plasters, however, depends in no way on the atmospheric conditions, for an artificial atmosphere is produced at a temperature and humidity that will assure uniform ageing; consequently the plaster is always uniform.

Pre-ageing lowers the water carrying capacity of the plaster; hence Aridize Plasters set into denser, stronger and more durable moulds.

Even when green, moulds made of these plasters possess great strength, and breakage by handling and manipulation in the moulding and casting stage is diminished.

Characteristics

Aridize Moulding Plasters are made from selected gypsum ideal for the purpose and unequaled for whiteness and purity. This, together with the special patented process of manufacture, produces a particularly smooth working plaster of absolutely uniform setting quality.

These plasters are ground much finer than other similar products, assuring a more thorough solution and a finer surface to the finished work, with an absence of pinholes. The fine satin-like surface increases the life of the moulds.

In addition to these qualities, the plasters are cooler working and slower setting, which accounts for low expansion and absence of warped moulds. The slow generation of heat in setting insures protection to gelatine or glue moulds. Slow setting gives time for blending and working out trapped air bubbles and working the plaster into angles and corners of moulds.

Directions

Mixing—Add water only, mix thoroughly and bring to a working consistency. Add 5% lime putty to the moulding plaster where extra plasticity is required for run work.

Package

Shipped in 100-lb. paper bags; 100-lb. jute and paper-lined cloth sacks and 250-lb. (230 lbs. net weight) barrels and in 320-lb. (300 lbs. net weight) barrels.

MASTER SPECIFICATIONS

PREFACE

Specification Form

The form of this specification is that of a "Master" which includes all clauses which in ordinary practice apply to average work. All clauses, obviously, do not apply to every building. In formulating the "Interior Lathing and Plastering Specifications" for a particular building, only those clauses which apply should be selected for inclusion. Special provisions or methods but seldom required are not included—such clauses should be added wherever necessary to clearly define the procedure and especially to obviate controversy involving responsibility and cost.

Local Ordinances

Correlate these specifications with the requirements of Local Ordinances and Trade Customs relating to this division of the work.

Alterations and Additions

These specifications cover new work only. For additions and alterations add such clauses covering repairs and replacements and the joining of old and new work as may be required.

Advisory Service

The technical staff of the UNITED STATES GYPSUM COMPANY is at all times accessible for advice and recommendations in the formulating of the specification for Interior Lathing and Plastering. Special data, the result of much extended research work, relating to the selection and application of Interior Plastering and "Explanations of Job Conditions which Affect Plastering" will be furnished on request.

Notes

Notes in italics are explanatory or advisory only and should not be included in the specification.

Selective Words or Phrases

Wherever words or phrases occur in the body of the specification paragraph printed in italics and enclosed in parentheses, choose that word or phrase which applies to the particular work, omitting those that are irrelevant. Wherever the word "specify" occurs in italics enclosed in parentheses, thus *(specify)*, add the particular word or clause applicable, optional with the specification writer.

INTERIOR LATHING AND PLASTERING

Note: *For complete guaranteed and bonded plastering system see Standard X Plastering System, page 6.*

Note: *For exterior stucco, see Oriental Exterior Stucco, page 23.*

Note: *For Sabinite Acoustical Plaster, see the* UNITED STATES GYPSUM COMPANY'S *complete catalogue covering "Sound Control Service."*

Note: *For "Master Specifications" for "Red Top Insulating Lath" see the* UNITED STATES GYPSUM COMPANY'S *complete catalogue covering "Insulation Products."*

(1) General Conditions

The general conditions governing the General Contract apply to the work under this division.

Note: *The American Institute of Architects' standard form of General Conditions is advocated.*

(2) Work Included

(2a) The work included under this heading shall be the following:

(2b) All metal suspended or furred ceilings.
(2c) All metal stud partitions.
(2d) All metal wall furring.
(2e) All miscellaneous metal furring.
(2f) All lathing.
(2g) All plastering.

(3) General Scope

Note: *List and locate either in schedules on plans or here portions of the building to be finished, the base to receive plaster and here include sufficient data to insure accuracy in estimates.*

(3a) The following require no plaster *(list and locate)*.

(3b) The following require but *(one (1)) (two (2))* coats of plaster *(list and locate)*.

(3c) Ceilings noted as furred *(on plans) (in schedules)* are furred with *(metal) (gypsum board) (wood)*.

(3d) All supports for lath are spaced 16 in. on centers.

(3e) All exterior walls are furred with *(specify)*.

(3f) Exterior walls are not furred. Plaster shall be applied directly on the *(specify)*.

(3g) Partitions are of *(specify)*.

(3h) Walls back of finished tile work shall be lathed only. No plaster shall be applied.

(3i) Omit all plaster on interior masonry walls and *(hollow tile) (Pyrobar)* partitions back of marble work.

(3j) All exterior masonry walls, not furred, shall receive one coat of plaster back of marble work.

(3k) Omit the finish coat of plaster on all stud walls back of *(marble work) (blackboards) (specify)*.

(3l) Omit the finish coat of plaster back of all *(wood wainscots) (specify)* and similar solid trim.

(3m) *(Specify)* shafts shall be plastered full height.

(3n) All chases in unfurred masonry walls which are to be plastered shall be lathed with metal lath. Lap the masonry at least 3 in. and secure at masonry joints. Wide chases (over 16 in.) shall be furred to receive lath.

(4) Scaffolding

(4a) This contractor shall provide and erect all scaffolding, staging, etc., necessary for the proper execution of his work.

(4b) He shall co-operate with other trades to the extent that erection of scaffolding shall not conflict with the execution of other work immediately preceding or carried on, without undue conflict, simultaneously with the lathing and plastering.

(4c) If, after due authority has been granted to erect scaffolding, it is necessary to remove parts thereof for the accommodation of others, demolition and re-erection shall be done only after allocation of cost, if any, has been equitably adjusted.

(5) Heat

(5a) Adequate temporary heat will be provided by others for the proper execution of work under this contract.

(5b) This contractor shall provide salamanders, fuel and attendance and shall maintain without fire hazard adequate heat for the proper execution of work under this contract.

(6) Closures

(6a) Provide temporary cloth closures for all exterior openings during plastering.

(6b) During the summer months exterior openings shall be screened to prevent plastering drying out before it has crystallized.

(7) Protection

(7a) Adequately protect from damage and plaster droppings all finish of the building.

(7b) Adequately protect the building with layers of heavy waterproof paper from damage by water at sources, gauging barrels and mixing boxes.

(8) Damage

Breakage of glass or other damage to the building or equipment through accident or carelessness incident to work under this contract shall be satisfactorily repaired or made good by replacement at this contractor's expense.

(9) Cleaning

(9a) At completion, remove all rubbish, plaster droppings, etc., and leave the building broom clean.

(9b) This contractor shall remove all plaster from glass and other finish and leave in the condition found.

(10) Cutting and Patching

After the erection of finish by others, this contractor shall, when called upon, cut out where required, patch and paint up all finished plaster work and leave the entire work in perfect condition.

(11) Sample Panels

This contractor shall furnish and erect, where directed for the approval of the architect, sample panels of one square yard area each, to illustrate each type of finish required under this contract. The finished work shall equal in all respects the approved panels.

(12) Concrete Surfaces

Note: *Concrete surfaces to receive plaster must not be smooth. Use rough form boards. Avoid dressed or oiled boards.*

(12a) Concrete surfaces must be dry and free from dust, oils and efflorescence.

(12b) Burn off all oil or grease from surface with a torch.

(12c) Remove efflorescence with a wire brush and wash with a one (1) to five (5) solution of muriatic acid and water. Thoroughly wash off acid with clean water.

(12d) Surfaces too smooth to receive plaster shall be thoroughly hacked.

(12e) Hacking will be done by others.

(13) Grounds

All lathing and plastering shall be laid to not less than the following grounds:

¾ in. for *(¼ in. gypsum lath) (insulating board lath) (wood lath) (expanded metal lath) (⅞ in. for ⅜ in. gypsum lath);* ⅝ in. for *(brick) (or) (clay tile) (½ in. for Pyrobar).*

(14) Guaranty

(14a) This contractor shall guarantee all work and materials under this contract for a period of *(specify)* from the date of completion and acceptance.

(14b) Any defects attributable to faulty workmanship or material furnished under this contract shall be made good at this contractor's expense.

(14c) This shall include the cost of repairs or replacement of any decorating or other finish damaged by the defects.

(15) Workmanship

All work shall be executed by skilled workmen in a manner to satisfactorily fulfill the provisions of these specifications.

(16) Examination

(16a) All construction to receive lathing and plastering is presumed to be substantial, sound, level, plumb and true.

(16b) This contractor shall examine all construction, supports and base to receive lathing and plastering and shall report to the architect in writing any defects which will deleteriously affect work under this contract.

(16c) Failure to so report defects for correction or replacement prior to execution of the work under this contract will be construed as acceptance of the construction and shall not relieve the contractor from obligation under his guaranty.

(17) Materials and Mixing

(17a) General—Store all plaster at the site in a dry place, raised above the bare ground.

Provide clean, water-tight mixing boxes (approximately 3½x7 ft.x10 in. deep for base coats and 2½x4½ ft.x10 in. deep for finish coats) raised 4 in. at one end. Clean mixing boxes after each gauging.

Tools shall be kept clean. Do not rinse tools in gauging water.

Do not mix more material than can be applied in approximately one (1) hour.

Do not mix one gauging with another. Never retemper plaster after it has commenced to set.

All material except sand *(wood lath)* shall be as manufactured by the UNITED STATES GYPSUM COMPANY.

(17b) Water—Water shall be clean, free from alkali and impurities.

(17c) Sand—Sand shall be clean and sharp and free from organic matter with grains graded from fine to coarse, meeting fully the Standard Specifications for Plastering Sand of the American Society for Testing Materials. Screen through a 6-mesh screen.

(17d) Metal Furring—*(Specify sizes)* Red Top Cold Rolled Channels.

Note: *See page 5.*

Note: *U. S. G. Red Top Inner Wall Furring Brackets, installed by the masonry contractor, prove for deep furring an economical and practical substitution for standard metal furring.*

(17e) Metal Partition Studs—*(Specify sizes)* Red Top Cold Rolled Channels.

Note: *See page 5.*

(17f) Wood Lath—No. 1 *(white pine) (cypress) (spruce)* free from knots, sap and bark.

(17g) Gypsum Lath—Rocklath ⅜ in. thick, 16x32 in. and 16x48 in.

(17h) Insulating Lath—Red Top Insulating Lath *(½ in.) (1 in.)* thick, 18x48 in.

Note: *See U. S. G. Co.'s "Insulation Products" catalogue for complete details and specifications.*

(17i) Metal Lath—*(Specify brand, material and finish)* lath; —— lb. for horizontal positions and —— lb. for vertical positions.

Note: *See pages 3 and 4. Select and specify weight for both horizontal and vertical positions.*

Note: *Minimum weights should be as follows:*

(a) Expanded Metal Lath—

(a1) (For vertical position, partitions, etc., attached to metal supports) 12 and 13½-in. on center, lath shall weigh a minimum of 2.5 and 3.0 lb., respectively, except for solid partitions where 2.2 lath may be used on 12 in. spacings; and 3.4 lath on 16 in. spacing. For nailed-on partitions, maximum spacing shall be 16 in. for all flat laths, minimum weight to be 2.5 lb.

(a2) (For tied-on ceilings attached to metal supports) maximum spacing shall be 12 and 13½ in. for 3.0 and 3.4 lb. flat lath; for nailed-on ceilings maximum spacing shall be 16 in. for these laths.

(b) ⅛ in. Flat Rib Lath—

(b1) (For nailed or tied-on partitions and furring)
For supports spaced not to exceed 16 in. o.c.....2.75 lb.
For supports spaced not to exceed 19 in. o.c.....3.0 lb.
(b2) (For nailed or tied-on ceilings)
For supports spaced not to exceed 12 in. o.c.....2.75 lb.
For supports spaced not to exceed 16 in. o.c.....3.0 lb.
For supports spaced not to exceed 19 in. o.c.....3.4 lb.

(c) ⅜ in. Rib Lath—

(c1) (For nailed or tied-on partitions and furring)
For supports spaced not to exceed 19 in. o.c.....2.5 lb.
For supports spaced not to exceed 24 in. o.c.....3.0 lb.
For supports spaced not to exceed 31½ in. o.c.....3.4 lb.
(c2) (For nailed or tied-on ceilings)
For supports spaced not to exceed 19 in. o.c.....3.0 lb.
For supports spaced not to exceed 24 in. o.c.....3.4 lb.
For supports spaced not to exceed 31½ in. o.c.....4.0 lb.

(17j) Cornerite—Red Top or YPS Cornerite, 3x3x96 in. with special selvage edge.

Note: *See page 4.*

(17k) Strip Lath—Red Top Strip Lath, 3x96 in. with special selvage edge.

Note: *See page 4.*

(17l) Corner Beads—Red Top Corner Bead No. *(specify)*

Note: *See page 4.*

(17m) Metal Plaster Arches—Red Top Metal Plaster Arches No. *(s) (specify).*

Note: *See page 4.*

(17n) Base Screeds—Red Top Base Screed No. *(specify).*

Note: *See page 5.*

(17o) Metal Picture Mould—Red Top Picture Mould No. *(specify).*

Note: *See page 5.*

(17p) Metal Expansion Casings—*(specify).*

(17q) Base Plaster (Scratch and Brown Coats)—

Note: *Select type best adapted.*

(17q1) *(Specify brand)* ***Cement Plaster (Unsanded)***—

Note: *See page 12.*

(a) For scratch coat on gypsum lath, wood, wire and expanded metal lath, mix 2 parts by weight of dry sand with 1 part of plaster.

(b) For brick, Pyrobar gypsum tile, clay tile and second or brown coat, mix 3 parts by weight of dry sand with 1 part of plaster.

(c) Do not mix sand and plaster until ready to add water.

(d) First put in the mixing box a layer of sand, then one of plaster in raised end of box. Hoe dry from one end of box to other and then back again, working sand and plaster thoroughly together to a uniform color. Put water in other end of box; hoe plaster into the water, mixing thoroughly. Mix thin with water at first, then bring to the proper consistence for application by addition of properly proportioned dry sand and plaster.

(17q2) *(Specify brand)* ***Wood Fiber Plaster***—

Note: *See page 12.*

(a) *Neat*—Put the plaster in upper end of mixing box and water in lower end. Hoe plaster into water and allow to soak from 10 to 20 minutes. Then mix to proper consistence for application.

Note: *Used for wood lath and gypsum lath and scratch coat on wire and expanded metal lath.*

(b) *Sanded*—Mix equal parts by weight of plaster and dry sand. Mix as specified above in (a).

Note: *Used for brown coat on wire and expanded metal lath and for all plaster on brick, Pyrobar gypsum tile or clay tile.*

(17q3) *(Specify brand)* ***Prepared Plaster (Sanded)***—

Note: *See page 13.*

(a) Add nothing to the material but water.

(b) Put the plaster in upper end of mixing box and water in lower end. Hoe plaster into water, mixing thoroughly. Mix thin at first, then add sufficient dry material to bring to the proper consistence for application.

(17q4) Bondcrete (For All Concrete Surfaces)—

Note: *See page 13.*

(a) For both scratch and brown coats.

(b) Add nothing to the material but water.

(c) Put the plaster in the upper end of mixing box and water in lower end. Hoe plaster into water. Allow the material to soak at least 10 minutes. Mix thoroughly and break down the mix to a smooth, even creamy consistence.

(17r) Trowel Finish—

Note: *Select type best adapted.*

(17r1) Red Top Trowel Finish—

Note: *See page 13.*

Put the finish in the upper end of mixing box and water in the lower end (8 to 8½ gals. to the 80-lb. bag). No soaking is necessary. Mix thoroughly. Add more water if necessary to bring to a light, creamy consistence.

(17r2) *(Specify brand)* ***Prepared Gypsum Finish***—

Note: *See page 14.*

Put the finish in the upper end of mixing box and water in lower end. Hoe plaster into water (using approximately 1 part of water to 2 parts of plaster measured by volume). Allow the material to soak and draw in the water without hoeing for at least 10 minutes. When the material has soaked and shows no further signs of air bubbles, mix thoroughly and, with particular care, break down the mix to a smooth, even, creamy consistence. Bring the mix finally to a very thin consistence. Transport in buckets.

(17r3) *(Specify brand)* ***Finishing Lime and*** *(Specify brand)* ***Gauging Plaster***—

Note: *See page 15.*

(a1) *(Hydrated Lime)* Fill watertight box one-half to two-thirds full of clean water. Add dry lime gradually, preferably sifting through a ¼-in. mesh screen, until all water is dried up. Allow lime to soak overnight to develop full plasticity. Do not hoe or screen after soaking unless lime is dirty or lumpy.

(a2) *(Quick Lime)* Add water and lime gradually while mixing, constantly agitating the mixture to prevent burning of the unslaked portion. Mix to a thin consistence and screen. Run into ageing box.

(b) Mix 3 parts of lime putty by measure with 1 part of dry Gauging Plaster (equal to 2 parts of dry hydrated lime and 1 part of dry gauging plaster by weight). Mix thoroughly.

(17s) Sand Float Finish—

Note: *Select type best adapted.*

(17s1) *(Specify brand)* ***Prepared Gypsum Sand Float Finish***—

Note: *See page 13.*

Put the finish in the upper end of mixing box and water in lower end. Hoe finish into water. Allow the material to soak and draw in the water without hoeing for at least 10 minutes. When the material has soaked and shows no further signs of air bubbles, mix thoroughly and, with particular care, break down the mix to a smooth, even, creamy consistency. Transport in buckets.

(17s2) *(Specify brand)* ***Sand Float Finish (Job Sanded)***—

Note: *See page 12.*

Screen sand through a No. 12 screen. Mix dry to a uniform color 1 part of Cement Plaster to 1 part of dry sand by weight (equal to from 4 to 6 shovels of sand to each 100-lb. bag). Put dry mix in upper end of box and water in lower end. Hoe material into water and mix thoroughly to a smooth creamy consistence. Transport in buckets. Keep tools and box clean.

(17t) Red Top Texture Cote—

Note: *See page 14.*

(17t1) Neat—Put water in box first—8 to 9 gals. of water to the 100-lb. bag. Let soak for 15 minutes. Mix thoroughly. Add water if necessary to bring to a creamy consistence. Mix only enough for 1 hour's use—do not retemper after material has set.

(17t2) Sand Float—Add 2 to 3 parts of fine sand to 1 part of plaster. Add retarder dissolved in water to lengthen time of set, if required. Mix as above in (17t1).

(17t3) Color—Tint to shade selected with U.S.G. Lime Proof Colors. Use extreme care to reproduce the same color in successive batches by accurate gauging of amount of color and mixing water and thorough mixing.

(17u) Oriental Interior (Colored Float or Texture Finish)—

Note: *See page 14.*

(17u1) Color(s) shall be *(specify)* as subsequently determined upon.

(17u2) Put the Oriental Interior in upper end of box and water in lower end. Hoe material into water, using approximately 1 part water to 2 parts Oriental Interior, by volume. Let Oriental Interior soak overnight (not over 24 hours). After soaking, mix thoroughly and carefully hoe the mix to a smooth, creamy consistence. Transport in buckets.

(17v) Red Top Keene's Cement—

Note: *See page 16. Clauses below are for finish coats only.*

(17v1) Add water only, mix thoroughly and bring to a working consistence.

(17v2) Add 1 pail of lime putty to each 100-lb. bag of Keene's Cement where extra plasticity is required.

(17w) *(Specify brand)* **Red Top Moulding Plaster**—

Note: *See page 16.*

(17w1) Add water only, mix thoroughly and bring to a working consistence.

(17w2) Add 50% lime putty to the moulding plaster where extra plasticity is required for run work.

(18) Furred or Suspended Ceilings

Note: *See "Standard X Suspended Ceilings."*

(18a) General—Where so indicated on plans *(or listed in schedules)* ceilings shall be furred or suspended with metal furring members.

(18b) Hangers—Hangers shall be placed not to exceed 4 ft. center to center in either direction. The minimum size for hangers shall be No. 8 galvanized wire, 1x$\frac{3}{16}$-in. flats or $\frac{7}{32}$-in. round mild steel rods.

Upper ends of hangers of wire, rods, or flats, shall be of sufficient length to wrap around beams or provide a suitable anchorage in the concrete or tile. Where steel beams or purlins are not more than 4 ft. center to center, hangers may be attached directly to them. When hangers are hung from concrete beams or arches, the hangers shall be placed before concrete is poured. When ceilings are hung from terra cotta floors, hangers may be installed at tile joints during erection, or may be installed after tile is in place, holes bored clear through tile and secured on upper side by steel rod or toggle bolt.

(18c) Runner Channels—Runner Channels shall be placed not to exceed 4 ft. on centers, and shall be not less than 1½ in. weighing not less than 456 lb. per thousand lineal feet. Lower end of wire hangers shall be secured to runner channels by three twists; lower end of rod hangers shall be secured to runner channels by two twists, or by wiring; lower end of flat steel hangers shall have holes punched at the proper distance to which the runner channels shall be bolted with not less than ⅜-in. diameter bolts.

Runner channels shall conform to the contour of the ceiling.

(18d) Furring Channels—Furring Channels shall not be less than ¾ in. with a minimum weight of 276 lb. per thousand lineal ft.; they shall be erected at right angles to the runner channels and shall be securely saddle tied to them by at least three strands of No. 16 galvanized annealed wire at each crossing, or by No. 9 wire hairpin clips.

Furring channels shall be spaced *(specify)*.

Note: *Maximum spacing should be 12 and 13½ in. for 3.0 and 3.4 lb. flat lath; 12 in. for 2.75 lb.; 16 in. for 3.0 lb.; 19 in. for 3.4 lb. ⅛ in. Flat Rib Lath; 19 in. for 2.75 lb., 24 in. for 3.4 lb., 31½ in. for 3.4 lb. ⅜ in. Rib Lath.*

(18e) Metal Lath—Shall weigh not less than *(2.75 lb.) (specify)* per sq. yd.

The metal lath shall be wired to the furring channels (the long dimension of the sheet being across the channels) by No. 18 gauge galvanized annealed wire every 6 in. along the furring channels; there shall be one tie on side laps half way between channels.

(19) Metal Stud Partitions

(19a) Solid Partitions—Metal studs for solid partitions shall be not less than ¾-in. cold or hot rolled channels weighing not less than 276 lb. per thousand lineal feet, and spacing of studs shall conform with the requirements for the weight of lath specified.

(19b) Hollow Partitions—Metal studs for hollow partitions shall be constructed of a double row of ¾-in. channels weighing not less than 276 lb. per thousand lineal feet and spacing of studs shall conform with the requirements for the weight of lath specified.

(19c) General—

(19c1) Studs shall be secured in position by inserting ends in holes punched ¾ in. in top of concrete or other masonry floors or in soffits of masonry ceilings, or by attaching to stud shoes, or by placing ends in holes drilled in wood floor bucks anchored to masonry floors at 4-ft. intervals.

(19c2) Studs shall be secured on wood floors by wire tying to nails driven 1 in. into floors and projecting at least 1 in. above.

(19c3) Where metal lath ceilings are used a small hole shall be made in the ceiling lath and the end of the channel allowed to project through it and be wired to a channel attached to the ceiling lath.

(19c4) Splicing of studs shall be made by lapping channels not less than 8 in. with the flanges interlocked and tied.

(19c5) Solid partitions over 6 ft. high shall be temporarily braced horizontally on the channel side at intervals not exceeding 6 ft. vertically before applying plaster. Such bracing shall not be removed until scratch coat on the lath side of the partition has set.

(19c6) In every case one channel shall be set next to wood buck at each side of openings and double wired securely to 8d nails driven on each side of channel in pairs into buck at 2-ft. intervals. Bottom of door buck shall be securely spiked to wood plug in floor, or attached by metal anchors.

(20) Metal Wall Furring

Where so indicated on plans *(or listed in schedules)* exterior walls shall be furred with ¾-in. channels spaced *(specify)* on centers with flange to wall. Furring channels shall be secured to floors and ceilings in a substantial manner and shall be substantially secured to walls with special hook nails driven into the mortar joints. Provide rigid framing at all openings.

(21) Miscellaneous Metal Furring

Provide of ¾-in. channels, furring for all *(false beams) (ornamental plaster cornices) (stair soffits) (specify)*, etc., as shown on the plans and as detailed. Furring shall be set *(specify)* on centers and rigidly secured to the building construction.

(22) Application of Wood Lath

(22a) All *(exterior stud walls) (wood furring) (interior stud partitions) (ceiling joists) (stair soffits) (specify)* shall be lathed with wood lath. Lath shall be spaced not less than ¼ in. nor more than ⅜ in. apart and shall be secured to each bearing with standard wood shingle nails, two (2) to each end and one (1) to intermediate bearings.

Lathing shall break joints every eight laths, all put on horizontally. Under no circumstances shall lathing stop and form a long, straight, vertical joint nor be put on vertically to finish out at angles or corners; neither shall any lath run through and behind studding from one room to another. All corners must be made solid before lath is applied.

(22b) All re-entrant angles shall be reinforced over the wood lath with Cornerite. Strips shall butt (not lap) at ends and shall be substantially secured.

(23) Application of Red Top Rocklath

All *(exterior stud walls) (wood furring) (interior stud partitions) (ceiling joists) (stair soffits) (furred or suspended ceiling) (metal stud partitions) (specify)* shall be lathed with Red Top Rocklath.

(23a) Cutting shall be done by scoring with a sharp hatchet or knife and then breaking down and up over a straight edge.

Nails shall be 1⅛ in., 13 gauge, ⅜-in. head, blued, long point, sterilized nails.

Red Top Rocklath boards shall butt with broken joints in each course. Stagger joints between walls and ceilings so the vertical joints on wall will not meet ceiling joints.

Fit Red Top Rocklath tight together at all re-entrant angles and corners. Cut accurately and fit Red Top Rocklath neatly around all electric outlet boxes, etc.

Space nails 4 in. apart at every support, nailing to center support first, then outer edges. Each nailing edge must have a firm bearing on studs, joists and furring. Drive nails home.

(23b) All re-entrant angles shall be reinforced over the Red Top Rocklath with Cornerite. Strips shall butt (not lap) at ends and shall be substantially secured.

(24) Application of Red Top Insulating Lath

Note: *See U. S. G. Catalogue on "Insulation Products" for complete specification data.*

(25) Application of Metal Lath

(25a) General—All *(exterior stud walls) (wood furring) (interior stud partitions) (ceiling joists) (stair soffits) (furred or suspended ceilings) (metal wall furring) (metal stud partitions) (miscellaneous metal furrings) (specify)* shall be lathed with metal lath.

(25b) Attachment to Wood Supports—Metal lath shall be attached to wood studs and joists by not less than 4d and 6d nails, respectively, driven to a penetration of not less than ⅞ in. and 1 in., respectively and spaced not to exceed 6 in. on centers, or by clips or devices with equivalent penetration and holding power. There shall be one tie on side laps, half way between supports.

(25c) Attachment to Metal Supports—Metal lath shall be wired to metal supports at intervals not exceeding 6 in., with not less than No. 18 gauge galvanized soft annealed wire and a tie shall always occur where sides of sheets lap at channels. There shall be one tie on side laps half way between channels.

(25d) Erection—

(25d1) Metal lath shall be erected with the long dimensions of sheet across the supports.

(25d2) Lath shall be first applied to the ceilings and the sheets carried down 6 in. onto the walls and partitions. If metal lath is not used on the ceilings, the lathing shall start at the top of the wall and be bent and carried up 6 in. onto the ceiling joists so that no joints occur at juncture of ceiling and walls; and on walls, all lath shall be started one framing member away from corner and bent into the corner and carried onto the abutting wall so as to avoid a joint at juncture of walls. Where ⅜-in. ribbed lath is used on ceilings or walls

it shall be butted into all joints, and strips of flat lath shall be bent into the shape of an "L" (Cornerite), 3 in. on each side, and be securely wired along each edge in all corners. Cornerite shall not be fastened at the corner, but only along each edge of the sheet.

(25d3) Lath shall be placed so that the lower sheet laps over the upper (not vice versa) and shall be securely attached to the supports. Fastenings shall be so placed that they shall occur where sides of sheets lap at supports.

(25d4) Expanded metal lath shall be lapped at sides not less than ½ in. and at ends not less than 1 in. End laps shall occur only over supports.

(25d5) Rib lath shall be lapped at sides by nesting outside ribs, and at ends, 1 in.

(26) Metal Plaster Arches

Secure metal plaster arches in position over the lath, set accurately in accordance with the details. Corner beads on vertical jambs shall join arch beads without break at the juncture.

(27) Corner Beads

All corners *(both vertical and horizontal)* shall be protected with corner beads for their full height *(or length)*.

Note: *If there are exceptions so note.*

Corner beads shall be substantially secured, accurately set, plumb, true and straight.

(28) Metal Base Screeds

The following rooms shall have base screeds:

Note: *List and locate either in schedules on plans or here.*

Screeds shall be substantially secured, accurately set, straight and true to line and parallel with the finished floor line.

(29) Metal Picture Moulds

The following rooms shall have metal picture moulds:

Note: *List and locate either in schedules on plans or here.*

Picture moulds shall be substantially secured, accurately set, straight and true to line and parallel with the ceiling line.

(30) Metal Expansion Casings

The following openings shall have metal expansion casings:

Note: *List and locate either in schedules on plans or here.*

Expansion casings shall be accurately set in line with jambs in accordance with details. Secure with screws and locking metal clips. Provide one-piece stamped casing miters.

(31) Application of Plaster—General

Keep plaster from freezing for 24 hours after application. Do not apply finish coat on a base coat which contains frost.

In hot, dry weather screen all openings while plastering to prevent material drying out before it has set. If plaster should dry out (showing soft, white spots or areas) sprinkle those portions so affected with clean water from a spray pump or a brush.

After plastering has set, open the windows and permit the wall to dry out as quickly as possible. Use judgment in procedure during freezing weather.

For grounds see "Grounds," par. 13, page 18. Unless specially otherwise noted, all plaster shall be applied in three (3) coats—scratch, brown and finish. Scratch coat shall be applied and the surface well scratched. When scratch coat is set and nearly dry, follow with brown coat. Brown coat shall be brought to a true level plane with rod and darby flush with the grounds, ready to receive finish coat. Angles and corners shall be left straight, true and plumb.

(32) Application of Base Plaster (Scratch and Brown Coats)

(32a) Cement Plaster and Prepared Plaster—

(32a1) On Wood Lath—Soak lath thoroughly the day before and again an hour or so before applying the plaster. Apply in two (2) coats, scratch and brown, the scratch with sufficient pressure to obtain a good key. Darby the brown coat lightly, and use water sparingly.

(32a2) On Gypsum Lath—Do not wet lath. Apply in two (2) coats, scratch and brown. Scratch coat shall be well scratched in to fill all interstices between lath boards. Darby brown coat lightly and use water sparingly.

(32a3) On Wire or Expanded Metal Lath—Apply in two (2) coats, scratch and brown. Scratch coat shall be applied lightly covering the lath and filling meshes. Scratch first coat and allow to set before applying brown coat. Darby brown coat lightly and use water sparingly.

(32a4) On Brick, Pyrobar Gypsum Tile, or Clay Tile—*(Soak brick or tile walls thoroughly.) (If necessary, sprinkle Pyrobar lightly to reduce suction.)* Apply in two (2) coats, scratch and brown, and fill out to grounds. Darby lightly and use water sparingly.

(32b) Wood Fiber Plaster—

Note: *Neat Wood Fiber Plaster may be troweled down to a smooth finish omitting further finish coat. If desired, so specify.*

(32b1) On Wood Lath—Soak lath thoroughly the day before and again an hour or so before applying the plaster. Apply scratch coat with sufficient pressure to obtain a good key. Rake or scratch the surface. Apply brown coat using sufficient material to fill out to the grounds.

Before the plaster begins to set, broom the surface to receive the finish coat.

(32b2) On Gypsum Lath—Do not wet lath. Apply in two (2) coats, scratch and brown. Scratch coat shall be well scratched in to fill all interstices between lath boards. Before the plaster begins to set, broom the surface to receive the finish coat.

(32b3) On Wire or Expanded Metal Lath—Apply in two (2) coats, scratch and brown. Scratch coat shall be applied a little stiff, covering the lath and filling meshes. Scratch first coat and allow to set before applying brown coat. Brown coat shall be applied to fill out to the grounds. Before the plaster begins to set, broom the surface to receive the finish coat.

(32b4) On Brick, Pyrobar Gypsum Tile or Clay Tile—*(Except over dampproof paint.) (Soak brick or tile walls thoroughly.) (If necessary, sprinkle Pyrobar lightly to reduce suction.)* Apply in two (2) coats, scratch and brown, and fill out to the grounds. Before the plaster begins to set, broom the surface to receive the finish coat.

(32c) Bondcrete (For All Concrete Surfaces)—

Note: *See paragraph 12, page 18.*

Note: *Bondcrete may be troweled down to a smooth finish omitting further finish coat. If desired, so specify.*

Apply in two (2) coats, scratch and brown, and fill out to grounds. Before the plaster begins to set, broom the surface to receive the finish coat.

(33) Application of Trowel Finish

(33a) Location—The following shall receive trowel finish:

Note: *List and locate either in schedules on plans or here.*

(33b) Red Top Trowel Finish or Lime and Gauging Plaster—

Apply over *dry* walls, using more water if the walls are bone dry. Scratch in a thin coat, then go over a second time filling imperfections and cat faces. Trowel to a smooth finish applying water with a damp brush. Troweling should be completed before the finish has set. In cold, damp weather, provide heat and ventilation until the finish is dry.

(33c) Prepared Gypsum Finish—

Base coat must be half green before finish is applied. If suction is too great, sprinkle lightly with clean water from a clean brush.

Apply in three (3) coats. The first time over, put on sufficient material to cover the surface completely, using material as thin as possible and grinding it thoroughly into the base coat. Allow this to draw a few moments to avoid blistering.

The second time over, lay the material on perfectly level.

The third time, make the material as thin as can be handled on the hawk and fill in cat faces and imperfections. After it has drawn a few moments, trowel to a smooth surface, applying water with a damp brush. Do not drench with water (drenching will kill the face of the material). Work top and bottom of the wall at the same time to avoid joinings.

(34) Application of Sand Float Finish

(34a) Location—The following shall receive sand float finish:

Note: *List and locate either in schedules on plans or here.*

(34b) Prepared Sand Float Finish or Cement Plaster Sanded—

Apply sand float finish after base coat has set firm and hard, but while still green.

"Grind in" a thin coat first; then "come back" with the final coat, laying it on in an even surface. Then use a *(cork) (carpet)* or *(felt)* float, working the material to a true, even surface, free from float marks and cat faces.

Note: *Cork float preferred.*

Use as little water as possible while working, so as to avoid killing the surface. Use damp brush only. Do not attempt to work after the material begins to or has set.

Work top and bottom of the wall at the same time to avoid joinings.

(35) Application of Oriental Interior (Colored Finish Coat)

(35a) Location—The following shall receive Oriental Interior Finish:

Note: *List and locate either in schedules on plans or here.*

(35b) General—Brown coat should be broomed or left rough under darby to insure a good bond. Remove all loose or projecting particles from base coat which may show through finish coat.

The base coat must be set firm and hard before the application of Oriental Interior. *On all types of masonry construction, such as gypsum tile, clay tile, etc., the base coat must be thoroughly dry.* On other types of lathing base, such as plaster board, wood or metal lath, Oriental Interior may be applied after the base coat is 90% dry. If the suction in the base coat is too great to permit ease of application, wet down lightly and uniformly with clean water.

To avoid cutting re-entrant angles, use a trowel with edges rounded to a curve approximately the circumference of a dime.

Use as little water as possible while working, so as to avoid killing the surface. Use damp brush only. Do not attempt to work material after it begins to or has set.

Work top and bottom of the wall at the same time to avoid joinings.

(35c) Float Finish—Apply in two (2) coats. First apply a thin coat, grinding this into base, thoroughly covering the surface, and allow to draw a few moments. The second time over lay the material on perfectly level and then use a *(cork) (carpet)* or *(felt)* float, working the material to a true, even surface, free from float marks and cat faces.

(35d) Texture Finish—Apply in two (2) coats. First apply a thin coat, grinding this into base, thoroughly covering the surface, and allow to draw a few moments. The second time over, lay the material on perfectly level, working it into the desired texture.

(35d1) Proper drying conditions must be maintained in order to protect the color. During the late fall, winter and early spring months, the slow-drying periods of the year, artificial heat and proper ventilation must be arranged for. Failure to provide this protection may result in color difficulties.

Note: *The* United States Gypsum Company *will furnish on application a Special Bulletin covering the execution of textured finishes.*

(35e) Tile or Masonry Effects—Mark off with a straightedge while the material is "green"—preferably from 4 to 5 hours after application. Units shall be rectangular and joints shall be clean cut and even.

(36) Application of Red Top Texture Cote

(36a) Location—The following shall receive Red Top Texture Cote:

Note: *List and locate either in schedules on plans or here.*

(36b) General—Brown coat should be broomed or left rough under darby to insure a good bond. Remove all loose or projecting particles from base coat which may show through finish coat.

The base coat must be set firm and hard before application of Red Top Texture Cote and approximately 50% dry.,

To avoid cutting re-entrant angles, use a trowel with edges rounded to a curve approximately the circumference of a dime.

(36c) Float Finish—

Note: *Specify same as (35c).*

(36d) Fexture Finish—

Note: *Specify same as (35d).*

(37) Application of Keene's Cement Finish

(37a) Location—The following shall receive Keene's Cement Finish:

Note: *List and locate either in schedules on plans or here.*

(37b) General—

Note: *Specify same as (33b).*

(37c) Marble Panels—Keene's Cement wainscots shall be divided into even vertical panels with V-joints while the material is "green"—preferably from 4 to 5 hours after application. First rake out plaster base at joints for a depth of ¼ and ½ in. wide, laid to a straightedge, plumb and true—clean of loose particles. Apply Keene's Cement as above and form clean cut, even vertical V-joints at panel divisions.

(37d) Tile Effects—

Note: *Specify same as (35e).*

(37e) Polished Surfaces—After the cement is dry, polish with a cloth to a highly polished surface.

(38) Ornamental Work

(38a) Location—The following rooms require ornamental plaster in accordance with details.

Note: *List and locate either in schedules on plans or here.*

(38b) Models—

(38b1) All ornamental work shall be executed from models.

(38b2) Models shall be furnished at the contractor's expense for all ornamental work. These shall be made by a skilled modeler *(selected) (approved)* by the architect, preferably in *(name place)* so that they may be under the direct supervision of the architect while being prepared. Models must be submitted for approval while in the clay.

(38b3) The contractor shall allow the sum of *(specify)* to cover the cost of models prepared under the direction of the architects, delivered f.o.b. cars *(specify)*.

(38b4) The owner will furnish, without cost to the contractor, models prepared under the direction of the architect, delivered f.o.b. cars *(specify)*.

(38c) General—

(38c1) All curved work shall be *(run)* or *(cast)* to true radial lines.

(38c2) Leave all ornamental plaster work in perfect condition for decorating, true and smooth, with surfaces and intersections rubbed down with fine sandpaper, if necessary.

(38d) Run Work—All run work shall be executed in gauged Moulding Plaster.

Furnish clean cut, accurate templates made in strict accordance with the architect's *(full size)* details.

Run all mouldings straight and true with perfect arrises and miters.

(38e) Cast Work—All cast work shall be executed in Moulding Plaster.

Ornamental work shall be cast hollow or solid as best suited to conditions, thoroughly strengthened with fiber and braced where necessary.

All cast work shall be set accurately—true, plumb and straight.

If necessary, members shall be substantially fastened around furring; where nails are used, they shall be galvanized.

ORIENTAL EXTERIOR STUCCO
(Base Coats and Colored Finish Coats)

Description

Oriental Exterior Stucco is a completely factory-mixed exterior stucco material of the highest quality. The finish coat is scientifically colored in a wide range of tints. It is the product of careful and thorough investigation and research by the UNITED STATES GYPSUM COMPANY.

The chief limitation of stucco heretofore has been the difficulty of producing the desired texture and color to harmonize with the architectural design when the color has to be mixed in on the job, or of matching a certain color when the batches are mixed at different times or under different conditions.

Oriental Exterior Stucco is scientifically compounded and is water-resistive, non-staining, plastic, easy to apply, and permanent. Its use eliminates much of the uncertainty and defects inherent in both quality and appearance in the usual job-mixed stucco work.

Bases—Oriental Exterior Stucco may be applied over stucco mesh, self-furring metal lath, wire lath, tile, brick or concrete. It is particularly adapted to use over Red Top Insulating Board and Gyplap. It is also adaptable for overcoating old cement stucco walls, masonry surfaces and walls of frame buildings.

Oriental Exterior Stucco contains no ingredient that will in any way weaken or corrode steel reinforcement.

Base Coat—Oriental Exterior Stucco Base Coat is a specially prepared, factory-mixed, permanent, water-resistive base for Oriental Exterior Stucco Finish, with the correct proportion of uniformly graded, selected sand, and other ingredients added to make it plastic.

Factory mixing prevents oversanding or improper proportioning of other ingredients on the job. Its uniformity assures perfect joinings of various mixes that will not show through the delicate coloring of the finish coat.

Being made ready for use by the addition of water only, it is economical of time and labor and assures a base of uniform suction and strength.

Finish Coat—Oriental Exterior Stucco Finish is mixed with mineral colors and prepared ingredients that make it water-resistive. The formula used is based upon methods used in producing the famous Old World stuccoes and one successfully used in America for 20 years.

Oriental Exterior Stucco Finish is furnished in white and eleven standard colors. All ingredients, including the mineral colors, are weighed and the charge thoroughly machine mixed. Water only needs to be added at the job. A uniform color and correct mixture are thus assured, entirely eliminating the unavoidable variations which occur when stucco is hand-mixed on the job.

Characteristics

Oriental Exterior Finish sets slowly enough to permit proper finishing, thus avoiding unsightly streaks or shading.

Proper manipulation by the workman will produce in Oriental Exterior Stucco the beautiful texture and color effects that mark the finest of both Old World and modern stucco work. Besides the period textures, it is easy to achieve the smooth trowel, stipple, sponge, rough cast or spatter-dash finishes.

Oriental Stucco Finish increases in hardness, strength and water resistive qualities with age.

Use

Use for base and finish coats of exterior white or colored stucco of the highest quality.

Note: *Oriental Exterior Stucco Finish may be applied over standard portland cement base coats.*

Package

Oriental Exterior Base Coat is shipped in 80-lb. paper bags, and Oriental Exterior Finish Coat is shipped in 100-lb. paper bags. Order Finish Coat by the number on color cards or samples.

Covering Capacity

Note: *See "Covering Capacity," page 11.*

Base Coat—The approximate covering capacity of one ton of Oriental Exterior Stucco Base Coat (scratch and brown coats) on the basis of the average job, is as follows:

Plastering surface	Brick and clay tile	Metal lath	Wire fabric	Cement and cinder tile	Concrete
Sq. yd. per ton	20 to 25	25 to 30	22 to 28	20 to 22	20 to 25

Finish Coat—One ton of Oriental Exterior Stucco Finish, not to exceed ¼ in. in thickness, will cover from 150 to 200 sq. yds., depending on the texture selected.

ORIENTAL EXTERIOR STUCCO—MASTER SPECIFICATIONS

Note: *Notes are explanatory or advisory only and should not be included in the specifications.*

(1) Work Included

The following surfaces shall be finished with Oriental Exterior Stucco:

Note: *Here list and locate all work included under this contract, together with the description of texture and color selected. If more than one texture or color is used on the work, list, locate and describe separately.*

(2) Examination

This contractor shall examine all base surfaces to receive stucco and shall report to the architect in writing any defects which will detrimentally affect the work under this contract. Commencement of work under this contract, without such notice, will be construed as acceptance of the base surfaces, and full responsibility for the perfect final condition of the finished work.

(3) Sample Panels

The contractor shall furnish on the site, where directed, three (3) sample panels one (1) square yard in area for the approval of the architect. Panels shall be executed on the base specified and in accordance with the architect's selection of textures and colors. The stucco work shall be finished in accordance with the approved panel or panels.

(4) General

All materials shall be as manufactured by the UNITED STATES GYPSUM COMPANY. All work shall be performed by skilled workmen.

(5) Materials

(5a) Red Top Expanded Metal Stucco Mesh—1½-in. mesh, painted; weight *(1.8) (3.6)* lb. per sq. yd. Nails shall be Red Top Economy Furring Nails.

(5b) Red Top Self Furring Diamond Mesh Lath—*(Painted) (Galvanized) (Copper bearing steel, painted) (Pure iron, painted);* weight *(2.2) (2.5) (3.0) (3.4).* Nails shall be 6d galvanized.

Note: *Select either for frame construction as desired.*

(5c) Base Coat—Oriental Exterior Stucco Base Coat.

(5d) Finish Coat—Oriental Exterior Stucco Finish, color No. *(specify).*

(6) Lathing

Note: *Include only for frame construction.*

(6a) Expanded Metal—Apply the expanded metal across the studs. Secure with self-furring nails in accordance with the manufacturer's directions approximately 6 in. apart on studs. Lap pieces of expanded metal 1 in. Carry metal around all corners to the first support. Thoroughly secure the metal at all openings.

(6b) Diamond Mesh Lath—Apply the Self Furring Diamond Mesh Lath across the studs. Lap lath ½ in. on sides and 1 in. on ends. Carry metal around all corners to the first support. Secure with 6d galvanized nails not more than 16 in. on centers horizontally and 6 in. on centers vertically. Drive nails well in and bend to engage at least two lath strands.

(7) Mixing and Application of Stucco

(7a) General—

(1) Use a clean, tight mixing box, about 3½x7 ft., raised about 4 in. at one end. Mix with a hoe. Clean the mixing box after each gauging.

(2) Use only clean water, free from alkali and impurities; keep tools clean. Do not rinse tools in gauging water.

(3) Do not mix more material than can be applied in about one hour.

(4) Do not mix one gauging with another and do not retemper stucco after it has commenced to set.

(5) Do not apply during freezing, cold or wet weather, nor when rainstorms threaten.

Note: *Freezing will cause disintegration as well as color difficulty. Slow or sluggish drying or a rainstorm before hardening takes place, generally results in cloudy effects and color distortion. Careful treatment of this phase of stucco work is the greatest guarantee of uniformity in color. The material should not be applied to greasy surfaces. Integral waterproofing or anti-freeze solutions should not be used.*

(6) Keep stucco in a dry place. Do not store on the bare ground.

(7b) Base Coats—Add only clean water to Oriental Exterior Stucco Base Coat and mix to the proper consistency. Apply in two coats. The first coat shall be ⅜ in. to ½ in. thick, scratched. After from 3 to 5 days apply the second coat not less than ⅜ in. thick properly rodded and floated to a true plane. Rake or thoroughly scratch each coat to provide a key for the succeeding coat. Allow second coat to cure from 7 to 10 days. In hot weather, wet down each coat daily.

(7c) Finish Coat—Add only clean water to Oriental Exterior Stucco Finish and mix to the proper consistency. Allow finish coat to soak from 20 to 30 minutes. After the base coats are completely dry, spray wall sufficiently to cut suction (avoid drowning surface). Apply finish coat not less than ⅛ in. or more than ¼ in. thick, as required for the finish selected.

The finish shall be:

Note: *Here specify or describe the finish selected. U.S.G. Bulletin OS-3 describes in detail the methods used to obtain various textures.*



Spray wall to cut suction. Apply Oriental Finish about ⅛ in. thick with a steel trowel. Float in circular motion with cork or carpet float. Keep the float well wet



Spray wall to cut suction. Scratch in Oriental Finish and double back, laying on a smooth uniform coat not to exceed ¼ in. thick. Use coarse brush. Avoid joinings



Spray wall to cut suction. Apply ⅛ in. coat of Oriental Finish. Broom vertically, avoiding conspicuous joinings. Apply spatter coat of creamy consistency and trowel down with vertical stroke



Spray wall to cut suction. Scratch in roughly over base coat. Complete coat not more than ¼ in. thick by laying on lightly with trowel held at 45° in upward stroke



Spray wall to cut suction. Scratch Oriental Finish in and double back, laying material on not over ¼ in. thick. Work 4-in. brush in semi-circular motion to show swirls and welts



Go over rough trowel texture after it has begun to stiffen with brush, slightly wet, to knock off sharp edges. Clean brush occasionally so as not to carry excess material

WALLBOARDS

SHEETROCK—THE FIREPROOF WALLBOARD

Description

Sheetrock is a fireproof wallboard. It is made of gypsum, moulded while in a plastic condition between two sheets of tough protective paper. In the finished product the gypsum has recrystallized and the board is strong, lasting, tough, durable and slightly flexible. The long edges are reinforced and protected by the same material with which the board is sheathed. These patented edges are square, uniform and true. The Sheetrock Armored Joint System described below provides a uniform, strong, jointless surface ideal for any finish.

The New Surface—Sheetrock has a close-grained, highly calendered surface of ivory color. It is tough and highly resistant to scuffing and abrasion. Light colored paints retain their original freshness and clarity. All paints spread farther.

The Core—The cellular core makes New Improved Sheetrock more insulating. It also increases flexibility, reducing the chance of breakage in transport, handling and application.

The Nailing Edges—Nailing edges on the standard ⅜-in. and ¼-in. thick Sheetrock are square and uniformly thick. The paper enveloping the core has been chamfered so that the reinforced edges are of precisely the same thickness as the rest of the board, thus eliminating bowing in the piles. Panels join evenly and smoothly. The ½-in. thick Sheetrock Building Board has a reinforced tongue-and-groove edge which is extremely uniform, assuring perfect fit and precise thickness at the edges.

Marking—On the edge of each sheet will be found a distinctive marking.

Sizes

Standard Sheetrock—Sheetrock is made ⅜ in. thick; 32 and 48 in. wide and 4, 5, 6, 7, 8, 8½, 9 and 10 ft. long. The widths fit standard 16-in. centering of studding and joists and the lengths readily adapt it to average ceiling heights.

(Sheetrock is also made ¼ in. thick and 6, 7, 8, 9 and 10 ft. long.)

Sheetrock Building Board—Sheetrock Building Board is made ½ in. thick (longitudinal edges tongue and groove); 48 in. wide and 8 ft. long.

Advantages

Fireproof—Does not burn or readily transmit heat. It interposes a continuous fireproof sheet of substantial thickness over the wood frame construction.

Permanent—Does not disintegrate.

No Expansion or Contraction—Does not warp, shrink or crack, because it is unaffected by climatic conditions.

Substantial Thickness—The standard ⅜-in. thick sheet is almost twice as thick as ordinary fiber wallboard.

Strong Close Longitudinal Joints—The boards fit close and even. The tough paper covering of Sheetrock is folded square over the longitudinal edges, forming a patented feature which insures an extra strong nailing edge and tight, flush joints. When finished with Sheetrock Armored Joint System, the joints are permanently hidden and are not apparent even under wallpaper.

Sound and Heat Insulation—Its greater thickness and permanently tight joints increase its insulating qualities materially over those of ordinary wallboard.

It is a non-conductor of sound to a surprising degree.

Easy to Install—It is sufficiently light in weight for easy, rapid handling. The tough sheets can be sawed and nailed like lumber.

Use

Because Sheetrock possesses so many high grade, practical features, it has a correspondingly wide field of usefulness.

Use for walls and ceilings in buildings of all types; building new rooms in old buildings; lining garages and attics; fireproofing over heating plants; factory dry rooms; exhibition booths; walls and ceilings of remodeling work. It is particularly adapted to office partition work in existing buildings, since it eliminates the time and dirt of plastering.

Sheetrock walls, particularly when finished with Metal "A" Joint System or Sheetrock Reinforced Joint System, take all types of painting and decorating, including wall paper.

Textone, the Plastic Paint, is a particularly desirable decorative medium for Sheetrock.

SHEETROCK REINFORCED JOINT SYSTEMS

General

The United States Gypsum Company has developed two systems of joint reinforcement, which add permanent armored joint concealment to the other advantages of Sheetrock. The joinings between the boards are "laced" by reinforcing (either the Sheetrock Metal "A" Joint System or the Reinforced (fabric) Joint System) embedded in a perfected joint cement of unusual strength and adhesiveness. This assures permanent concealment of board joinings and lessens the possibility of joint cracks showing through the decoration.

Sheetrock Metal "A" Joint System

The Sheetrock Metal "A" Joint System of reinforcement consists of a perforated metal tape packed in a box containing 250 lin. ft. 1⅞ in. wide with 15 lbs. of joint cement which is sufficient to treat the joints on 500 sq. ft. of board surface.

The Metal "A" System is somewhat more expensive than the Reinforced Joint System, but is preferable.

Reinforced Joint System

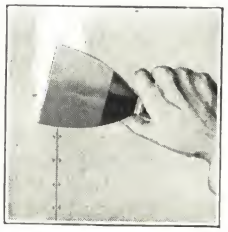
The Reinforced Joint System consists of a specially woven and processed cloth fabric 2 in. wide, packed as above described for Metal "A" System, except the bag contains 10 lbs. of cement.

Sheetrock Finisher

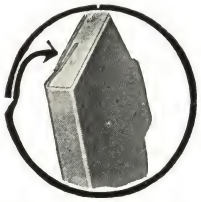
Sheetrock Finisher is a specially prepared material, far superior to so-called joint fillers, with none of the disadvantages of the old type of plaster filler. When mixed with water, Sheetrock Finisher forms a cement, which is easily, quickly and economically applied with a semiflexible scraping knife. It is used to conceal joints, spot nailheads and repair surface abrasions. Supplied in 5, 10 and 25-lb. packages. 5 lbs. should finish joints and cover nailheads for 500 sq. ft. of Sheetrock.



Sheetrock Joint Before Reinforcing



"Buttering"—Working the Cement Into the Joint



U.S.G. Patented Reinforced Edges Provide Extra Nailing Strength, Flush Joints



Applying Reinforcing Over "Buttered" Joint



Forcing Cement Through Reinforcing—Leveling Surface

APPLICATION OF SHEETROCK

MASTER SPECIFICATIONS

Note: *Notes are explanatory or advisory only and should not be included in the specifications.*
Note: *Select and include only those clauses which apply to the particular work. Words or clauses within brackets in italics are selective.*

(1) Work Included

Note: *List and locate all walls and ceilings to be covered with Sheetrock.*

(2) Framing

All studding and joists shall be spaced 16 in. on center. Framing in general shall be standard as provided for the application of wood lath.

Provide 2x4-in. headers on ceilings to take all end joints of Sheetrock and where required to form nailing base for wood beams, cornices, etc. Cut in 2x4-in. headers on walls to form substantial nailing for baseboards, wainscot caps and similar interior woodwork trim.

(3) Materials

(3a) Wallboard—Sheetrock as manufactured by the UNITED STATES GYPSUM COMPANY.

(3a1) Standard Sheetrock—(⅜-in.) (¼-in.) thick lengths shall be full height from floor to ceiling on walls and to fit paneling or headers of ceiling.

(3a2) Sheetrock Building Board—½ in. thick, 8 ft. long.

(3b) Nails—

(3b1) 3d cement coated common nails (flat head) 1⅛ in. long.

(3b2) Over old plaster, 6d cement coated common nails (flat head) 1⅞ in. long.

(3b3) On buildings of two or more stories with a floor above Sheetrock ceiling, 4d cement coated common nails (flat head) 1⅝ in. long for ceilings.

(3c) Joint Treatment—

(3c1) Sheetrock Metal "A" Joint System.

(3c2) Reinforced Joint System.

(3c3) Sheetrock Finisher (cement).

(4) Preparation of Sheetrock

(4a) Piling—Pile flat on floor in center of room, back of board up, except first board. Protect edges.

Note: *Doors and windows should be in place before board is delivered on job.*

(4b) Handling—Always handle Sheetrock in a vertical position on its longitudinal edge.

(4c) Sawing—Place back of board down and use a sharp hand saw. Support board close to sawing edge. Cuts that are covered with trim may be made with a knife or chisel and a straightedge. Immediately after a cut is made, bevel the cut edges on the face side with coarse sandpaper. Also bevel all mill-cut ends before the board is nailed in place. In no case leave loose paper on cut edges unless they are to be covered with wood trim. Recut the mill ends of any boards that have been made imperfect by handling.

(5) Applying Sheetrock

(5a) General—All ends and edges shall be perfect. All exposed ends shall be face-beveled. All boards shall butt tight along the covered edges and shall be left open ⅛ in. at all abutting cut ends (do not force mill-cut or sawed ends together).

(5a1) Standard Sheetrock shall be applied parallel with framing members.

(5a2) Sheetrock Building Board shall be applied at right angles to framing members.

(5b) Ceilings—Erect ceilings first. Apply Sheetrock *(parallel with) (at right angles to)* joists. Tack a strip of wood along the top of studs ½ in. from ceiling joist. Then raise Sheetrock, resting one end on the strip, and place a tee (made of 1x2-in.) under the board about one-third the distance from the opposite end to hold Sheetrock in position while nailing. When cross joints are necessary they shall be broken except when the joints are to be covered with wood panel strips or beams.

(5c) Walls—Apply Sheetrock full length *(vertically) (at right angles to framing).* Edges shall fit tightly against ceiling boards. Scribe and saw to fit if necessary. Square the first board with adjacent walls. Fill spaces above and below windows last. Break joints on partitions (on opposite sides of partitions perpendicular joints shall not come on the same stud).

(5d) Nailing—Drive nails "home," straight in, with heads slightly below surface; do not use a nail set. On intermediate supports space nails 6 in. apart on ceilings and 9 in. apart on walls. At *(all sides and)* ends, space nails 3 in. apart, ⅜ in. from edge. First, drive *(a few)* nails at the edge adjoining board last applied; nail the first intermediate stud or joist; nail the second intermediate stud or joist; finally nail *(sides and)* ends. Do not stagger nails on joining edges. *(Nail from the center of the board towards each end.)* If there is a slight bow, set several nails in the board along the nearest support, pushing the board tightly against the support and driving the nails home.

Note: *Omit clauses in italics in above par. (5d) if Sheetrock Building Board is specified.*

(6) Application of Reinforced Joint System

Note: *Complete direction sheet is contained in each package containing reinforcing tape and cement.*

(6a) Remove the roll of fabric, direction sheet and the small envelope of cement from the package.

(6b) Into a water pail or other metal receptacle containing the prescribed quantity of water (see direction sheet), gradually add the contents of the large bag of powdered cement and while adding, mix thoroughly to a consistency thinner than putty (in cold weather take the chill from the water). Be sure to get the entire batch plastic and completely mixed, so it will be pliable enough to work through the weave of the fabric reinforcing to insure a uniformly good bond. Place a wet cloth over the material and let stand for one hour before using.

(6c) After the mixed cement has stood for one hour it is ready for use. If too thin, add some dry joint cement. When cement is left over from one day to the next, cover material with a wet cloth; it is also well to add a little new material and stir batch thoroughly before using again. Caution: Never add plaster of paris or any other material to the cement.

(6d) Cut *(Metal "A" tape) (Fabric)* Reinforcing into proper lengths to correspond to the joints; or cut off a strip as the workman begins to treat each joint.

(6e) With a semi-elastic broad knife, liberally "butter" the joint with the plastic cement and immediately place a strip of *(Metal "A" tape) (Fabric)* Reinforcing over this cement, pressing down evenly. Then draw knife firmly over fabric, exerting pressure enough to force cement through the open mesh. At the same time level the surface on each edge of reinforcing. Caution: Be sure to work the cement well through *(metal perforations) (fabric mesh).*

Note: *A little practice will get perfect results; if properly done, this one operation completes the joint treatment, except that it must be permitted to dry overnight before applying the decoration.*

(6f) If a good, level and uniform job has not been secured with this single application, the joint, when dry, shall be gone over again with cement to properly prepare it. Sand smooth if required.

Note: *Where decoration over this reinforced joint is to be paint or wallpaper, more care must be taken to make a smooth, even job. A second application is often required. Joints and nailheads should be carefully sandpapered after the cement is dry, or slight imperfections and rough places may show up distinctly under the paper or through paint. Sheetrock Finisher (page 29) can be used for the second application, as it produces a smooth finish for concealment with paint or wallpaper.*

(6g) Spot all intermediate nailheads with cement.

(6h) Where any joinings between Sheetrock boards are open more than ⅛ in. because of careless application, first fill them level to surface of board with Sheetrock Finisher. After the Sheetrock Finisher is completely "set" and dry, the joint shall then be treated with the fabric and cement.

DECORATING SHEETROCK

General—Sheetrock can be painted, calcimined, wallpapered, enameled or covered with lining cloth or paper, either with or without panels. It can also be decorated with Textone. Always conceal joints and nailheads by means of the Sheetrock Reinforced Joint System, either Metal "A" or Fabric, or with Sheetrock Finisher.

Wallpaper—Before wallpapering apply a varnish size. It makes possible the easy removal of the paper before redecorating. Wall fabrics are hung in a similar manner.

Painting—See that the surface of Sheetrock is absolutely clean, dry and free from dust. Use a sizing coat or primer, made by mixing equal parts of a good grade of varnish size and ready mixed paint of desired color; or, with white lead thinned with turpentine or benzine, and tinted to suit. Before sizing surface apply a coat of primer over joints and nailheads, and stipple with a stubby brush. When dry apply a coat of primer uniformly and carefully over surface. Let priming coat dry at least 24 hours, then touch up any "flat spots" and let dry before applying the first coat of paint.

Calcimine—Before calcimining apply a varnish size, following same method of first brushing joints and nailheads as for painting.

Textone—Uniformity in color of tinted Textone over Sheetrock and Sheetrock Reinforced Joint System is best secured when joints are painted with a coat of tinted Textone mixed to regular application consistency but well brushed out. When this is dry the regular Textone texture may be applied.

SHEETROCK TILE BOARD

Description—Sheetrock Tile Board is a fireproof, gypsum wallboard made to obtain conveniently and at low cost, beautiful tiled-wall effects. It is a perfected product that makes possible lacquered and enameled surfaces that resemble the best ceramic tile in any shade of color desired, thus enabling the decorator to obtain complete color harmony.

After Sheetrock Tile Board has been erected and decorated, it can be washed clean when soiled. The surfacing of Sheetrock Tile Board is of heavy fiber, which has a distinctive cream color, especially adapted for decorating.

Sizes—Sheetrock Tile Board is made in panels ⅜ in. thick, 48 in. wide and 6, 7, 8, 9 and 10 ft. long. The tile impressions are 4¼x4¼ in., a standard size for built-in fixtures. There is a selvage or trimming edge on each panel end outside the tile pattern. The panels are packed two in a bundle, with the tile face inside and edges reinforced.

Advantages—Because it is made from gypsum, Sheetrock Tile Board does not burn. Neither does it warp or buckle, nor does it harbor vermin, and, though it is made from gypsum rock, it is light enough for convenient erection and can be nailed, sawed and fitted with the ease of wood.

The material has all the advantages inherent in Sheetrock.

Use—Use for tiled-wall effect in bathrooms, kitchens, lavatories, lunchrooms, dairies, doctors' offices, restaurants, delicatessens and barber shops.

Erection and Decorating—Complete directions for erection and decorating of Sheetrock Tile Board are on the back of each panel.

GYPLAP—FIREPROOF SHEATHING

Description

Gyplap is a fireproof solid sheet of gypsum encased in a tough fibrous covering, the outer surface of which is moistureproof. It is an ideal material for sheathing on frame structures under siding, shingles, stucco and brick veneer. It has been successfully used in homes as a substitute for soft wood flooring under linoleum, where it lies permanently flat, eliminating the joints and usual cupping of the wood floor.

Gyplap has the U.S.G. patented reinforced folded edge, which gives maximum strength. It cuts and nails like lumber.

Sizes

Gyplap is ½ in. thick, 24 in. wide, 6 ft. 8 in. and 8 ft. long to fit supports 16 in. on centers.

Advantages

Fireproof—Does not burn or readily transmit heat. It interposes a substantially thick fireproof sheet over the wood frame.

Permanent—Does not disintegrate.

Moistureproof—The outer surface is specially treated to resist moisture. No building paper is required.

Windproof—The continuous surface with wind-tight horizontal joints (the end joints occur only over supports) prevents air leakage.

Economy and Convenience—The sizes of Gyplap are convenient and economical to erect. It cuts and nails as easily as lumber, adapting it to any building condition.

Every sheet of Gyplap is true and uniform—no knots or waste material.

Strength—The large units of Gyplap span across seven studs spaced 16 in. on centers and thoroughly brace the framework.

Strength and Rigidity Tests

Strength tests of Gyplap and of ⅞-in. thick wood sheathing applied both horizontally and diagonally, conducted by Columbia University in New York City, and Armour Institute of Technology in Chicago, are ample proof of the strength and rigidity of gypsum sheathing, and its suitability for all purposes for which wood sheathing has usually been employed.

SPECIFICATIONS

Note: *Siding stucco and brick veneer may be applied over Gyplap in the usual manner.*

Note: *½-in. thick, 4-ft. x 8-ft. Sheetrock Building Board may be substituted for Gyplap.*

(1) Sheathing and Roof Boarding

Sheathing and roof boarding shall be Gyplap as made by the United States Gypsum Company, ½ in. thick, 24 in. wide, 6 ft. 8 in. or 8 ft. long. Nails for application shall be 1¾ in. long, No. 10½ gauge, galvanized flat head roofing nails.

Protect Gyplap boards from the weather until ready to apply.

(2) Application

Apply Gyplap, with groove side down and trade-mark side in, directly to framework with length at right angle to supports.

Butt the ends tightly over a support and interlock the side edges. Stagger vertical joints.

Fit tightly around all openings.

Fasten securely with nails spaced 4 in. apart on each bearing, set ⅜ in. from end edges.

Do not cover Gyplap with building paper.

(3) Siding

Apply siding at right angles to studding directly over Gyplap. Nail only to studs with nails sufficiently long to pass through Gyplap.

(4) Stucco

Note: *For reinforcement for stucco over Gyplap see Oriental Stucco Specifications. Where ordinary metal lath is used, fur over studding.*

(5) Shingling

Over the Gyplap apply, secured through the Gyplap to each bearing, 1x2-in. furring strips to take shingle weathering specified.



G. E. WALTER, INC.

Designers and Manufacturers of Duretta Composition, Artificial Stone, Ornamental Plaster, Duro-Compo Ornaments for Woodwork

425 East 53rd Street
NEW YORK, N. Y.

Products

Ornamental Plastering—All period styles including the modern, antique plaster finishes and parge plastering.

Interior Cast Stone—All types of plain and ornamental imitation stone for interiors, both applied and precast. Caen Stone, Limestone, Travertine, etc.

Cast Stone Mantels—Catalogue on request of period reproductions.

Duro-Compo Ornaments for Woodwork—Pressed composition exactly imitating carved wood and applied to woodwork. Soft and flexible when applied but becomes hard as rock, and if properly applied, will adhere permanently. Six or seven thousand stock designs comprising column and pilaster caps, mouldings, rosettes, festoons, friezes, corbels, stair brackets, panels, Grinling Gibbons ornaments, and a wide variety of other ornamental details.

Duretta Fireproof Composition

What It Is—Duretta is a fibrous fireproof composition, cast in gelatin moulds and reinforced with metal where necessary. It exactly reproduces plain and carved woodwork or metal, is comparable to wood in durability and will neither warp nor shrink. It can be easily stained, painted or gilded. Duretta work is easily erected and can be secured in place with nails or screws.

The Bureau of Buildings of New York City has approved Duretta for use in fireproof buildings.

General Types and Uses—Duretta can be used as a substitute for wood in the decoration of fireproof buildings and is suitable for plain and carved paneling, ceilings, mantels, grilles, frames, consoles, lighting fixtures, etc. There are three distinct types of Duretta which are specified according to their uses:

Duretta Wood Composition.
Duretta Iron Composition.
Duretta Exterior Composition.

Modern Style—Duretta in special finishes such as polished silver, gold and copper is an excellent medium for the expression of modern ideas in decoration.

Planning Special Work—We are prepared to cooperate with the architect in the planning of any special work involving the use of Duretta. Where given definite information as to the general type of work, sizes and quantities, we will prepare sketches utilizing our stock designs where possible. This service is rendered without obligation.

Cost—In the matter of cost Duretta work will generally be found considerably more economical than wood. This is especially true where the design includes carved features. Where plain paneling is used the saving over wood will depend upon the proportion of repetition, the extent to which a limited number of moulds can be used for a quantity of casts.

Columns—Exterior or interior columns and pilasters of any type are practical in Duretta, or caps, alone, can be supplied for columns or pilasters in other materials.

Half-timber—Duretta half-timber work is recommended primarily for fire-proof construction, and for use in general, where the design is largely ornamental.

Mantels—Duretta mantels in imitation wood are especially adapted for requirements calling for a quantity of mantels of the same design and size. Also, mantels in imitation stone.

Duretta Wainscots—Duretta wainscots are cast in sections of one to four panels in width. They can be screwed to wood grounds or applied to any wall presenting an even surface.

Ceilings—Duretta is used for coffered and beam ceilings in carved wood effect, also cornices and corbels.

Duretta Door Panels—Duretta door panels are cast in one piece and can be inserted in either wood or fireproof metal doors. They can be secured with narrow mouldings or by screws. Ornamental panels of various types can also be successfully used in connection with woodwork for many other purposes.

Rails—Duretta has been extensively used for carved balusters.

Duretta Grilles—Duretta grilles are furnished unfinished or in bronze, gilt, verde antique, rusty iron, polished iron, marble and various other finishes. Duretta grilles range in thickness from ½ in. up, according to the design.

Special Designs and Estimates

In addition to our large line of stock ornaments in Compo and Duretta composition, we are equipped to make up models of special designs, and will quote prices promptly on this character of work upon receipt of scale or detail drawings. Where given definite information as to the general type of work, sizes and quantities, we will prepare sketches utilizing our stock designs where possible.

THE BEST BROS. KEENE'S CEMENT CO.

MEDICINE LODGE, KAN.

EASTERN SALES OFFICE: Chicago Daily News Building, CHICAGO, ILL.

BRANCH OFFICES

SAN FRANCISCO, CALIF. CLEVELAND, OHIO WASHINGTON, D. C. KANSAS CITY, MO. ATLANTA, GA.

Products

Manufacturers of BEST BROS. KEENE'S CEMENT and "PIONEER" WHITE PLASTERS.

Grades of Keene's Cement

Best Bros. Keene's "Regular"—

This is our standard grade for ordinary plastering. It is of good color, fairly coarsely ground so as to mix readily with lime putty; has a tensile strength of over 600 lbs. per sq. in. in 7 days; an initial set of 2 hours and a final set of 4 hours.

It is used chiefly for base coat plastering; gauging in lime mortar; sand float finish; and is the principal ingredient in most of the colored interior finishes on the market today.

Best Bros. Keene's "Fine"—

This has the same tensile strength and setting time as the "Regular" grade but is ground finer and is of uniform purity of color, being made from hand picked rock.

It is used for backing up artificial marble; for making Caen Stone; for various other effects in ornamental plastering; and occasionally for finish coat work.

Best Bros. Keene's "Fast Finish"—

This has been manufactured specifically for a smooth finish coat, and is made to set up more quickly than our "Regular" grade when mixed with lime putty. It is designed to overcome the long interval of time that has previously been necessary between the application and the final troweling of a Keene's Cement finish. It is ground the same as the "Regular" grade; has a job set of 2 hours; and a tensile strength of over 500 lbs. per sq. in.

Best Bros. Keene's "Quickset"—

This is designed specifically for castings, running moldings, precast travertine, and similar purposes where the material is used in a neat form and has to set in the shortest time. It is finely ground; of pure white color; has an initial set of 20 minutes and a final set of 35 to 40 minutes. It has a tensile strength of 600 lbs. per sq. in.

Best Bros. Keene's "Superfine"—

This grade is used only for the facing of artificial marble. It is very slow setting, having an initial set of 4 hours and a final set of 8 hours. It is pure white in color and very finely ground.



Grades of "Pioneer" White Plaster

The various grades of white plasters are so well known and established in the industry that a detailed description of their characteristics is unnecessary. Best Bros. "Pioneer" Plasters are made from high grade gypsum rock and every care is used in their manufacture. They carry the same guarantee of uniformly high quality that applies to Best Bros. Keene's Cement.

"Pioneer" Finish Plaster (Slow Set)—

This is used for gauging with lime putty for smooth finish coat work.

"Pioneer" Gauging Plaster (Fast Set)—

Same grade of material as our "Pioneer" Finish, without the retarder. It is a straight plaster of paris and thus has a somewhat quicker set than the Finish grade.

"Pioneer" Molding Plaster—

A very finely ground, smooth working grade, designed specifically for running moldings, and relief castings.

"Pioneer" Casting Plaster—

This grade has been specially treated so as to take the minimum amount of water in attaining normal consistency. It is specifically designed for statuary and casting in closed molds.

Composition of Best Bros. Keene's Cement and Plasters

The various grades of Best Bros. Keene's Cement and "Pioneer" plasters are manufactured from gypsum rock of exceptional purity. Careful, standardized attention from quarry to finished product insures the uniform excellence of the various grades.

THE BEST BROS. KEENE'S CEMENT CO. is the original and largest manufacturer of Keene's Cement in this country, having been established since 1889.

Advantages—

All grades of Best Bros. Keene's Cement are certified to comply with the requirements of the American Society for Testing Materials, and the U. S. Government Master Specifications.

Best Bros. Keene's Cement forms the toughest, most durable and whitest wall it is possible to obtain, and can be troweled or floated to practically any style of finish that may be desired. Non-resonant, sanitary and fire resistant. Will not corrode metal lath.

Best Bros. Keene's Cement also combines perfectly with lime.

It possesses two other qualities of great value; first, it will keep indefinitely and can be used with perfect results after being stored for years; secondly, it can be retempered. It does not "kill."



Additional Data

Comprehensive and detailed specifications are given in our A.I.A. folders, supplied promptly on request.

SPECIFICATIONS FOR KEENE'S CEMENT PLASTERING

Mixing by Power

General—All plastering shall be done with Best Bros. Keene's Cement mixed and applied according to the specifications of the manufacturer, provided they do not conflict with the requirements herein.

Three-coat Work on Metal Lath—

(A) Scratch Coat:
10 cu. ft., stiff, aged lime putty.
200 lbs. Best Bros. Keene's Cement, "Regular."
6 lbs. hair or fiber.
1 cu. yd., clean, sharp sand.

(B) Brown Coat:
7 cu. ft., stiff, aged lime putty.
150 lbs. Best Bros. Keene's Cement, "Regular."
1 cu. yd., clean, sharp sand.

Three-coat Work on Wood Lath—

(A) Scratch Coat:
9 cu. ft., stiff, aged lime putty.
200 lbs. Best Bros. Keene's Cement, "Regular."
6 lbs. hair or fiber.
1 cu. yd., clean, sharp sand.

(B) Brown Coat:
7 cu. ft., stiff, aged lime putty.
150 lbs. Best Bros. Keene's Cement, "Regular."
1 cu. yd., clean, sharp sand.

Two-coat Work on Tile, Brick or Gypsum Block—

(A) Brown Coat:
7 cu. ft., stiff, aged lime putty.
150 lbs. Best Bros. Keene's Cement, "Regular."
1 cu. yd., clean, sharp sand.

Two-coat Work on Concrete Walls and Ceilings—

(A) Brown Coat:
9 cu. ft., stiff, aged lime putty.
200 lbs. Best Bros. Keene's Cement, "Regular."
1 cu. yd., clean, sharp sand.

Finish Coats—Any of the following finishes may be specified over the above bases:

Smooth White Finish:
100 lbs. Best Bros. Keene's Cement, "Fast Finish."
80 lbs. stiff, aged lime putty.

Sand Float Finish—
100 lbs. Best. Bros. Keene's Cement, "Regular."
165 lbs. stiff, aged lime putty.
450 lbs. clean, sharp sand.

Smooth Hard Finish—for Wainscots, etc.:
100 lbs. Best. Bros. Keene's Cement, "Regular."
25 lbs. stiff, aged lime putty.

Extra Hard Finish:
Use Best Bros. Keene's Cement "Regular" or "Fine" neat. Add no lime.

Brick and Tile Surfaces—All brick and tile surfaces shall be thoroughly broomed off and washed before the mortar is applied, and shall be damp when it is applied.

Concrete Surfaces—New concrete must not be plastered until it is dry. All dust and loose particles shall be removed from concrete surfaces by brushing well with a wire brush. The surfaces shall be washed with clean water and kept moist while the plaster is being applied. Should the concrete surfaces be oily or gummy, they must be washed with a 10% solution of muriatic acid and water (1 qt. of acid to a bucket of water), and washed out with clean water within twenty minutes after the acid solution is applied. Any cracks in the concrete shall be cut to a V-shape and filled in with neat cement and water, which must be allowed to dry thoroughly before the plaster is applied.

This coat must be laid on with a trowel or wooden float and not touched again, except to knock off the rough edges with the float. Great care must be exercised in applying the base coat to concrete. It must be laid on in one operation and not touched again, for if the coat is moved in any way the bond is broken.

Mixing by Hand

On small jobs where material is applied by hand a richer mix is recommended.

General—All plastering shall be done with Best Bros. Keene's Cement mixed and applied according to the specifications of the manufacturer, provided they do not conflict with the requirements herein.

Three-coat Work on Metal Lath—

(A) Scratch Coat:
8 cu. ft., stiff, aged lime putty.
400 lbs. Best Bros. Keene's Cement, "Regular."
6 lbs. hair or fiber.
1 cu. yd., clean, sharp sand.

(B) Brown Coat:
6 cu. ft. stiff, aged lime putty.
250 lbs. Best Bros. Keene's Cement, "Regular."
1 cu. yd., clean, sharp sand.

Three-coat Work on Wood Lath:

(A) Scratch Coat:
7 cu. ft., stiff, aged lime putty.
400 lbs. Best Bros. Keene's Cement, "Regular."
6 lbs. hair or fiber.
1 cu. yd., clean, sharp sand.

(B) Brown Coat:
6 cu. ft. stiff, aged lime putty.
250 lbs. Best Bros. Keene's Cement, "Regular."
1 cu. yd., clean, sharp sand.

Two-coat Work on Tile, Brick or Gypsum Block—

(A) Brown Coat:
6 cu. ft., stiff, aged lime putty.
300 lbs. Best Bros. Keene's Cement, "Regular."
1 cu. yd., clean, sharp sand.

Two-coat Work on Concrete Walls and Ceilings—

(A) Brown Coat:
7 cu. ft., stiff, aged lime putty.
400 lbs. Best Bros. Keene's Cement, "Regular."
1 cu. yd., clean, sharp sand.

Finish Coats—Any of the following finishes may be specified over the above bases:

Smooth White Finish:
100 lbs. Best Bros. Keene's Cement, "Fast Finish."
80 lbs. stiff, aged lime putty.

Sand Float Finish:
100 lbs. Best. Bros. Keene's Cement, "Regular."
165 lbs. stiff, aged lime putty.
450 lbs. clean, sharp sand.

Smooth Hard Finish—for Wainscots, etc.:
100 lbs. Best. Bros. Keene's Cement, "Regular."
25 lbs. stiff, aged lime putty.

Extra Hard Finish:
Best Bros. Keene's Cement "Regular" or "Fine" neat. Add no lime.

Any plastered surfaces that are loose and not properly attached to the concrete after the mortar has dried out must be cut out and done over again, and sufficient area shall thus be removed to make a uniform surface without having the appearance of patchwork.

Finish coat should never be applied direct to concrete walls or ceilings.

Grounds—On wood lath, grounds shall be ⅞ in.; on metal lath, ⅝ in.; on brick or tile, ½ in.

Sand—Must be screened, clean and sharp; free from loam, quicksand or other impurities.

Lime—Hydrated lime shall be soaked in watertight boxes for at least 24 hours before using.

Lump lime shall be well slaked; run through a sieve of ¼-in. mesh, and properly stored and protected for a sufficient time before using to ensure all particles being thoroughly slaked.

Lathing—Metal lath shall be either painted or galvanized. Wood lath shall be of a good grade, free from knots, sap and bark (white pine preferred). It shall be thoroughly dampened shortly before plaster is applied.

THE FINISHING LIME ASSOCIATION OF OHIO

HEADQUARTERS OFFICE
508-509 Home Bank Building
TOLEDO, OHIO

MEMBERS

THE KELLEY ISLAND LIME & TRANSPORT CO.
NATIONAL MORTAR & SUPPLY CO.
THE NATIONAL LIME & STONE CO.
THE OHIO HYDRATE & SUPPLY CO.
THE WOODVILLE LIME PRODUCTS CO.
THE GIBSONBURG LIME PRODUCTS CO.

SPECIFICATIONS FOR INTERIOR PLASTER, USING FINISHING HYDRATED LIME

For the purpose of aiding you in obtaining a perfect, everlasting job of plaster and solving your problems in acoustics, we are submitting these specifications on the use of Finishing Hydrated Lime. These specifications are based on average conditions and will serve as a guide in carrying out your work. The proportions of these specifications are based on the Finishing Limes of Ohio, which have physical characteristics peculiar to limestone found only in a small area in northwestern Ohio.

Materials

Finishing Hydrated Lime—All lime for finish coats shall be Dolomitic Finishing Hydrated Lime meeting the requirements of the American Society for Testing Materials, and THE FINISHING LIME ASSOCIATION OF OHIO, delivered at the job in original packages.

All lime for base coats shall be a mixture of finishing hydrated lime and fiber, mill mixed and delivered on the job in the original packages.

Sand—(a) Sand for scratch and brown coats shall meet the requirements of the tentative specifications for sand for lime plaster of the American Society for Testing Materials.

(b) Sand for sand finish shall be a clean, dry screened sand 100% passing a No. 10 mesh screen, unless otherwise specified for specific finishes.

(c) Colored screenings and marble dust may be used to obtain color shades.

Gauging Materials—(a) Plaster of paris shall be clean, fresh and fully calcined, meeting the specifications of the American Society for Testing Materials.

(b) When Keene's cement is used it shall be a standard brand meeting the specifications of the American Society for Testing Materials.

(c) When portland cement is used it shall be a standard brand meeting the specifications of the American Society for Testing Materials and the Portland Cement Association.

Hair—(a) Hair shall be long washed goat or cattle hair free from foreign matter.

(b) Vegetable fibre free from tannin may be used and shall be long, clean, and well washed out.

Water—Water shall be clean and fit for domestic consumption.

Metal Lath—All expanded and fabricated lath shall be of an approved brand, applied in accordance with recommendations of the manufacturers.

Wood Lath—Wood lath shall be No. 1 White Pine or equal and should be as damp as practicable when mortar is applied. Courses should be broken every eighth course, and all lath laid horizontally and in one direction on ceilings. They shall be nailed securely with 3d nails to each support, and shall cross and have butt joints over a support. Lath shall be spaced ⅜ in. apart. Provide and securely place metal corner beads and metal lath strips in all exterior and interior angles.

Ground Work—(a) Grounds shall be placed and secured prior to the application of plaster. Wood lath and metal lath shall have ¾-in. or ⅞-in. grounds. Solid backings shall have ⅝-in. grounds.

Plastering on Concrete Surfaces

Base Coats (Putty Mix)

Ceilings—*Proportions:* Stiff putty, 1 part by volume; fine plaster sand, 2½ parts by volume.

Prepare ceiling by brushing or washing free from scale dust, dirt, oil, etc., and then slush down with neat portland cement as a primer or by hacking and roughing surface prepare bond to receive plaster. When this is set, apply coat as thin as possible. (If plain surface is required, it should be obtained through good formwork. Do not attempt to fill up uneven places with plaster.) Trowel to finish or texture desired. If white coat is desired, add finely screened sand to regular white coat.

Walls—⅝-in. grounds. *Proportions:* Stiff putty, 1 part by volume; plaster sand, 3 parts by volume.

Brush or wash surface free from all dirt scale, or foreign matter, and then slush down with neat cement, or by hacking and roughing surface prepare bond to receive plaster. When this is dry apply 1 coat of this mortar and by adding 1 more part of sand, apply a second coat, and bring out to grounds. Use rod and darby to bring to even surface. When firm but not dry, rub evenly with float to remove and prevent shrinkage cracks, and prepare surface to receive finish coat. When thoroughly dry apply finish coat.

Note: All interior surfaces of concrete basement walls below ground level should be furred and lathed before plastering.

Note: For first class work we recommend furring and lathing over concrete surfaces.

Base Coats Fibered (Dry Mix)

Ceilings—*Proportions:* Finishing Hydrated Lime, 2 sacks, 100 lb.; fine plastering sand, 300 lb.

Prepare ceiling by brushing or washing free from scale dust, dirt, oil, etc., and then slush down with neat portland cement as a primer, or by hacking and roughing surface prepare bond to receive plaster. When this is set, apply coat as thin as possible. (If plain surface is required, it should be obtained through good formwork. Do not attempt to fill up uneven places with plaster.) Trowel to finish or texture desired. If white coat is desired add finely screened sand to regular white coat.

Walls—⅝-in. grounds. *Proportions:* Fibered Finishing Hydrated Lime, 1 sack, 50 lb.; plaster sand, 300 lb.

Brush or wash surface free from all dirt scale, or foreign matter, and then slush down with neat cement. When this is dry apply 1 coat of this mortar and by adding 1 more part of sand, a second coat, and bring out to grounds. Use rod and darby to bring to even surface. When firm but not dry, rub evenly with float to remove and prevent shrinkage cracks, and prepare surface to receive finish coat. When thoroughly dry apply finish coat.

Note: All interior surface of concrete basement walls below ground level should be furred and lathed before plastering.

Three-coat Work on Metal Lath

Base Coats (Dry Mix)

Mortar—The mortar shall be a mixture of Finishing Hydrated Lime and sand mixed in the following proportions:

Proportions—Scratch coat shall be composed of: Fibered Finishing Hydrated Lime, 1 sack, 50 lb.; plastering sand dry, 200 lb.

Brown coat shall be composed of: Fibered Finishing Hydrated Lime, 1 sack, 50 lb.; plastering sand dry, 250 lb.

Application—(a) Plastering shall be to ⅞-in. grounds.

(b) Apply a coat of scratch mortar evenly and with sufficient force to insure a good clinch and key.

(c) As soon as this coat has become firm but not dry, scratch entire surface with broom or metal scratcher to insure bond for brown coat.

(d) When this coat has become dry apply brown coat and bring surface out to grounds. Rod and darby to true surface, and when this coat is firm, but not dry, rub evenly with float to eliminate and prevent shrinkage cracks and to prepare surface to receive finish coat.

Gauging—(a) If a harder set is desired, 15% to 20% of portland or Keene's cement by weight of lime may be gauged in the scratch coat.

Base Coats (Putty Mix)

Mortar—The mortar shall be a mixture of Finishing Hydrated Lime paste or putty, which has been allowed to age either neat or sanded for at least 24 hours, in the following proportions:

Proportions—Scratch coat shall be composed of: Stiff putty made from fibered lime, 1 part by volume; plastering sand dry, 3 part by volume.

Brown coat shall be composed of: Stiff putty, 1 part by volume; plastering sand dry, 4 part by volume; hair or fibre, 3 lb. per cu. yd. mortar.

Application—(a) Plastering shall be to ⅞-in. grounds.

(b) Apply a coat of scratch mortar evenly and with sufficient force to insure clinch and key.

(c) As soon as this coat has become firm but not dry, scratch entire surface with broom or metal scratcher to insure bond for brown coat.

(d) When this coat has become dry apply brown coat, and bring surface out to grounds. Rod and darby to true surface and when this coat is firm but not dry, rub evenly with float to eliminate and prevent shrinkage cracks, and to prepare surface to receive finish coat.

Gauging—(a) If a harder set is desired, 15% to 20% of portland or Keene's cement by weight of lime may be gauged in the scratch coat.

Three-coat Work on Wood Lath

Scratch or Base Coats (Dry Mix)

Mortar—The mortar shall be a mixture of Finishing Hydrated Lime and sand mixed in the following proportions:

Proportions—Scratch coat shall be composed of: Fibered Finishing Hydrated Lime, 1 sack, 50 lb.; plastering sand dry, 200 lb.

Brown coat shall be composed of: Fibered Finishing Hydrated Lime, 1 sack, 50 lb.; plastering sand dry, 250 lb.

Application—(a) Plastering shall be to ⅞-in. grounds.

(b) Apply a coat of scratch mortar evenly and with sufficient force to insure good clinch and key.

(c) As soon as this coat has become firm but not dry, scratch entire surface with broom or metal scratcher to insure bond for brown coat.

(d) When this coat has become dry apply brown coat, and bring surface out to grounds. Rod and darby to true surface and when this coat is firm but not dry, rub evenly with float to eliminate and prevent shrinkage cracks, and to prepare surface to receive finish coat.

Gauging—(a) If a harder set is desired, 15% to 20% of portland or Keene's cement by weight of lime may be gauged in the scratch coat.

Base Coats (Putty Mix)

Mortar—The mortar shall be a mixture of Finishing Hydrated Lime, paste or putty, which has been allowed to age either neat or sanded for at least 24 hours, in the following proportions:

Proportions—Scratch coat shall be composed of: Stiff putty made from fibered lime, 1 part by volume; plastering sand dry, 3 part by volume.

Brown coat shall be composed of: Stiff putty made from fibered lime, 1 part by volume; plastering sand dry, 4 part by volume.

Application—(a) Plastering shall be to ⅞-in. grounds.

(b) Apply a coat of scratch mortar evenly and with sufficient force to insure good clinch and key.

(c) As soon as this coat has become firm but not dry, scratch entire surface with broom or metal scratcher to insure bond for brown coat.

(d) When this coat has become dry apply brown coat, and bring surfaces out to grounds. Rod and darby to true surface and when this coat is firm but not dry, rub evenly with float to eliminate and prevent shrinkage cracks, and to prepare surface to receive finish coat.

Gauging—(a) If a harder set is desired, 15% to 20% of portland or Keene's cement by weight of lime may be gauged in the scratch coat.

Two-coat Work on Brick, Tile, Gypsum Block, Concrete Block, etc. (Doubled-up Work)

Base Coats (Dry Mix)

Mortar—The mortar shall be a mixture of Finishing Hydrated Lime and sand, mixed in the following proportions:

Proportions—Scratch coat shall be composed of: Fibered Finishing Hydrated Lime, 1 sack, 50 lb.; plastering sand dry, 225 lb.

Application—(a) Plastering shall be to ⅝-in. grounds.

(b) All surfaces of tile, etc., shall be free from oil, dirt, dust or other foreign matter, and should be wet down before applying plaster.

(c) Apply a coat of this mortar with sufficient pressure to insure bond, and double back with the same mortar, bringing the coat out to grounds; rod and darby to true even surface.

(d) When surface is firm, but not dry, rub evenly with float to remove and prevent shrinkage cracks, and to prepare surface to receive finish coat.

(e) When plaster is thoroughly dry apply finish coat.

Base Coats (Putty Mix)

Mortar—The mortar shall be a mixture of Finishing Hydrated Lime, paste or putty, which has been allowed to age, either neat or sanded for at least 24 hours, in the following proportions:

Proportions—Scratch coat shall be composed of: Stiff putty made from fibered lime, 1 part by volume; plastering sand dry, 3½ parts by volume.

Application—(a) Plastering shall be to ⅝-in. grounds.

(b) All surfaces of tile, etc., shall be free from oil, dirt, dust or other foreign matter, and should be wet down before applying plaster.

(c) Apply a coat of this mortar with sufficient pressure to insure bond, and double back with the same mortar, bringing the coat out to grounds; rod and darby to true even surface.

(d) When surface is firm, but not dry, rub evenly with float to remove and prevent shrinkage cracks, and to prepare surface to receive finish coat.

(e) When plaster is thoroughly dry apply finish coat.

Finish Coats

Putty made from Finishing Hydrated Lime shall be soaked 24 hours. This is done by shifting Finishing Hydrated Lime into an equal part by volume of clear water.

White Smooth Finish—Thoroughly mix gauging and Finishing Hydrated Lime putty and apply evenly. Trowel to eliminate all checks, chip cracks and uneven points until a true and even surface is obtained.

Proportions—Finishing Hydrated Lime, 4 sacks, 200 lb.; plaster of plaster, 50 lb.

Textured White Finish—Thoroughly mix gauging and Finishing Hydrated Lime putty and apply a very thin coat completely covering the brown coat. Follow this with heavier coat to form texture desired.

Proportions—Finishing Hydrated Lime, 3 sacks, 150 lb.; plaster of paris, 50 lb.

Sand Finish—Mix Finishing Hydrated Lime and sand dry and screen through No. 10 screen unless specified for specific finishes, and add water and mix to proper consistency.

Apply a thin coat to all mortar surfaces, and double back with same mixture and float to true plane surface.

Proportions—Finishing Hydrated Lime, 2 sacks, 100 lb.; plastering sand, 300 lb.

Keene's cement, portland cement or highly retarded gypsum may be added to sand finish as a hardener in proportions of 10% to 30% of entire mixture.

Textured Finish—Finish in same manner as sand finish, except second coat is applied heavier, and texture desired worked in with tools or hands.

THE KELLEY ISLAND LIME & TRANSPORT CO.

World's Largest Producer of Lime and Limestone Products

GENERAL OFFICES

Leader Building CLEVELAND, OHIO

PLANTS

WHITE ROCK, OHIO
KELLEY ISLAND, OHIO
GIBSONBURG, OHIO
HUNTINGTON, IND.
DOVER PLAINS, N. Y.
MARBLEHEAD, OHIO
ROCKPORT, MICH.
TIFFIN, OHIO
BUFFALO, N. Y.
MARTINSBURG, W. VA.

Products

TIGER FINISH HYDRATED LIME; TIGER FIBERED HYDRATED LIME; TIGER MASONS' HYDRATED LIME; QUICKLIMES—Ground, Pebble and Lump.

TRADE MARK

Facilities and Distribution

THE KELLEY ISLAND LIME & TRANSPORT CO. is the world's largest producer of lime and limestone products. From ten plants, strategically located, it serves all larger markets conveniently. The general offices, to which all correspondence should be addressed, are at Cleveland. The *famous* TIGER brands of lime are distributed through more than 4500 building supply dealers in all parts of the United States.

Tiger Finish

The *famous* Tiger Finish Hydrated Lime is made at White Rock and Gibsonburg, Ohio, from magnesium limestone. The high quality of this product is securely based upon the uniformity of the raw material, plus a process of calcining and hydration scientifically performed under the strict supervision and control of expert chemists.

In interior plastering it gives the smooth white, sand float, and antique texture finishes. In exterior plastering it is used in portland cement stucco to secure whiteness and ease and smoothness of application.

"It spreads like warm butter."

Tiger Fibered Lime

For base coats in interior plastering. Made at White Rock, Ohio, from magnesium limestone. For an *all lime* plastering job use Tiger Fibered Hydrated Lime and finish with Tiger Finish Hydrated Lime.

Tiger Masons'

A hydrated lime for sand-lime and sand-lime-cement mortars.

Quicklimes—Lump, Pebble and Ground

For sand-lime and sand-lime-cement mortars.

Use Lime Mortars for Watertight Masonry

The plasticity of the mortar measures its watertightness. Unless the building units are thoroughly and uniformly bedded, one cannot expect freedom from efflorescence.

For Concrete Work

Ten per cent of hydrated lime by weight of portland cement makes for watertightness and enhances the appearance. Lime is an addition, not replacing any ingredient.

"Studies in Lime"—Specifications

An attractive book in colors. It illustrates and describes various interior plaster designs, including the texture finishes for different historical periods.

Specifications are given, also working details (to scale) to obtain desired plastering effects.

Sent free to architects upon request.

Co-operative Service

Through its Architectural Service and Information Department, this company will be glad to discuss with architects, contractors and builders any problem arising in connection with the use of lime.

NATIONAL MORTAR & SUPPLY COMPANY

Manufacturers of Lime and Limestone Products

GENERAL OFFICES
Federal Reserve Building, PITTSBURGH, PA.

PLANTS: GIBSONBURG AND COLD SPRINGS, OHIO

DISTRICT SALES AND SERVICE

WASHINGTON, D. C., 5112 Connecticut Avenue
CHICAGO, ILL., 914 Wrigley Building
DETROIT, MICH., 325 Merton Road
CLEVELAND, OHIO, P. O. Box 172
COLUMBUS, OHIO, P. O. Box 722
SPRINGFIELD, OHIO, 2111 Broadway

EASTERN REPRESENTATIVES: The Abbey Co., Inc.
NEW YORK, N. Y., 2 Park Avenue at 33rd Street
PHILADELPHIA, PA., 809 Commercial Trust Building
NEWARK, N. J., 138 Roseville Avenue

Charter Member of the Finishing Lime Association of Ohio

Products

BANNER HYDRATED FINISHING LIME; BANNER BASE COAT LIME—Fibered; SUPERIOR HYDRATED LIME.

Banner

Banner Hydrated Finishing Lime

Famous Ohio high magnesium (dolomitic) white lime for hard, smooth, white finishes and popular textured or period finishes; for complicated, artistic mouldings and ornamental work. A favorite of plasterers and contractors since 1907. Its large yield when soaked into putty gives economy by large coverage. Has plasticity that encourages big yardage and perfect wall surfaces, angles, corners, and cornices by craftsmen. Apply in natural pure white color for later decorating; or, integral mineral colors, carefully and thoroughly mixed, may also be used. Painting, after finishing coat is dry, is recommended.



(Reg. U. S. Pat. Off.)

Packed in 50-lb. heavy paper valve bags. Delivered to the job in original packages bearing above trade-mark printed in blue for easy identification.

Analysis—The purity of Banner Lime is proven by the following analysis, certified by the Pittsburgh Testing Laboratory. Results were calculated on non-volatile residue. The extra quality of Banner is indicated by the last column which gives the requirements of the American Society for Testing Materials, specification C-6-24 and United States Government Master Specification SS-L-351 (superseding 249).

	Banner analysis per cent	Requirements A.S.T.M. Spec. C-6-24 U. S. Govt. Spec. SS-L-351
Carbon dioxide	.94	Max. permitted 5.0%
Calcium and magnesium oxides:	97.68	Min. required 95.0%
Sieve test:		
On 30-mesh	.004	Max. permitted 0.5%
On 200-mesh	3.32	Max. permitted 15.0%

Availability—Building material dealers in United States and Canada carry stocks of Banner Lime at all times for delivery in any wanted quantities. Consult local dealer for prices or communicate direct with any office listed above.

Facilities—Two modern plants located at Gibsonburg, Ohio, with 35 vertical gas-fired kilns. Duplication of all processes insures uninterrupted production. Quarry area over 20 acres, average depth 40 ft.

For 24 years rock analyses have shown absolutely no variation in chemical content. Reputation of Banner Lime is built upon unusual rock deposit, plus modern processing. This latter includes mechanical sizing of kiln stone and gas-fired kilns with absolute heat regulation for uniform burning; continuous process hydration (instead of batch hydration) for uniformity; air separation (instead of screening and grinding) for purity. Daily production 350 tons.

Specifications — Complete standard specifications are given in this catalogue by The Finishing Lime Association of Ohio. As charter members of this organization we recommend the use of Banner Lime according to these specifications for standard practice, varying only as local conditions dictate. We can put you in touch with reliable plastering contractors qualified to execute dependable lime plastering at no higher cost than hardwall work. Complete standard specifications for your A.I.A. File will be cheerfully furnished upon request.

For Every Building Purpose—Use Banner Lime for brick work, tile setting, stone mortar, waterproofing concrete. Quality work is more easily achieved with a quality product. Further information upon request.

Banner Base Coat Lime—Fibered

For lime plaster. Well mixed with proper proportions of mixed fiber, and comes to the job in original packages ready for use. Gives the convenience demanded by modern practice together with the finest qualities of lime plaster. May be mixed and used immediately or aged to improve working qualities. If used at once, very thorough mixing is essential. Machine mixing is preferable.

Every architect knows the merits of "old-fashioned" lime plaster: durability without limitation; fire resistance; insulation against heat and cold and *sound*. Banner Lime carries three times its own weight of sand, so plaster made of it can economically be put on the walls with heavier grounds, thus multiplying the natural sound-deadening qualities of lime plaster.

Superior Hydrated Lime

A high magnesium mason's lime produced at Cold Springs, Ohio, in a modern 10-kiln plant with a daily capacity of 100 tons. Used for all building construction requirements except finishing or whitecoating. Extensively used by United States Government in concrete construction; in dam work under Government supervision; in public utility enterprises where specifications are stringent and rigidly enforced. Distributed by building material dealers.

NATIONAL MORTAR & SUPPLY CO. SUPERIOR HYDRATED LIME PITTSBURG, PA. REG. U.S. PAT. OFF.

TRADE-MARK

NEW ENGLAND LIME COMPANY

GENERAL OFFICES

PITTSFIELD, MASS.

Products

GRANULAR FINISHING LIME
SNOWITE FINISHING LIME
GRANULATED MASONS LIME
FIRST QUALITY CANAAN LIME
PULVO
"NELCO" HYDRATED FINISHING LIME
"NELCO" HYDRATED MASONS LIME
"NELCO" PLASTIC FINISH
NEW ENGLAND STUCCO
NEW ENGLAND PLASTER
CEDARTEX
RAY-O-LITE PAINT

Granular Finishing Lime

The original and only true lime of this character on the market. This lime is produced from stone taken from the oldest quarry and finest deposit of natural crystalline high calcium white marble in this country. Lime from this plant has been used by the contracting trade for nearly a century as a reliable building and finishing lime product.

Snowite Finishing Lime

While this is strictly an all purpose lime, it was designed principally for white coat or finishing purposes. This is our regular Granular Finishing Lime reduced to an impalpable fineness—slakes freely, is a big putty yielder and can be used soon as cool enough to handle with absolute assurance that it will not pit or blister in the wall.

Granulated Masons Lime

A fat, smooth working lime for scratch, brown or masonry mortar—manufactured at the same plant and of the same character as our Granular Finishing Lime.

First Quality Canaan Lime

This lime needs no introduction to any trade as it is one of the best known of all limes today and conceded for years as one of the strongest masonry and plastering limes on the market.

Pulvo

A combination of two of the above limes in powdered form. Pulvo is cool and smooth under the trowel in scratch and brown coat work—has ample strength of itself without admixture of cement for load bearing walls. Makes a waterproof joint and an absolute cure for efflorescence in brick and masonry mortar.

"Nelco" Hydrated Finishing Lime and "Nelco" Hydrated Masons Lime

As good as made in any mill.

All of the above limes are sold under our own trademarked labels and are approved by the society for testing materials at Washington, D. C.

"Nelco" Plastic Finish

A trowel or brush finish in white or colors economical to use for all texture purposes.

New England Stucco

A cement plaster in colors for outside use.

New England Plaster

A Keenes cement product in colors for interior finish.

Cedartex

An ideal aromatic prepared plaster—used as a finishing coat for closet lining.

Ray-O-Lite Paint

A waterproof flat paint, sold in the paste form, to be diluted with water when used.

THE OHIO HYDRATE & SUPPLY CO.

Manufacturers and Distributors of Hydrated Finishing Lime, Acoustical Plaster and Other Limestone Products

GENERAL OFFICE AND PLANTS

WOODVILLE, OHIO

Charter Member of The Finishing Lime Association of Ohio

Products

HYDRATED FINISHING LIMES of equal quality: "Ohio" White Finish, "Woodville" White Finish, "Buckeye" White Finish, "Hawk Spread" White Finish.

"Ohio Acoustico," an acoustical plaster.

"Ohio Ritewall," a fibered lime plaster.

"Ohio Mastite," a prepared masonry mortar.

Facilities and Organizations

THE OHIO HYDRATE & SUPPLY CO. was organized in 1916 and now has an annual plant capacity of over 300,000 tons of finishing lime and 1,000,000 tons of other limestone products.

Our products are sold by over 6500 retail building supply dealers conveniently located throughout the United States and Canada.

TRADE-MARKS

Guarantees

All Ohio Hydrate products are guaranteed to meet the standard specifications of the American Society for Testing Materials, and also the rigid requirements of The Finishing Lime Association of Ohio of which we are charter members.

To make identification easy our four brands of finishing lime—all of which are of equal quality—are packed in 50-lb. rope paper bags distinctively marked at top, bottom and sides with Red Zig Zags.

Use For Plastering

Ohio, Woodville, Buckeye and Hawk Spread White Finishing Lime are special finishing limes for finish coats of plaster, either smooth, sanded or textured.

Ohio Ritewall is a mill mixed fibered finishing lime plaster, specially prepared for base coats.

Ohio Acoustico is a mill mixed prepared acoustical plaster, having a sound reduction factor of .28 at 512 cycles per second.

Specifications—For complete and detailed specifications covering the use of our finishing limes for scratch, brown and finish coat plastering see pages of The Finishing Lime Association of Ohio, of which we are members.

Use For Masonry (Mortar)

Ohio Mastite is a prepared masonry mortar meeting the most rigid requirements for quality work in masonry of all types.

Specifications—Masonry mortar shall consist of 1 part Ohio Mastite and 3 parts of well graded clean sharp sand by volume, and shall be well mixed by hand or machine to uniform consistency before using.

Use For Concrete

The use of Ohio, Woodville, Buckeye or Hawk Spread Hydrated Finishing Lime in concrete mixtures is good waterproofing insurance. They lubricate concrete mixtures, cut the cost of placing, secure better embedment of reinforcing, reduce the cost of finishing after removal of forms and produce some increase in compressive strength.

When hydrated lime is used to lubricate and improve the general workability of the concrete mixture, the following mentioned quantities should be used, the quantity shown being added to each 94-lb. bag of cement in a batch.

1 :1½ :3 mix— 5 lbs. hydrated lime
1 :2 :4 mix— 8 lbs. hydrated lime
1 :2½ :5 mix—10 lbs. hydrated lime
1 :3 :6 mix—12 lbs. hydrated lime

If watertightness is the important result desired, the following quantities should be used.

1 :1½ :3 mix— 7 lbs. hydrated lime
1 :2 :4 mix—10 lbs. hydrated lime
1 :2½ :5 mix—12 lbs. hydrated lime
1 :3 :6 mix—15 lbs. hydrated lime

Further information furnished on request.

THE WOODVILLE LIME PRODUCTS COMPANY

Manufacturers of Blubag Brands of Lime Products for Building Uses

TOLEDO, OHIO

FIELD OFFICES

NEW YORK, N. Y., 55 West 42nd Street — BOSTON, MASS., 1110 Statler Building — CHICAGO, ILL., 220 South State Street

PLANT AND QUARRIES, WOODVILLE, OHIO

Charter Member of The Finishing Lime Association of Ohio

Products and Brands

"White Enamel" Finishing Lime, "White Lily" Finishing Lime, "Gold Medal" Finishing Lime, all packed in distinctive blue packages labeled *Blubag,* which makes it easy for the architect who specifies *Blubag* brands to distinguish them on the job.

Blubag Fibered Lime Plaster, for base coat plastering.

Blubag Sand Finishes, for interior coats in white, ivory and buff.

Also the following:

Blubag Exterior Stucco Finishes in white, gray and buff.

Prestone Superlime Plaster for plastering surfaces where moisture is encountered.

"Ace High" Masons Lime, Lump Lime, *Blubag* Brick Cement, Rex Concrete Products Improver.

Note: Complete information relative to *Blubag* products will be gladly supplied.



Facilities and Distribution

Plant and quarries are located at Woodville, Ohio, and general offices at Toledo, Ohio. Products are distributed through all principal building material dealers throughout the United States.

Quality of Lime Is of Greatest Importance

Eighty percent of the interior of a building visible to the eye is *wall.* Quality of the lime used is, therefore, of the greatest importance and should receive the architect's most careful consideration.

Blubag brands of hydrated finishing lime are guaranteed to meet the standard specifications of the American Society for Testing Materials as well as those of the Bureau of Standards.

Laboratory Tests Insure Uniform Quality

Nothing is taken for granted in the production of *Blubag* lime products. Every process of manufacture is under the supervision of seasoned and experienced men and skilled chemists.

A complete and modern research and testing laboratory is an important factor in preserving the natural qualities of *Blubag* lime — whiteness, plasticity and strength—which makes it a product of the highest quality that may be obtained anywhere at any price.

Thousands of tons of *Blubag* Finishing Hydrated Lime are constantly undergoing a *natural "Dyjestive" process* in our immense ageing tanks. It assimilates the raw and caustic tendencies of freshly hydrated lime, and leaves a pure, snow-white, bone-dry powder that is soft and safe as talcum.

As a result of this careful "Dyjestive" process, the tendency of the finish to blister or burn workmen is practically eliminated. Also, the finish has a greater degree of uniformity and improved working qualities. Yet not a single iota of the life and efficiency of *Blubag* Finishing Hydrated Lime has been sacrificed or impaired. It is better than ever.

This "Dyjestive" process is just an additional step taken in the course of manufacture to preserve and enhance the remarkable natural quality of our limestone which produces a hydrated lime that is "Quality from Stone to Finish."

Blubag Fibered Lime Plaster for Base Coat Plastering

Prepared from our finishing hydrated lime mixed with proper proportions of fiber, thoroughly distributed and ready for mixing with sand at the job. It can be applied to wood or metal lath, brick, gypsum tile or other masonry bases immediately after mixing. No soaking is necessary.

This fibered lime plaster develops excellent acoustical qualities and produces a hard, durable wall.

12 Specific Properties that Make Blubag Fibered Lime Plaster Outstanding—

(1) Durability.
(2) Specific sound deadening properties.
(3) Develops high strength.
(4) Improves with age.
(5) Fire-resistant.
(6) Workability enables the plasterer to produce straight walls and angles.
(7) Retemperable—eliminates loss of material.
(8) Increases productivity of plasterer with less effort.
(9) Non-corrosive to metal.
(10) Maximum covering capacity.
(11) Produces even unbroken surfaces.
(12) Gives perfect base for decorations.

Blubag Sand Finishes

Blubag Sand Finishes are standardized products using graded, natural colored aggregates, with standard cementitious materials, factory mixed and bagged, arriving at the job ready for the mixing water and application. They can be applied as sand float or textured finishes.

Blubag Brick Cement

Blubag Brick Cement is a scientifically proportioned mixture of high grade cementitious materials. The proportions in which these standard materials are mixed produce a brick cement having many distinct advantages.

How to Specify Our Lime

For a complete standard form of specification refer to the pages in this catalogue of The Finishing Lime Association of Ohio.

Select the particular specification to fit your requirements and insert the brand name "*Blubag* Brands of Finishing Hydrated Lime," together with "manufactured by The Woodville Lime Products Company, Toledo, Ohio."

Specifications

Detailed specifications on all *Blubag* lime products will be sent to you upon request.

B 2207

INSULATION

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ACOUSTICS

THE EAGLE-PICHER LEAD COMPANY

Manufacturers of Eagle Insulation for Homes

GENERAL OFFICES

Temple Bar Building, CINCINNATI, OHIO

BALTIMORE, MD., 359 Guilford Avenue
BOSTON, MASS., 11 Wharf Street
BUFFALO, N. Y., 39-43 Mechanic Street
CHICAGO, ILL., 4401 South Western Avenue
CINCINNATI, OHIO, 1030 Broadway
CLEVELAND, OHIO, 1200 W. Ninth Street
DALLAS, TEX., 600 No. Caruth Street
DETROIT, MICH., 7310 Woodward Avenue
JOPLIN, MO., 214 W. Third Street
KANSAS CITY, MO., 2801 Terrace Street
MINNEAPOLIS, MINN., 437 Harding St., N.E.
NEW ORLEANS, LA., 411 So. Peters Street
NEW YORK, N. Y. 420 Lexington Avenue
PHILADELPHIA, PA., Fourth and Cherry Sts.
PITTSBURGH, PA., 49 Terminal Way, S.S.
EAST ST. LOUIS, ILL., 305 St. Clair Avenue

For Lead Pigments for Paint, see Manufacturers' Index

EAGLE HOME INSULATION DOES AN ADEQUATE INSULATING JOB

Eagle Home Insulation is thick and bulky. It is this thickness that enables it to do an *adequate* insulating job. Honeycombed with millions of tiny "dead" air cells so necessary to proper insulation, it is used in thicknesses of approximately 4 ins. in walls and attics or upper ceilings.

Naturally, the conductance of heat of this thick layer of fluffy Eagle Insulation is virtually negligible. Authoritative tests reveal the Eagle Insulation method, due to this unusual thickness is far more effective than many of the insulating methods in common use.



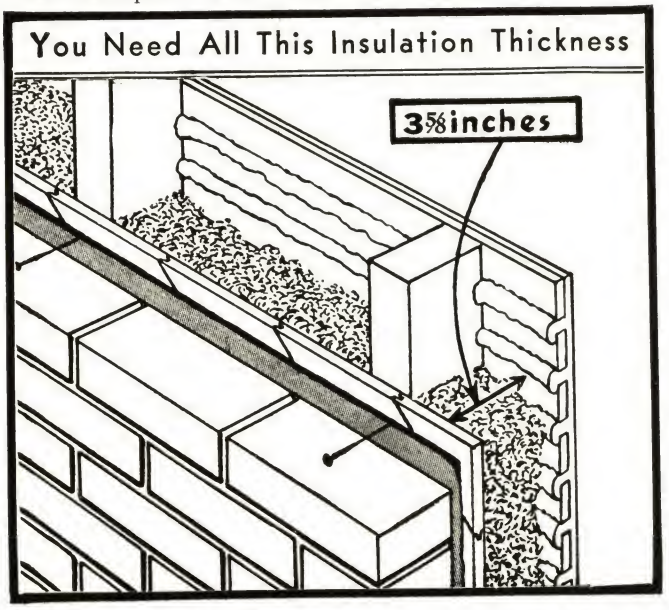
TRADE MARK

Fireproof: Accepted by Underwriters' Laboratories and U. S. Bureau of Standards

Eagle Home Insulation is clean mineral fibre, made from flint-rock, limestone, and other silica bearing minerals. These are fused at high temperatures, and "blown" into a fluffy, "wooly" material. Eagle Insulation is absolutely fireproof. It is also a non-conductor of electricity and is completely impervious to lightning. These facts are attested to by the Underwriters' Laboratories and the U. S. Bureau of Standards.

Containing no vegetable matter, Eagle Insulation is rotproof and verminproof. It will never deteriorate, but will outlive the building in which it is installed. It does not "settle," but stays in place so that its efficiency is never impaired.

For *lightness in weight* and *low thermal conductivity*, Eagle Home Insulation rates with the best of all fireproof and verminproof insulations on the market.



Unique Method of Application Makes It Suitable for Any Type of Construction

Fluffy, light Eagle Insulation is easy to handle and speedy to install. An ingenious pneumatic machine blows the material into place in the sidewalls and the attic or upper ceilings. There is no muss, no bother. The whole job is done thoroughly, speedily, and at small expense.

Because Eagle Home Insulation is pneumatically applied by the "blown" method, it is suitable for installation in practically any type of building or home, old or new, frame, brick, or stucco. Every Eagle contractor is skilled and competent to do an adequate insulating job. He has been selected only after THE EAGLE-PICHER LEAD COMPANY has thoroughly investigated and approved his integrity and capability.

Eagle Insulation Assures Comfort and Promotes Health

Eagle Home Insulation is applied in a thickness of approximately 4 inches. This fluffy, bulky layer so effectively retards heat flow that, in summer, an Eagle-insulated home is always from 12° to 15° cooler than outside temperature. Even upstairs rooms (usually unbearable) become delightfully cool when protected with Eagle Insulation. They remain within 1° of the temperature of the lower rooms.

In winter, it is easy to maintain a healthful temperature of approximately 72° in all the rooms, because the heat of the furnace stays *within* the house instead of seeping through to waste itself on all outdoors. There are no "cold spots" in an Eagle-insulated home; the temperature is balanced and healthful throughout the entire building.

Dirt and dust cannot penetrate thick Eagle Insulation. Neither can drafts and icy winds; thus danger of "flu" and colds in winter is lessened considerably.

Saves from 30% to 50% in Yearly Fuel Bills

An expenditure in Eagle Insulation pays the home owner large returns. Canadian Government authorities estimate that the average house burning eight tons of coal per year would require only five if it were properly insulated. The saving in fuel made possible by thick Eagle Home Insulation runs from 30% to 50% yearly, depending on the type of structure insulated. These savings will usually pay for the cost of insulation in from three to five years.

A second important economy is the absolute prevention of "wall sweating." This action occurs in walls when warm air strikes them, after they have been made cold by the influx of cold air from the outside. The result is a condensation of moisture which leaves ugly spots. Costly redecorating is necessary to remove them.

But with thick Eagle Insulation between the inner and

outer walls, the cold air cannot penetrate inward. Hence "wall sweating," with its inconvenience and expense, is absolutely prevented.

Substantial Savings in Investment in Heating Equipment

Because a greater part of the heat generated in an Eagle-insulated home is utilized within the house, (the only appreciable loss of heat being at doors and windows) a much smaller initial investment in heating equipment is made possible. The heating plant is not handicapped in warming the building; therefore the furnace, as well as radiators, can be smaller and less costly.

This saving in capital invested for heating apparatus releases additional funds for use elsewhere in the building. Often the saving is sufficient to cover the full cost of insulating.

Write for Sample and Descriptive Literature

Eagle Home Insulation, despite its low conductivity rating, does not cost as much as many insulations on the market. Write to THE EAGLE-PICHER LEAD COMPANY, Insulation Division, Joplin, Missouri, for a sample and the name of the Eagle Contractor in your city.

Specifications for Application

Note: These specifications are intended to cover the most common types of installations. For specific recommendations concerning any insulating project, write to THE EAGLE-PICHER LEAD COMPANY, Insulation Division, Joplin, Missouri.

Work Included

The work contemplated under this specification shall include all materials, labor, equipment and service necessary for and reasonably incidental to the installation of Home Insulation by the Pneumatic Method to completely insulate the portion of the building as shown and noted on the drawings or herein specified.

This contractor shall make all openings required to install his work and shall do all patching of such openings after his materials have been placed. He shall furnish and set all work not included by other contractors, which may be required in connection with the installation of his materials.

(Insert here detailed specification applying to the particular job).

Work Not Included

Other contractors will furnish and install the following work as specified under other divisions and other specifications text which this contractor shall read so as to ascertain what is called for therein: (The paragraphs which do not apply to the job at hand are to be omitted.)

(a) Furnish and erect all metal or wood lath, insulating lath or plaster lath as specified, on all walls which are to be insulated and finished with plaster, as specified under..... (state where specified).

If metal or wood lath, such lath adjoining ceiling, window sills, etc., on all exterior walls to be insulated will be temporarily secured so that the home insulation contractor may readily remove it to allow the installation of his material. The home insulation contractor will replace and secure such lath.

(b) Furnish and erect all furring not less than 2 in. deep on all stone, brick, tile or concrete masonry walls which are to receive the home insulation.

(c) Finish with a parge coat of cement the inner surface of all stone masonry walls which are to receive the home insulation, to bring same to a fairly even surface.

Finish with struck joints the inner surface of brick or tile walls which are to receive the home insulation, to bring same to a fairly even surface.

Materials and Workmanship

All insulating materials placed under this specification and contract shall be those manufactured by THE EAGLE-PICHER LEAD COMPANY and shall bear the manufacturer's label. The insulation material shall be installed by the pneumatic method, except in areas where this method is impracticable or impossible. In such areas the insulation material shall be placed by hand. All insulation material shall be installed by .....

.....of .....
(State name and address).

Detailed Specifications to be Inserted Under "Work Included" Where Indicated

No. 1. Finished Attics

The insulating material shall be installed in attic spaces as follows:

The home insulation contractor shall apply continuously to backs of studs of knee walls, Sisalkraft or Diamond Cord Paper, secured in place.

The insulating material shall be installed between ceiling beams over .....(state) story to extend from exterior walls to base of knee walls, up knee walls to intersection with rafters and up rafters to and across attic ceiling, etc. It shall also be installed in all gables, dormers and closets which adjoin finished attic portions, to provide a continuous blanket of insulation over entire roof area. The insulation shall be installed to a depth of not less than 3⅝ ins. between ceiling beams and to the full depth of studs in knee walls and gables, etc., and the full depth of rafters.

No. 2. Unfinished Attics

(Insulation to be installed between rafters to a depth of not less than 3⅝ inches.)

The insulating material shall be installed in attic spaces as follows:

The home insulation contractor shall apply between all rafters over entire roof area, Sisalkraft or Diamond Cord Paper, secured in place not less than 3⅝ ins. from underside of roof sheathing or single lath. He shall also supply to studs in gable ends, similar paper secured in place and so installed as to allow the placing of the insulating material behind it to a thickness of not less than 3⅝ ins.

The insulating material shall be installed between rafters and between studs in gable ends, etc., to provide a continuous blanket of insulation over entire roof area. The insulation shall be installed to a thickness of not less than 3⅝ ins.

No. 3. Unfinished Attics

(Insulation to be installed between rafters to their full depth.)

The insulating material shall be installed in attic spaces as follows:

The home insulation contractor shall apply to underside of rafters and to face of studs in gable ends, a suitable wall board, celotex or masonite board, secured in place. (If joints are to be battened, so specify.)

The insulating material shall be installed between rafters and between studs in gable ends, etc., to provide a continuous blanket of insulation over entire roof area. The insulation shall be installed to the full depth of the rafters and the full depth of the studs.

No. 4. Unfinished Attics

(Insulation to be installed between ceiling beams to a depth of not less than 3⅝ inches.)

The insulating material shall be installed in attic spaces as follows:

The insulating material shall be installed between ceiling beams to provide a continuous blanket of insulation over entire ceiling area of.....story (state first, second, or third.) The insulation shall be installed to a thickness of not less than 3⅝ inches.

No. 5. Exterior Walls

(New construction. Metal or wood lath on wood frame.)

The insulating material shall be installed in all exterior walls [except.....(state exception if any).....] to completely fill such walls from top of foundation wall to roof.

The insulation shall be installed to completely and thoroughly fill to an even density all walls, specified. If insulation is to be installed before plaster is applied, the contractor shall partially cover each space between two studs during the time it is being filled, with a sheet of insulating board, of sufficient width to span the studs and provided with a hole near the upper end to receive the nozzle of the blowing equipment.

No. 6. Exterior Walls

(New construction. Gypsum plaster lath or insulating plaster lath, etc., on wood frame.)

The insulating materials shall be installed in all exterior walls, [except.....(state exceptions if any).....], to completely fill such walls from top of foundation wall to roof.

The insulation shall be installed to completely and thoroughly fill to an even density all walls specified.

No. 7. Exterior Walls

(New construction. Solid masonry.)

The insulating material shall be installed in the furred spaces of all exterior walls, [except.....(state exceptions if any).....], to completely and thoroughly fill to an even density such furred spaces from foundation wall to roof.

Note: If metal or wood lath is to be used add last sentence of specification No. 5

GENERAL INSULATING & MANUFACTURING CO.

PLANT AND EXECUTIVE OFFICE
ALEXANDRIA, IND.
REPRESENTATIVES IN ALL PRINCIPAL CITIES

Products

BULK ROCK WOOLS, wall and ceiling fills.
HOMEFELT, felted rock wool sewed between paper.
ROCKFELT, a blanket type insulator.

Gimco ROCK WOOL

Also Savall Pipe Covering which combines rock wool efficiency and fiberboard toughness.
We manufacture a complete line of Industrial Insulating Brick, Block, Flexfelt, Pipe Covering and Cements.

GIMCO ROCK WOOL (Annealed Silica Fibres)

General Description

Gimco Rock Wool, the basic material from which all Gimco products are made, has been used for over twenty-five years by large industrial plants, steam plants, refineries, cold storage plants, etc., to maintain temperatures from below zero up to 1250° F. above.

It is made from a peculiar type of pure silica rock, which is melted and blown into millions of tiny fibers containing by volume over 90% trapped air. The Gimco patented annealing process, by which the wool is annealed while the rock is in the molten state, above 3000° F., produces an unusually soft, pliable wool that will not break down or settle in use.

Gimco Rock Wool has a thermal conductivity of only .27 B.t.u. per in., per hour, per sq. ft., per degree difference, as determined by the U. S. Bureau of Standards.

In addition to having high efficiency per inch of thickness, Gimco Rock Wool is so priced that it may be economically used in thicknesses three and one-half to seven times greater than that of most of the frequently used house insulators, without an increase in cost, giving to the home that extra thickness of protection that has been found by leading industrials to be so necessary to the proper maintenance of temperatures.

The Gimco Patented Annealing Process

One of the outstanding features of Gimco Rock Wool is the exclusive method in which it is annealed to toughen the fibers, and to make them impervious to moisture. The wool is treated while in the molten state in such a manner as to anneal the fibres *thoroughly and evenly* as they are blown. We do not spray an annealing compound on the wool after it has been blown. We wish to emphasize the fact that no treatment is given the wool after it has left the cupola at a temperature of 3000° F.

Gimco Rock Wool absolutely will not burn and tends to prevent the spread of fire. It will not absorb moisture from the air, is unaffected by climatic changes, and absolutely will not deteriorate, settle, or sift out. It will not harbor vermin, and will last as long as the house it insulates. (See Underwriters' Laboratories' Report Retardant No. 2358.)

Various Forms and Their Uses

Gimco Rock Wool is furnished in a variety of forms and thicknesses to meet every insulating requirement, and to satisfy every cost budget. It is without doubt, one of the most efficient, and lowest priced insulators, per in. of thickness, in use today.

Gimco Long Fibre No. 120 Annealed Wool

This is an unusually soft, long fibre wool that has been given a medium heavy treatment by our special annealing process to impregnate it against moisture absorption. It is used for hand packing into the space between the studding of walls, calking around windows and doors, and packing between ceiling joist. The natural cling of its long fibres holds it in place without special fastening. Furnished loose in paper or burlap bags.

Gimco No. 130B Granulated Wool

The difference between granulated wool and long fibre wool is that the wool has been mechanically granulated, or rolled up into nodules about the size of peas, to facilitate pouring into small spaces. When poured in this manner, it readily conforms to the irregularities of the space insulated, and does not require packing. Used over ceilings of new and old homes, and can be poured or blown into the walls of old homes.

Gimco Homefelt

Wherever there is a need for a blanket type of insulator, such as between roof rafters, in ceilings where the attic is floored before the ceiling is lathed, or in some types of walls, Gimco Homefelt is recommended. It is Gimco No. 120 long fibre wool sewed to a thickness of 1 in. between two layers of heavy craft paper. Furnished in 25 and 50-ft. rolls in widths of 16, 18, 24 and 36 in.

Gimco Rockfelt

Gimco Rockfelt is a blanket type of insulator, furnished in two styles.

Style A is Gimco Rock Wool felted into a blanket similar to cotton batting. In this form it is easily handled for applying to the ceiling by simply unrolling between the joist. No fastening required.

Style B is the same as Style A, except that it has a layer of heavy craft paper fastened to one side. In this form it can be used in sidewalls, between rafters, and under attic floors, where the attic is floored before lathing. Both styles furnished in thicknesses from ½ to 3 in. and in rolls 15 in. wide by 16 ft. long.

SPECIFICATIONS FOR APPLYING ROCK WOOL PRODUCTS

A. Ceilings









AI. Attic Unfloored—Gimco No. 130B Granulated Annealed Fibered Rock Wool shall be placed on top of the ceiling lath and plaster either by pouring directly from the bags or by blowing in place with a pneumatic conveyor. The material shall then be leveled off and gauged to a thickness of 4 in. Pack GIMCO BULK ROCK WOOL No. 110 in cracks where the wall and roof join.

Note

Conductivity:
4 in. ..... .067 B.t.u.
2 in. (alternate)... .135 B.t.u.
Sound absorption co-efficient at frequency of 512:
4 in. ..... .66
2 in. (alternate)... .62

AII. Attic Floored—Remove one board on each side and in the center of the attic floor and blow Gimco No. 130B Granulated Annealed Fibered Rock Wool from the center opening towards each side. Gauge to a thickness of 4 in. Should the attic be over 16 ft. wide, additional openings should be made.

Note

Conductivity and sound absorption co-efficients are the same as in AI.



AIII. Attic Floored Before Ceiling Is Lathed—Apply 1-in. Rock Wool Homefelt between the joists, nailing the flange or turnouts with lath strips to the sides of the joists, plates and headers. Care shall be taken to butt the joints closely.

Note

Conductivity ..... .27 B.t.u.
Sound absorption co-efficient at frequency of 512..... .56

Alternate—Apply 1-in. Gimco Annealed Fibered Rock Wool Rockfelt, Type B, between the joists with random lath strips to the floor above and to the sides of the joists and the plates.

Note

Insulating co-efficients practically the same as Rock Wool Homefelt.

B. Sidewalls













BI. Fill Type Insulation (New Construction)—Before lathing, pack the exposed sidewalls and bathroom walls the entire thickness of the studding with Gimco Annealed No. 120 Rock Wool to a density of about 10 lbs. per cu. ft. (Nothing is required to hold it in place as it has sufficient tenacity to cling to the studding until the lath is applied). Calk all windows carefully with Gimco Long Fiber Rock Wool No. 120.

Note

Conductivity ..... .075 B.t.u.
Sound absorption co-efficient at frequency of 512.. .65

BII. Felt Type Insulation (New Construction)—The exposed sidewalls and the bathroom walls shall be insulated with 1-in. thick Gimco Rock Wool Homefelt. The Homefelt shall be tucked between the studding and held in place with lath strips. Calk all windows carefully with Gimco Long Fibered Rock Wool No. 120.

Note

Conductivity ..... .27 B.t.u.
Sound absorption co-efficient at frequency of 512 ..... .56

Alternate—The exposed sidewalls and the bathroom walls shall be insulated with 1-in. thick Gimco Rockfelt. The Rockfelt shall be held in place against the sheathing and sides of the studding by random lath strips. Calk all windows carefully with Gimco Long Fiber Rock Wool No. 120.

Note

Conductivity ..... .27 B.t.u.
Sound absorption co-efficient at frequency of 512 ..... .57

BIII. Blown Type Insulation (For Old Homes)—Walls already built and other places inaccessible to hand application, shall be filled with Gimco No. 130B Granulated Annealed Fibered Rock Wool by means of a pneumatic conveyor.

Remove a strip of siding below each wall plate at the top of the wall and under each window. Cut a 3-in. diameter nozzle hole through the sheathing then, after ascertaining that there are no obstructions within the wall by dropping a plumb bob down the inside of the wall, the conveyor nozzle shall be inserted in the hole and the wall blown full of Gimco No. 130B Granulated Annealed Fibered Rock Wool. On blowing the wall full, the siding shall be carefully replaced.

JOHNS-MANVILLE

EXECUTIVE OFFICES
292 Madison Avenue, NEW YORK, N. Y.

For Branch Offices, see Section on Wall Tile

Products

JOHNS-MANVILLE HOME INSULATION.

Also Packings for all purposes; Refractory Cements; Waterproofing and Dampproofing; Asbestos Ebony; Asbestos and Asphalt Roll-roofing; Rotproof Roofs; Asbestos products of all kinds.

For the following Johns-Manville products, see Manufacturers' Index: Acoustical Treatment and Sound Isolation; Shingles; Built-up Roofing; Insulating Board and Insulating Lath; Insulations; Tile Flooring; Transite, Flat and Corrugated; Wall Tile.

JOHNS-MANVILLE HOME INSULATION

The present time is one which makes it imperative for the architect to consider all savings possible in building construction and maintenance. For the home owner and architect this necessity raises instantly the question of comfort and economy in fuel bills which may or may not follow the use of insulation, and the best choice of insulating materials. At all times the question of comfort deserves first consideration in the planning of a home. Adequate insulation provides comfortable interior temperature during the hot seasons and makes possible the maintaining, most economically, of adequate interior temperatures during the seasons of cold. Insulation is now commonly recognized as an indispensable necessity in any well planned and well constructed individual home.

Many houses now built or to be constructed will, in all probability within the next few years, have installed therein equipment to control interior temperature during the summer. The economical operation of such equipment demands adequate insulation.

J-M Home Insulation is by far the most unique and valuable contribution which has yet been made to the solving of these problems. Either for the new residence, the one undergoing alteration, or the existing structure for which no alteration is planned, it is the most economical, the most efficient and most satisfactory system which can be specified or used.

The Material and the Method

Finely spun rock wool (*actual rock fibre*) is blown by compressed air into the spaces between studs in outer walls, between beams in attic floors and all other confined spaces in which air may otherwise circulate.

In houses under construction this blowing may be done from inside the building without disturbance of the work of other trades. In houses already erected the blowing is done from outside by machines mounted on trucks, a brick, clapboard or shingle being removed temporarily where necessary, for insertion of the hose nozzle. In stucco finished houses holes are drilled for the necessary access, repatching afterward being affected without injury to appearance.

Five Outstanding Advantages

Obviously this new method entails no mess or bother and has the following advantages:

(1) All spaces, including those of odd shape, can be completely filled without waste of material or labor, or suspending interior finish of walls to admit access for hand packing.

(2) Owing to the strong structure of the rock wool and the method of installation, there is little or no tendency to settle, thus opening up spaces through which heat may eventually penetrate.

(3) Being a genuine mineral the insulating material is non-combustible in itself aside from its complete stoppage of all drafts.

(4) It will not harbor or support vermin.

(5) Insulating efficiency is such as to yield fuel savings ranging from 25% to 45%, at the same time greatly increasing summer comfort, actual tests showing reductions of 8 to 17 degrees below outside temperature with only a maximum of 2 degrees difference between first and second floors. These figures are supported by a large number of testimonials from owners of houses which have been insulated by this new J-M method.

Estimates

As conditions vary with each application, special estimates are given in each instance. Consult the nearest J-M Home Insulation Contractor, or address us for further information and assistance. The initial expense of J-M Home Insulation will be found in any case extremely reasonable and well within the possibilities of any better class residence building of even moderate cost. Not to mention the increased comfort in summer, the fuel savings in winter will return the initial investment in a very few years.

SPECIFICATIONS

Work Included

The work contemplated under this specification shall include all materials, labor, equipment, and services necessary for and reasonably incidental to the installation of Home Insulation by the pneumatic method to completely insulate the portion of the building as shown and noted on the drawings or herein specified.

The contractor shall make all openings required to install his work and shall do all patching of such openings after his materials have been placed. He shall furnish and set all work not included by other contractors which may be required in connection with the installation of his materials.

(*Insert here detailed specifications applying to the particular job.*)

Work Not Included

The following work will be furnished and installed as specified under other divisions of the specification, which this contractor shall read so as to ascertain what is called for therein:

(*The paragraphs which do not apply to the job at hand are to be omitted.*)

(*a*) All metal or wood lath, insulating lath or plaster lath as specified, on all walls which are to be insulated and finished with plaster. If metal or wood lath, such lath adjoining ceiling, window sills, etc., on all exterior walls to be insulated will be temporarily secured so that the Home Insulation Contractor may readily remove it to allow the installation of his material. The Home Insulation Contractor will replace and secure such lath.

(*b*) All furring, which shall be not less than two inches deep, on all stone, brick, tile or concrete masonry walls which are to receive the Home Insulation.

(*c*) A finishing parge coat of cement on the inner surface of all stone masonry walls which are to receive the Home Insulation, to bring same to a fairly even surface. Finish with struck joints the inner surface of brick or tile walls which are to receive the Home Insulation, to bring same to a fairly even surface.

Materials and Workmanship

All insulating materials placed under this specification and contract shall be those manufactured by JOHNS-MANVILLE and shall bear the manufacturer's label. The insulation material shall be installed by the pneumatic method, except in areas where this method is impracticable or impossible. In such areas the insulation material shall be placed by hand. All insulation material shall be installed by the Home Insulation Company of (*state name and address*).

Detailed Specifications

No. 1. Finished Attics

The insulating material shall be installed in attic spaces as follows: The Home Insulation Contractor shall apply continuously to backs of studs of knee walls, Sisalkraft or Diamond Cord Paper, secured in place. The insulating material shall be installed between ceiling beams over (*state*) story to extend from exterior walls to base of knee walls, up knee walls to intersection with rafters and up rafters to and across attic ceiling, etc. It shall also be installed in all gables, dormers and closets which adjoin finished attic portions, to provide a continuous blanket of insulation over entire roof area. The insulation shall be installed to a depth of not less than 3⅝ ins. between ceiling beams and to the full depth of studs in knee walls and gables, etc., and the full depth of rafters.

No. 2. Unfinished Attics

(*Insulation to be installed between rafters to a depth of not less than 3⅝ ins.*)

The insulating material shall be installed in attic spaces as follows: The Home Insulation Contractor shall apply between all rafters over entire roof area, Sisalkraft or Diamond Cord Paper, secured in place not less than 3⅝ ins. from underside of roof sheathing or shingle lath. He shall also apply to studs in gable ends, similar paper, secured in place and so installed as to allow the placing of the insulating material behind it to a thickness of not less than 3⅝ ins. The insulating material shall be installed between rafters and between studs in gable ends, etc., to provide a continuous blanket of insulation over entire roof area. The insulation shall be installed to a thickness of not less than 3⅝ ins.

No. 3. Unfinished Attics

(*Insulation to be installed between rafters to their full depth.*)

The insulating material shall be installed in attic spaces as follows: The Home Insulation Contractor shall apply to underside of rafters and to face of studs in gable ends, J-M Insulating Board, secured in place. (*If joints are to be battened, so specify.*) The insulating material shall be installed between rafters and between studs in gable ends, etc., to provide a continuous blanket of insulation over entire roof area. The insulation shall be installed to the full depth of the rafters and the full depth of the studs.

No. 4. Unfinished Attics

(*Insulation to be installed between ceiling beams to depth of not less than 3⅝ ins.*)

The insulating material shall be installed between ceiling beams to provide a continuous blanket of insulation over entire ceiling area of (*state*) story. The insulation shall be installed to a thickness of not less than 3⅝ ins.

No. 5. Exterior Walls

(*New construction. Metal or wood lath on wood frame.*)

The insulating material shall be installed in all exterior walls (*state exceptions if any*) to completely fill to an even density such walls from top of foundation wall to roof. If insulation is to be installed before plaster is applied, the Contractor shall partially cover each space between two studs during the time it is being filled, with a sheet of insulating board, of sufficient width to span the studs and provided with a hole near the upper end to receive the nozzle of the blowing equipment.

No. 6. Exterior Walls

(*New construction. Gypsum plaster lath or insulating plaster lath, etc., on wood frame.*)

The insulating materials shall be installed in all exterior walls (*state exceptions if any*) to completely fill to an even density such walls from top of foundation wall to roof.

No. 7. Exterior Walls

(*New construction. Solid masonry.*)

The insulating material shall be installed in the furred spaces of all exterior walls (*state exceptions if any*) to completely and thoroughly fill to an even density such furred spaces from foundation wall to roof.

(*If metal or wood lath is to be used add last sentence of Specification No. 5.*)

CALICEL PRODUCTS, INC.

GENERAL OFFICES AND FACTORY

HAMMOND, IND.

SALES OFFICES IN PRINCIPAL CITIES

(1) Building and Home Insulation.
(2) Acoustical Tile.*
(3) Acoustical Plaster.*
(4) Sound Deadening.*

Calicel INSULATION

(5) Calistone Roof Slabs.*
(6) Insulating Concrete Aggregate.*
(7) Refractory Insulation.
(8) Pulverized Fillers.

*For Pages Describing These Calicel Products, see Manufacturers' Index.

CALICEL (H) BUILDING INSULATION

In General

Calicel is most outstanding proof that the theories of insulating experts, for many years, have been entirely correct, these experts having agreed that the ideal insulation against the flow of heat is minute and confined air space, wherein the air space be entirely enclosed and so small that circulation cannot take place within it or heat radiate across it appreciably. Also that the confining air cell walls be highly polished to prevent penetration. Practical value, naturally, being dependent upon a sufficient quantity of cells being grouped together.

What a description of Calicel! Proof comes from viewing the accompanying highly magnified view of a particle of Calicel.

The Material

Calicel, basically, is highly expanded stone. It is a granular, mineral refractory insulator having extraordinarily low thermal conductivity and possessing remarkable sound absorbing or deadening qualities as well. It is a synthetic combined silicate of lime and alumina formed at temperatures in excess of 2000° F., and so cooled that the molten mass is expanded from 10 to 40 volumes into a highly cellular structure resembling sponge. The insulating value is due to this characteristic cellular structure which, under the microscope, shows countless minute highly polished spherical surfaces offering the utmost resistance to the passage of heat and sound waves. Subsequent refining and sizing operations produced finished Calicel which is the base for numerous insulators and is also used as an aggregate in the manufacture of Calicel Acoustical Tile and Calistone Insulating Concrete and Roof Slabs.

Merits

Calicel is naturally and permanently fire, vermin and moisture proof, and should not be confused with other loose fibrous or granular insulators since its value is derived from the never changing cellularity of its particles rather than from cells created between the particles. Though extremely light in weight, it possesses good strength of body and will support a column of its own particles 100 feet or more high without crumbling.

Tests by the Armour Institute of Technology show the thermal insulating value of Calicel-H to be .28 or better per inch thickness. It is much used for sound deadening or absorption where these qualities alone are required.

Water will not injure it, as it has no affinity for moisture—nor for odors. Adjacent outside water leaks can be located immediately as it has no "blotter like tendency." Its hard quartz-like structure is a menace to rodents or vermin. Calicel contains no chemical properties which might prove detrimental to any other material (such as iron) which it might contact.

Calicel-H is one of the lightest fireproof insulations known; its weight, when placed in walls or ceilings being ten pounds or less per cubic foot.

When sound deadening of floors, walls and ceilings is desired, loose Calicel-H gives most remarkable results; a recent installation of 4 in. walls giving an intensity reduction of 75 decibels. Recent installations include major broadcasting studios.

Installation

It is remarkably dust-free and easy to install—no special equipment being required. It is furnished in convenient sized bags and is poured into place, dry, like so much sand or grain—always seeking all voids without "arching" and without discomfort to installation crews.

Finally, in spite of its quality, it can be purchased at as low or lower price per unit of value than any insulation now known.



A Single Grain of Calicel Magnified 20 Diameters

The unretouched photo shows the minute air cell construction that accounts for the superior insulating and sound deadening qualities of Calicel

Distribution and Service

Calicel-H is distributed through approved dealers or contractors in all principal cities who are prepared to make or supervise installations.

A complete engineering service for heat, cold and sound insulation is available to architects and engineers at all times.

Specification

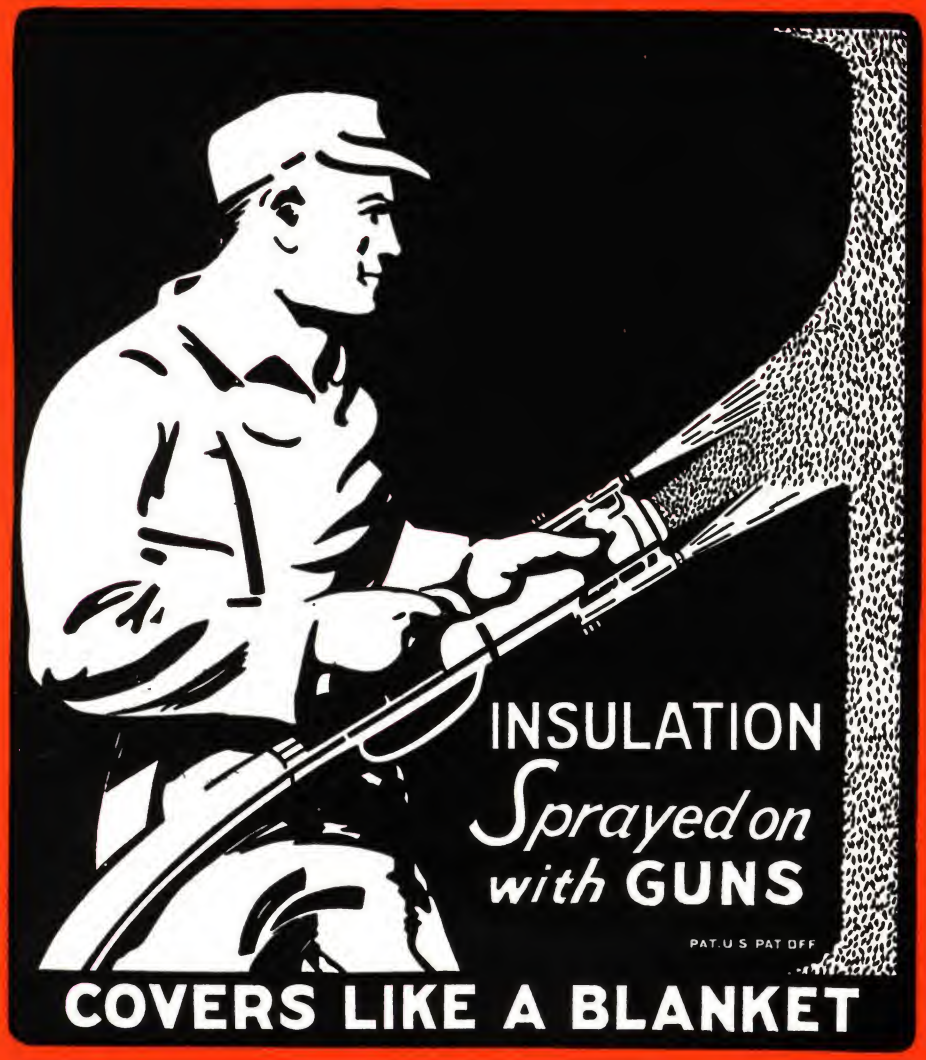
Calicel-H as manufactured by Calicel Products, Inc. of Hammond, Indiana, shall be placed in the following locations (or as indicated by plans); the installation shall be made as per the instructions of the manufacturer, by or under the supervision of his distributor or approved contractor. Care must be taken to secure absolute filling of all voids in walls, ceilings, floors etc. which are to be treated.

INSULATION

Sprayed On Process

HEAT-SOUND AND ACCOUSTICAL CORRECTION

TECHNICAL DATA and SPECIFICATIONS



LOCAL REPRESENTATIVE ~

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SPRAYO-FLAKE COMPANY

ADMINISTRATIVE OFFICES

836 EAST BAY STREET, MILWAUKEE, WISCONSIN

SPRAYO-FLAKE COMPANY

Manufacturers of Sprayo-Flake Insulating Materials and Equipment

ADMINISTRATIVE OFFICES
836 East Bay Street, MILWAUKEE, WIS.

LICENSED OPERATORS

ALBANY, N. Y.	CINCINNATI, OHIO	HARTFORD, CONN.	MINNEAPOLIS, MINN.	PROVIDENCE, R. I.
BALTIMORE, MD.	CLEVELAND, OHIO	INDIANAPOLIS, IND.	NEW HAVEN, CONN.	ROCHESTER, N. Y.
BOSTON, MASS.	DAYTON, OHIO	KANSAS CITY, MO.	NEW YORK, N. Y.	ST. LOUIS, MO.
BRIDGEPORT, CONN.	DENVER, COLO.	LINCOLN, NEB.	OMAHA, NEB.	SAN FRANCISCO, CAL.
BUFFALO, N. Y.	DETROIT, MICH.	LOS ANGELES, CAL.	PITTSBURGH, PA.	SIOUX CITY, IOWA
CHICAGO, ILL.	FORT WAYNE, IND.	MILWAUKEE, WIS.	PHILADELPHIA, PA.	WORCESTER, MASS.

Process

Sprayo-Flake insulating process consists of forcing dry flakes of fibrous material, previously impregnated with a fire resisting agent, by air through a specially constructed gun. As the fibrous flakes leave the gun they are coated with a spray of atomized adhesive agent or binder and projected to the surface to be insulated. The coated fibrous flakes form a thick blanket of insulation covering the surface and sealing all cracks and crevices. It can be applied to practically any surface in any desired thickness.

Development

Sprayo-Flake was conceived by a layman while observing the installation of insulating material in his own home under course of construction. Prompted by a desire to overcome the difficulties involved in installing other types of insulating materials, the spray gun method was evolved. Further development proved the soundness of this theory. Sprayo-Flake method in one operation does a most thorough job, it eliminates entirely the labor of cutting, fitting, and nailing.

Development of the original idea dates back to the year of 1924 when specially designed equipment was perfected for applying Sprayo-Flake. The next step was adoption of an adhesive agent, addition of fire resisting qualities, and verminproofing which was perfected in laboratories and through practical usage in the building field.

Sprayo-Flake Insulation and Spray Acoustic are available for insulating homes, factories and public buildings against heat, cold and sound, and for acoustical treatment.

Distribution and Service

To assure the highest return per dollar invested in insulation the SPRAYO-FLAKE COMPANY has adopted a modern economically sound plan of merchandising and distribution. Sprayo-Flake is supplied direct from factory to job through licensed operators. These licensed operators located in principal building centers are insulation specialists, financially responsible, and work on an exclusive franchise basis. Each installation is made by expertly trained mechanics under exacting supervision.

This advanced plan of distribution enables the architect, builder, or owner to know the exact cost of insulation. Sprayo-Flake is always quoted on a basis of unit price per square foot, or lump sum bid, installed including labor and material.

PHYSICAL CHARACTERISTICS OF SPRAYO-FLAKE

The fibrous cellular structure and method of application give Sprayo-Flake the desired characteristics of the ideal insulation material:

Note: *The binder or vehicle is emulsified asphalt. It is important that the inherent difference in quality and composition of this material be differentiated from ordinary or petroleum cut-back asphalt.*

(1) Low Thermal Conductivity—

0.246 B.t.u. per hour per square foot per inch thickness per degree temperature differential.

(2) Practicability—

Can be applied to practically any surface in any desired thickness. Seals all cracks and crevices, calks around window and door frames.

(3) Fire Resistant—

Chemically pre-treated fibrous materials, plus the emulsified asphalt binder produce a highly fire resisting insulation.

(4) Verminproof—

Emulsified asphalt binder in conjunction with mineral admixtures render Sprayo-Flake insulation repellant to vermin.

(5) Light Weight—

Flakes of fibrous air cell structure weigh only 4.6 pounds per cubic foot installed.

(6) Permanency—

The fabricated blanket of Sprayo-Flake insulation is held in place permanently by employing an emulsified asphalt binder. This binder also preserves the fibrous flakes from deterioration.

The adhesive properties of emulsified asphalt have long been recognized and it will not deteriorate with age.

(7) Low Cost—

Sprayo-Flake insulation is manufactured and applied mechanically in one operation, eliminating costly labor involved in cutting and fitting prepared types of materials.

(8) Flexibility—

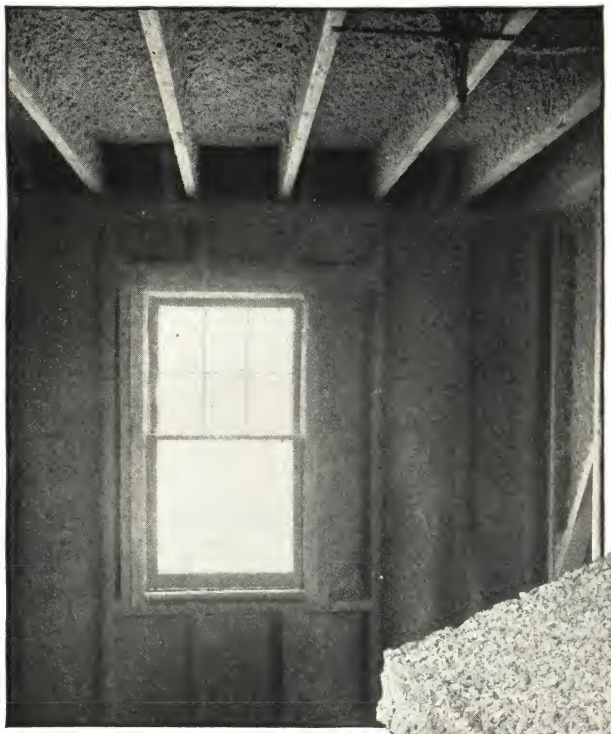
Sprayo-Flake is sufficiently flexible to allow for usual expansion and contraction of structural members to which it is applied without impairing its efficiency. This is emphasized by its excellent resistance to distortion by impact as installed on ceilings of box cars tested over a considerable period of time.

(9) Sound Absorbent—

The cellular structure and resiliency of Sprayo-Flake render it a highly sound absorbent material. It is ideal for sound deadening or acoustical treatments.

TYPICAL CONSTRUCTION SHOWING APPLICATION OF SPRAYO-FLAKE HEAT INSULATION

Air Gun Application of Sprayo-Flake Assures Thorough Calking of Windows and Complete Covering of Walls and Ceiling



Insulated and Uninsulated Section of Wall, Showing How Thoroughly Sprayo-Flake Covers All Surfaces

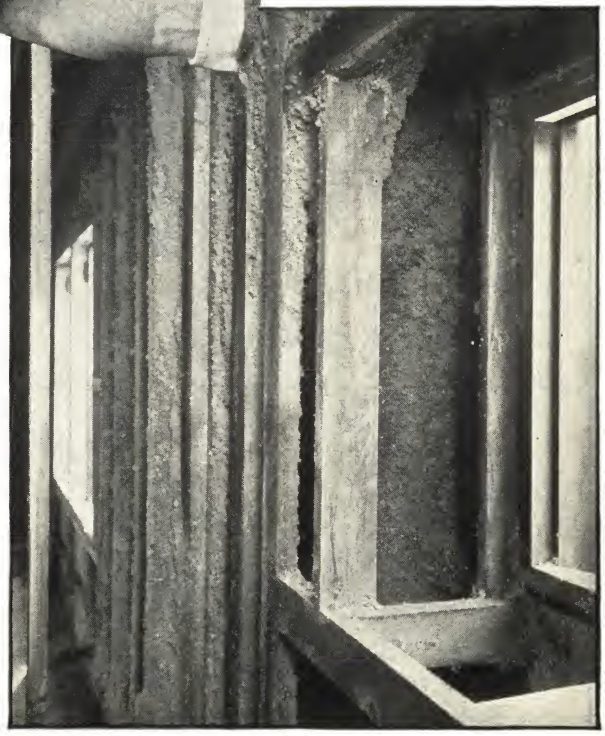


Right:
Section of Sprayo-Flake, Showing Cellular Structure





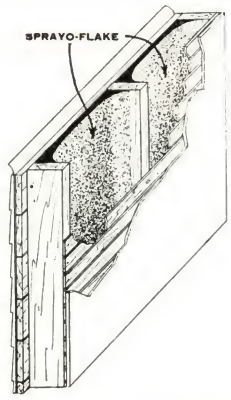
Roof Slopes and Attics Are Efficiently Insulated with Sprayo-Flake—No Nails, Seams or Laps



All Cracks, Crevices, Nooks and Inaccessible Places Are Easily Insulated by Air Gun Method

SPRAYO-FLAKE HEAT INSULATION WALL COEFFICIENTS

Construction
4-in. lap siding
Building paper
¾-in. sheathing
Sprayo-Flake
⅜-in. lath
⅜-in. plaster

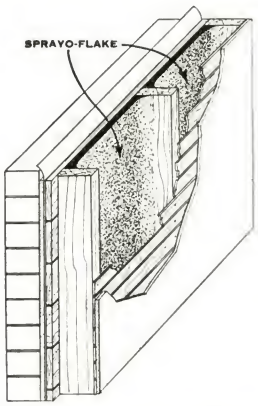


FRAME CONSTRUCTION

S-F thickness	Insulated with Sprayo-Flake 1 in.	1½ in.	2 in.	2½ in.	Uninsulated
U_s*	.119	.096	.081	.069	.227
Steam F	29	36	42	50	15
Hot water F	18	22	26	31	8

*See note Sprayo-Flake Page 4.
Note: In actual installations, a specified 1-in. thickness averages fully 1¼ in. thick.

Construction
4-in. brick
½-in. mortar
Building paper
¾-in sheathing
2x4-in. studs
Sprayo-Flake
⅜-in. lath
⅜-in. plaster

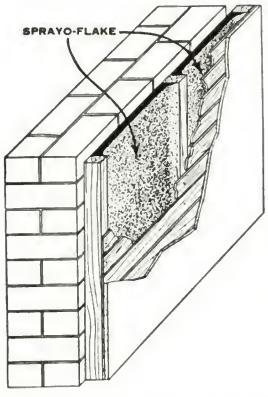


BRICK VENEER CONSTRUCTION

S-F thickness	Insulated with Sprayo-Flake 1 in.	1½ in.	2 in.	2½ in.	Uninsulated
U_s*	.116	.094	.079	.069	.216
Steam F	30	37	43	50	16
Hot water F	18	23	27	31	10

*See note Sprayo-Flake Page 4.
Note: In actual installations, a specified 1-in. thickness averages fully 1¼ in. thick.

Construction
8½-in. brick
Waterproofing
2x2-in. furring
Sprayo-Flake
⅜-in. lath
⅜-in. plaster

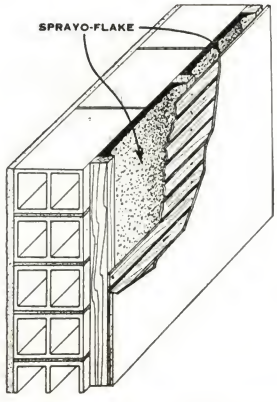


SOLID BRICK CONSTRUCTION

S-F thickness	Insulated with Sprayo-Flake ¾ in.	1 in.	Uninsulated
U_s*	128	114	.209
Steam F	26	30	16
Hot water F	16	18	10

*See note Sprayo-Flake Page 4.
Note: In actual installations, a specified 1-in. thickness averages fully 1¼ in. thick.

Construction
¾-in. stucco
8-in. hollow tile
Waterproofing
2x2-in. furring
Sprayo-Flake
⅜-in. lath
⅜-in. plaster



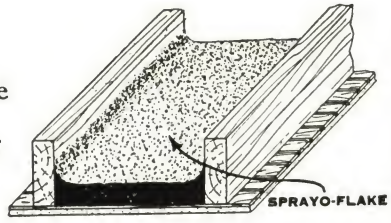
TILE CONSTRUCTION

S-F thickness	Insulated with Sprayo-Flake 1 in.	1½ in.	Uninsulated
U_s	.108	.089	.191
Steam F	32	38	18
Hot water F	20	24	11

Note: In actual installations, a specified 1-in. thickness averages fully 1¼ in. thick.

CEILING AND ROOF COEFFICIENTS (Heat Insulation)

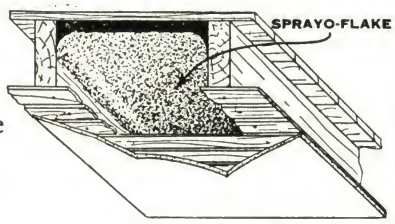
Construction
Joists
Sprayo-Flake
⅜-in. lath
⅜-in. plaster



CEILING WITH NO FLOORING

	Insulated with Sprayo-Flake				Uninsulated
S-F thickness	1½ in.	2 in.	2½ in.	3 in.	
U_s	.125	.10	.083	.07	.502
Steam F	38	44	53	62	14
Hot water F	24	27	33	40	9

Construction
¾-in. floor
Joists
Sprayo-Flake
⅜-in. lath
⅜-in. plaster

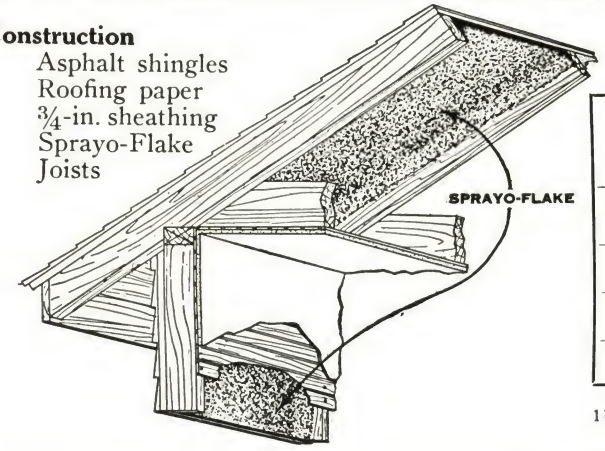


CEILING WITH FLOORING

	Insulated with Sprayo-Flake		Uninsulated
S-F thickness	1 in.	1½ in.	
U_s	.126	.097	.234
Steam F	38	46	23
Hot water F	24	29	14

Note: In actual installations, a specified 1-in. thickness averages fully 1¼ in. thick.

Construction
Asphalt shingles
Roofing paper
¾-in. sheathing
Sprayo-Flake
Joists



ROOF (Pitch 1 in 3)
Attic Unheated

	Insulated with Sprayo-Flake		No floor
	No flooring	¾ in. flooring	
S-F thickness	1 in.	1 in.	Uninsulated
U_s	.12	.09	.231
Steam F	28	38	21
Hot water F	18	24	15

Note: In actual installations, a specified 1-in. thickness averages fully 1¼ in. thick.

CALCULATION OF COEFFICIENT (U_s) FACTORS FOR SPRAYO-FLAKE HEAT INSULATION

The coefficient factors (U_s) for various thicknesses of Sprayo-Flake, shown in detail above, are calculated by using the overall heat transmission (U) factors as given in the 1929 Guide, A. S. H. & V. E. for the various types of wall, ceiling and roof constructions, uninsulated and adding to these factors the resistance of Sprayo-Flake ($R=\frac{X}{C}$).

Example: Wall, frame construction:
U—Uninsulated. =.227 B.t.u.
U_s—Insulated with 1-in. Sprayo-Flake =.119 B.t.u.
Calculated from the following accepted formula:

$$U_s=\frac{1}{\frac{1}{U}+\frac{X}{C}}=\frac{1}{\frac{1}{.227}+\frac{1.0}{.25}}=\frac{1}{4.4+4.0}=\frac{1}{8.4}=.119$$

X=thickness of Sprayo-Flake Insulation.
k=conductivity of Sprayo-Flake .25 B.t.u. per inch.

**Note:* In order to have a definite check for Sprayo-Flake calculated factors the three typical walls of standard construction insulated with Sprayo-Flake were tested by Professor Frank B. Rowley of the University of Minnesota. His large "Hot Box" method for testing over all-wall transmission, as approved by A. S. H. & V. E. code was utilized.*

Professor Rowley's Tests (copies gladly furnished upon request) prove the calculated coefficients correspond so closely with the actual test coefficients that the above factors are safe for estimating heat losses, radiation and fuel requirements for all ordinary construction. Use the above coefficients when estimating heat losses for Sprayo-Flake construction.

Industrial work or larger buildings requiring special engineering data will be analyzed upon request to the nearest Sprayo-Flake office.

Steam (F)$=\frac{240}{70°\times U}$ Hot water (F)$=\frac{150}{70°\times U}$

MASTER SPECIFICATIONS FOR SPRAYO-FLAKE HEAT INSULATION

A. Preliminary Provisions

Note: Sprayo-Flake Insulation is always installed on a contract basis (labor and material included), by responsible operators employing trained mechanics. This assures thorough insulation under exacting supervision. No deviation from good standard construction practice is necessary when Sprayo-Flake Insulation is specified. The air-gun method of application permits applying the material to any surface in any desired thickness. All cracks, crevices and inaccessible places are automatically sealed.

The following specification suggestions are made to assure proper installation of Sprayo-Flake on the most satisfactory and economical basis:

A-1 Frame Construction—

A-1a—Follow ordinary standard construction practice.

A-2 Brick Veneer Construction—

A-2a—Follow ordinary standard construction practice.

A-3 Masonry Construction—

A-3a—Follow ordinary standard construction practice.

A-3b Waterproofing—All exterior walls shall be waterproofed on the inside with a good grade of waterproofing, Flintkote C-13 or equal.

A-3c Carpentry Work—Wall furring strips. When Sprayo-Flake Insulation is installed on the inside of exterior, waterproofed masonry walls, furnish and apply 2x2-in. furring strips spaced 16 in. on centers for receiving lath and plaster, or Sprayo-Flake Plaster-base (with asphalt binder) shall be applied directly to waterproofed masonry walls. (See page 10.)

B. Work Included

The work included under this heading shall be the furnishing and installation of all Sprayo-Flake Insulation as follows:

B-1 Exterior Walls—

Note: Where ceiling or roof is insulated, wall insulation shall be carried through to ceiling or roof insulation, so as to form continuous or unbroken insulation from foundation to roof peak or across ceiling. All dormer walls and other openings to or through roofs shall be insulated.

B-2 Ceilings—

Top story ceilings shall be insulated when roof is not insulated. Insulation to be applied over lath and plaster when ceiling is not floored or to underside of rough flooring and between joists when ceiling is floored. Insulation shall continue to the wall sheathing and shall be applied between the ribbon, between joist ends and elsewhere to make a complete job.

B-3 Roofs—

When ceilings are not insulated or when attic is to be utilized for living quarters, the insulation shall be applied to the entire underside of the roof sheathing, between rafters, from peak to eaves, joining with the insulation in the sidewall construction.

B-4 Floors—

When specified, floors shall be insulated where and as indicated. (See page 8.)

B-5 Window and Door Frames—

All exterior window and door frames as well as all other cracks, crevices or inaccessible places shall be thoroughly sealed or calked with insulation.

C. Materials

C-1 Insulation—

Insulation shall be Sprayo-Flake Insulation as manufactured by the SPRAYO-FLAKE COMPANY of Milwaukee, Wisconsin.

C-2 Thickness—

Note: Sprayo-Flake may be installed any desired thickness to any surface. Because of the economy and speed of applying Sprayo-Flake, plus the fact that efficient insulation should be applied reasonably thick, it is recommended that Sprayo-Flake be installed not less than 1 inch in thickness and thicker when or where required.

C-2a Walls—(1) Frame construction: Insulation shall be installed [*1 inch*] [*1½ inches*] [*2 inches*] [*2½ inches*] thick between studding.

(2) Masonry construction: Insulation to be installed [*¾ inch*] [*1 inch*] thick between furring strips, leaving slight air space between finished surface of insulation and lathing.

Note: Sprayo-Flake must not come in contact with wet plaster, unless Sprayo-Flake Plaster-base (with asphalt binder) is installed.

C-2b Ceilings—Insulation shall be installed [*1½ inches*] [*2 inches*] [*2½ inches*] thick in ceilings when applied over the lath and plaster and [*1 inch*] [*1½ inches*] thick when applied to the underside of the rough flooring between joists.

C-2c Roofs—Insulation shall be installed 1 inch thick.

C-2d Floors—Insulation shall be installed [*1 inch*] [*1½ inches*] thick. (See page 8.)

C-2e Window and Door Frames—Insulation shall be installed around all door and window frames as calking. Sprayo-Flake shall be sprayed into all weight pockets allowing space for the proper operation of the weights.

D. Installation

All Sprayo-Flake Insulation shall be installed by licensed operators utilizing the Sprayo-Flake air-gun application method. Work to be done in a workmanlike manner by experienced mechanics.

REPRESENTATIVE SPRAYO-FLAKE INSTALLATIONS



Apartment, Kew Gardens, L. I., N. Y.
EUGENE DEROSA, Architect,
New York, N. Y.
Sound insulation throughout



Apartment, Hartford, Conn.
BURNS & MOAES, Architects
Sound insulation—all floors



Left:
Lillian Oppa Residence, Kenilworth, L. I., N. Y.
THOMAS C. ROGERS, Architect
Great Neck, L. I.
Heat insulation



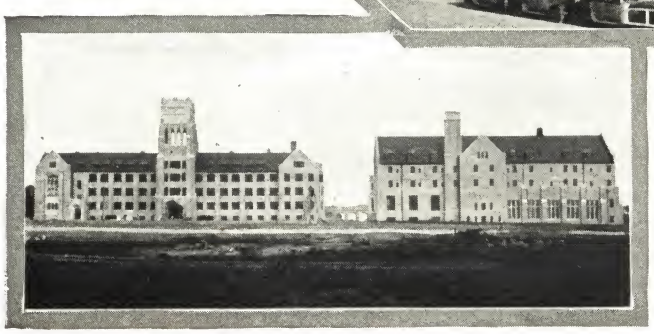
Center:
County Hospital, Milwaukee, Wis.
VANRYN & DEGELLEKE and ARMSTRONG & DEGELLEKE, Associated
Heat and sound insulation



Left:
City Auditorium, Minneapolis, Minn.
CROFT & BOERNER, Architects
Entire roof insulation

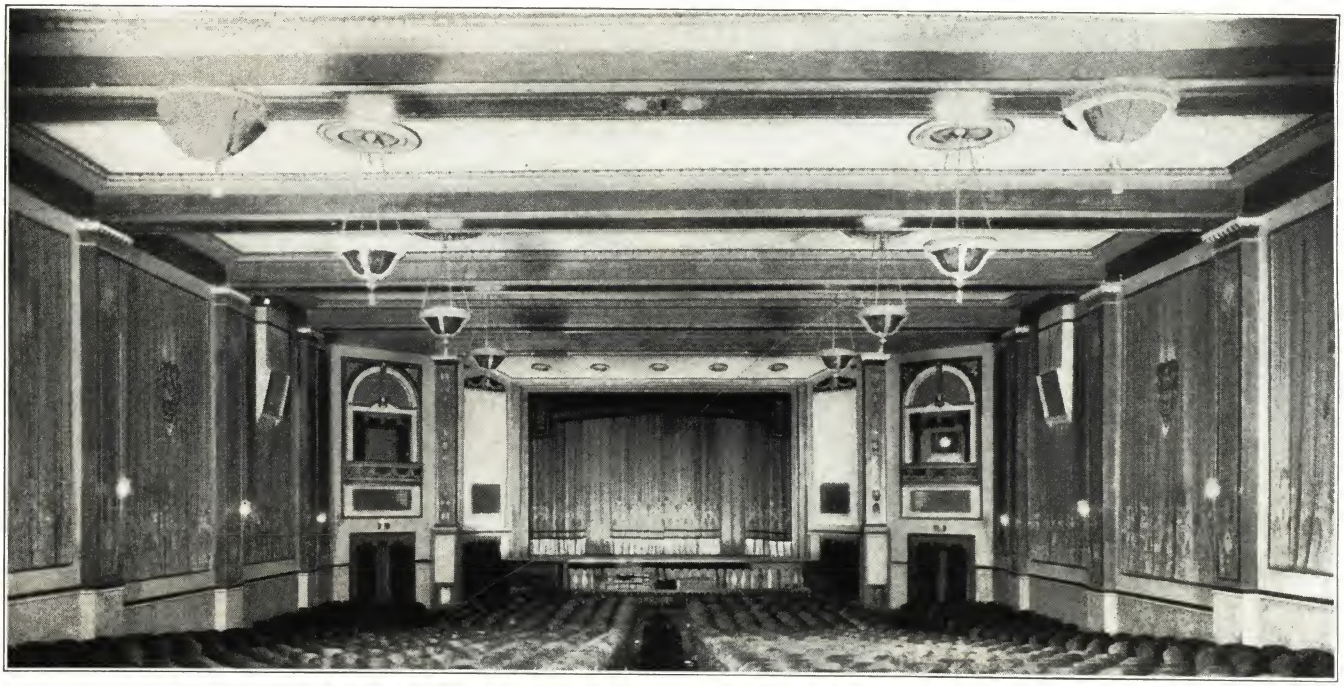
Below:
St. Mary's College, Milwaukee, Wis.
HERBST & KUENZLI, Architects
Acoustical correction

Below:
Richard H. Grant Residence, Dayton, Ohio
PEABODY, WILSON & BROWN, Architects, New York, N. Y.
EDWIN F. SIMPSON, Associate Architects, Dayton, Ohio
Heat and sound insulation





SPRAY-ACOUSTIC FOR ACOUSTICAL TREATMENT



Theatre Ceiling Treated with Spray-Acoustic

Adaptability

Subjugation of architecture to acoustics has at last been overcome by the SPRAYO-FLAKE COMPANY in submitting a material which does not in any way conflict with any architectural design. This particular factor has been a constant source of irritation to the profession, due to the fact that factory produced treatment will not readily lend itself to the various types or influences in architecture.

The church auditorium, like that of the school and theatre, needs a treatment whose color tones and versatility will enhance rather than detract from the intended effect.

Neutral tones of the same absorptive material should be used in school music and band practice rooms, not neglecting the library, cafeteria, natatorium, gymnasium and ventilating system.

It is well to note that fan rooms and ventilation ducts should be treated so that a shut-down of equipment is not necessary to enjoy the entertainment or instruction.

Banks and hotels find that Spray-Acoustic promotes the growth of business by its ability to kill those unnecessary and distracting reverberatory noises.

For hospital corridors, dining rooms, diet kitchens, labor and delivery rooms, the Spray-Acoustic treatment gives an ideal condition for the comfort of the patients.

Description

Spray-Acoustic, like Sprayo-Flake, is manufactured on the job utilizing the spray gun method described on page one under "Process." The same flexible material is applied for a base coat, but the firm absorbing surface is achieved by the introduction of pastel colors in the binder which tint the last fraction of an inch of the material to suit the general decorative scheme. Spray-Acoustic adheres to any surface and will positively conform to the angles and curves intended by the architect with no joints, seams or indentations.

Test

Spray-Acoustic is figured on the following factors based on the standard frequency of 512.

Thickness	Coefficient
½" Spray-Acoustic	.45
¾" Spray-Acoustic	.61
1" Spray-Acoustic	.70

It is further to be noted that Spray-Acoustic maintains an unusually even absorption value over the other pitch frequencies, which is important for the reception of various tone qualities.

Engineering Service

Due to the wide difference in acoustical problems, it is important to utilize the very efficient engineering service that may be found at the Sprayo-Flake offices in the principal cities. We deem it a privilege as well as a necessity to render an analysis on each problem.

SPECIFICATIONS FOR SPRAY-ACOUSTIC TREATMENT

(A) Treatment

Spray-Acoustic shall be applied over the surface to be treated to *(specify)* thickness.

Note: *Job analysis will be submitted by Spray-Acoustic engineers to establish thickness.*

(B) Tinting

The entire surface shall be tinted to the color selected by architect.

(C) Installation

The installation shall be made by a licensed Sprayo-Flake operator in accordance with the standard Sprayo-Flake Air Gun Method.

(D) Protection

Suitable protection shall be provided for existing construction, furniture, etc., and all refuse shall be removed and the premises left in suitable condition.

SPRAYO-FLAKE SOUND INSULATION

WHY SOUND INSULATION

This increasingly noisy life of ours demands architectural and structural consideration for the stoppage of noise in the buildings in which we live and work.

Air-borne sounds from radios, musical instruments, conversation, etc., passing through walls or partitions in apartments, hotels and hospitals, cause the greatest amount of annoyance. Next in importance from the standpoint of retarding the passage of sound through partitions is stopping both air-borne sounds and impact sounds through floors.

Thus, we have two distinct problems:

(1) Stopping air-borne sounds through walls and partitions.

(2) Stopping air-borne and impact sounds through floors.

Sound is transmitted by the molecular vibration and the structural vibration of the partition (or floor) which acts like a drum head. This sound transmission can be retarded by mass, structural independence, breaks in density and the use of sound absorptive materials. To obtain sufficient mass for satisfactory sound insulation is excessively expensive and takes up too much valuable space.

It has been thought for some time that to secure sound-proofness which would be satisfactory for apartment purposes, a heavy and rigid wall was necessary. Recent tests have proved that this is not the case. By carefully following construction principles, using proper materials and treating pipes, conduits and ducts, it is possible to build comparatively inexpensive light partitions which are satisfactorily sound-proof for apartment house work.

Practical Test Data

Actual test data on sound insulation is today very limited. There are laboratory tests on various insulation materials in terms of sound absorption and transmission for such materials in themselves but the architect or builder is interested in knowing the final results when these materials are used in combination with practical wall or floor construction.

In order to obtain practical construction test data the SPRAYO-FLAKE COMPANY utilized the services of The C. F. Burgess Laboratories (under the personal supervision of Mr. R. F. Norris), recognized as authorities on this subject throughout the country. These scientific sound transmission tests of sound insulation methods in modern completed and occupied buildings are the most advanced data we are able to locate to date.

A summary of these tests, showing partition and floor constructions, with logarithmic reduction factors and comments are shown on the following pages. We quote as follows from the Burgess Laboratories' reports:

"A series of tests were made for the SPRAYO-FLAKE COMPANY on the dividing walls or partition walls in the Le Claire Apartments in Milwaukee, Wisconsin, and on the floors in the Milwaukee County Hospital.

"*Note:* All of the partition walls were exactly the same size and in the same location but on different floors, so that our tests on them may be strictly comparable. The terrazzo-concrete floors were typical one above the other and of the same construction, differing only in that one floor had ¾ in. of Sprayo-Flake Sound Insulation applied to the underside of the floor section and to the sides of the metal joists.

Method of Tests

"The apparatus used in making the tests consisted of an electric horn which generated a sound of definite intensity, the pitch varied continually between 500 and 525 cycles per second, this range being chosen because it is the average range of speech sounds. In conjunction with this instrument a second instrument which registered the sound intensity directly on a scale was employed. The method of testing was as follows:

"The sound producing instrument was set up in a room on one side of the wall to be tested. The sound was started and a measurement was taken of the intensity on that side of the test wall. The sound was allowed to continue at the same intensity and the measuring instrument was placed on the other side of the wall under test, care being taken to close off all direct passages through which the sound might travel from one room to the other. A measurement was then taken of the sound intensity on this side of the wall. The ratio of the sound intensity in the two rooms was obtained from a ratio of readings and from this value the sound reduction of the wall was determined. This reduction is reported in both logarithmic reduction factor and reduction in sensation units. An explanation of these units follows:

"When sound of a certain intensity is heard, its apparent loudness is roughly the logarithm to the base ten of the intensity of the sound. This logarithmic unit is called the audibility. Bell Telephone Company engineers have found that the least sound that could be detected by the average ear was approximately one-tenth of this logarithmic unit. This amount of sound was called by them one 'sensation unit.' Consequently ten sensation units equal one audibility unit.

Discussion

"It has been the experience of the B. F. Burgess Laboratories that a wall or floor section with the logarithm of reduction of between 4.1 and 4.2 is satisfactory for apartment house work since, while it does not make ordinary speech sounds absolutely inaudible, it makes them unintelligible and of such low intensity that they are easily masked by the occupational noises in the apartment. The higher the logarithm of reduction above 4.1 the greater the sound deadening efficiency. It will be noted in partition test series No. 1 that the walls in test A and test B were considerably above this value and that wall C dropped below considerably. The conclusion is that the construction in walls A and B is more suitable for apartment house work than that in wall C. Wall A is the most sound-proof partition wall that I have measured. Wall D had a logarithm of reduction which was slightly below the accepted value.

"In the Floor test, series No. 2, the wood constructed floor No. 1 had a logarithm of 4.08 which approaches very closely the ideal range. This same floor uninsulated has a logarithm of approximately 2.0. It is interesting and encouraging to find that with proper insulation it is possible to make a floor of standard wood construction which will be for all practical purposes, sound-proof.

"In floors No. 2 and No. 3, air-borne sounds did not register transmission through the concrete floors but the physical intensity of the sound being transmitted through the floor (impact sound) is reduced to about one-fifth by the addition of the sound absorbent material to the undersides of the concrete floor slab and to the sides of metal floor joists.

Conclusions

"The above tests indicate that it is possible to build a light and satisfactory sound-proof wall (or floor) for apartment work. It has been thought for some time that to secure sound-proofness which would be satisfactory for apartment purposes a rather heavy and rigid wall was necessary. The above tests, however, indicate that this is not the case and that with careful construction and proper application a light wall can be made which will be entirely satisfactory as a sound-proof dividing partition."

SPRAYO-FLAKE SOUND INSULATION TEST DATA

ON WALLS OF LE CLAIRE APARTMENTS, MILWAUKEE BY C. F. BURGESS LABORATORIES, INC.

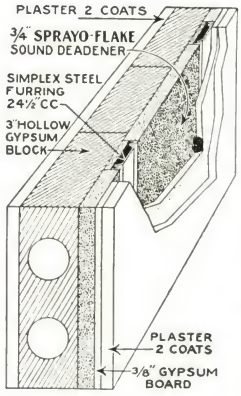
WALL—"A"

3" HOLLOW GYPSUM BLOCK SIMPLEX STEEL FURRING WITH SPRAYO-FLAKE INSULATION

LOGARITHM OF REDUCTION—6.27

REDUCTION IN SENSATION UNITS—62.7

Most Sound-proof



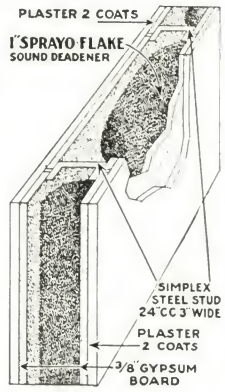
WALL—"B"

SIMPLEX STEEL STUD PARTITION INSULATED WITH 1" SPRAYO-FLAKE

LOGARITHM OF REDUCTION—4.75

REDUCTION IN SENSATION UNITS—47.5

Above Required Value



WALL—"C"

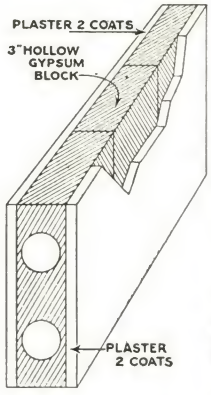
3" GYPSUM BLOCK

No Insulation

LOGARITHM OF REDUCTION—3.15

REDUCTION IN SENSATION UNITS—31.5

Considerably Below Value



WALL—"D"

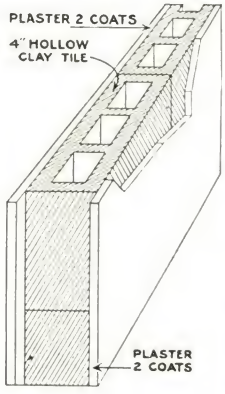
4" CLAY TILE

No Insulation

LOGARITHM OF REDUCTION—3.95

REDUCTION IN SENSATION UNITS—39.5

Slightly Below Value



SPECIFICATIONS—SOUND INSULATION WITH SPRAYO-FLAKE

SOUND INSULATION OF 3" GYPSUM HOLLOW PARTITION TILE

Furred One Side with Simplex Steel Furring

(A) Partition Construction

(A1) Gypsum Partition Tile—The gypsum tile partitions shall be built in accordance with the manufactured standard specifications.

(A2) Simplex Steel Furring—Fur one side of the gypsum tile partition with Simplex Steel Furring Channels. Channels shall be blocked out from the tile with ¾x2x2 in. wood blocking spaced not to exceed 36 in. on centers. After the insulation has been installed as in (B) apply the Gypsum Board to the Simplex Furring in accordance with the manufacturer's standard specifications and plaster both sides of the partition in the customary manner.

(B) Insulation

Sprayo-Flake Insulation shall be applied to the exposed furred surface of the gypsum tile to a minimum thickness of ¾ in. Carry insulation back of furring channels between blocking and feather insulation on the sides of the channels to the exposed front edges.

(C) Installation

Installation shall be by Licensed Sprayo-Flake Operators in accordance with the standard Sprayo-Flake air-gun method.

SOUND INSULATION OF SIMPLEX STEEL STUD PARTITION

(A) Partition Construction

Simplex Steel Stud Partitions shall be constructed in accordance with the manufacturer's standard specifications. After the Gypsum Board has been applied to one side of the partition the insulation shall be applied as in (B). After the insulation has been installed apply the Gypsum Board to the remaining side of the partition and plaster both sides of the partition in the customary manner.

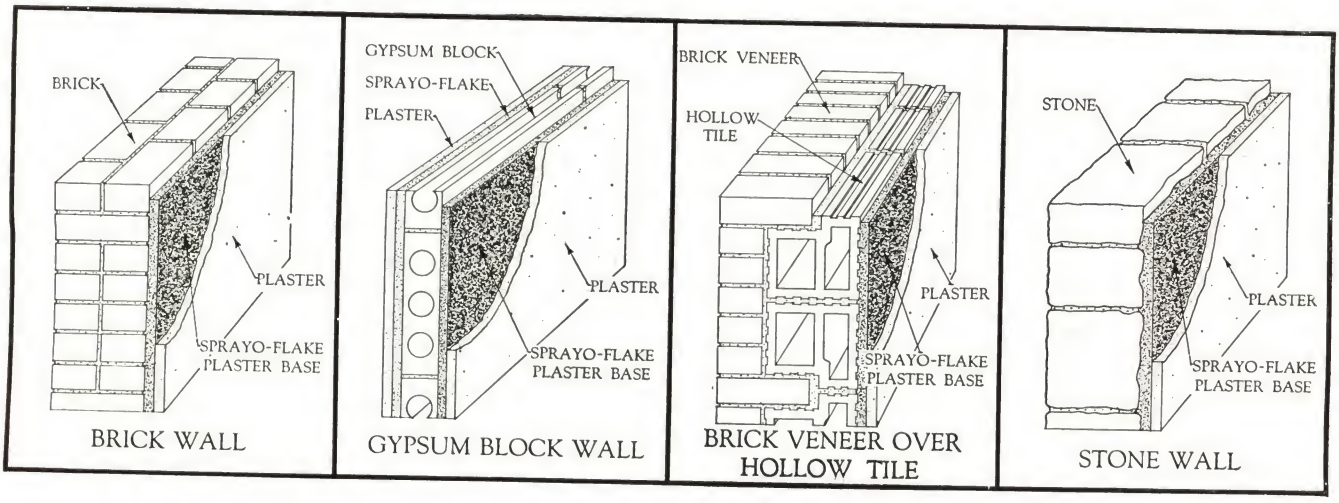
(B) Insulation

Sprayo-Flake Insulation shall be applied to the exposed inner surface of the Gypsum Board to a minimum thickness of 1 in. Cover the exposed sides of the steel studs feathered to the exposed front edge.

(C) Installation

Installation shall be by Licensed Sprayo-Flake Operators in accordance with the standard Sprayo-Flake air-gun method.

SPRAYO-FLAKE PLASTER BASE



DESCRIPTION AND SPECIFICATIONS FOR SPRAYO-FLAKE PLASTER BASE

Foreword

Sprayo-Flake has again come to the aid of architects in solving the disturbing problem of how to dampproof, insulate, and lath solid masonry walls without excessive cost. It is a well-known fact that in most parts of the country dampproofing has become a necessity; also, that when applied it not infrequently leaves the wall in an unsatisfactory condition for plaster. In cases of this kind it has been the practice to fur out before lathing and plastering. In spite of these precautions, the wall is still not acceptable because of the tremendous heat loss through masonry. The further addition of adequate insulation places the cost so high that the profession has been leaning to veneer construction in spite of the beauty, solidity and desirability of solid masonry.

With the advent of Sprayo-Flake Plaster Base, the company is justifiably proud in offering a material embodying all of the above provisions at an extremely economical cost.

Description (Dampproofing and Insulation)

Sprayo-Flake Plaster Base is applied with the same process and ingredients as our other products, but the proportions are distinctly varied. The result is a product rich in dampproofing qualities but still resilient enough to absorb ordinary building strains, practically eliminating the danger of unsightly cracks, and so forth. The facts contained herein have been arrived at through exhaustive tests conducted in our own plant as well as in the field for the past three years.

Note: When used on either interior or exterior partitions, it must not be overlooked that the base obtained for plaster is unique, in that a combination suction and mechanical bond is obtained. The plaster base has a rough, hard surface to which plaster may readily key mechanically, yet is porous enough to offer an excellent suction bond. Tests conducted on this particular point indicate a bonding strength in excess of 200 lbs. per sq. ft.

Sound Deadening of Partitions

Sprayo-Flake Plaster Base may be applied to interior as well as exterior partitions, thereby furnishing a break in density which is invaluable in reducing the passage of sound. As previously discussed (page 8) the introduction of an elastic, resilient material reduces vibration to such a point that it is not discernible above the ordinary occupational noise within the apartment.

SPECIFICATIONS

Materials

Insulation, plaster base and dampproofing shall be Sprayo-Flake Plaster Base as manufactured by the SPRAYO-FLAKE COMPANY of Milwaukee, Wisconsin.

Thickness

Material shall be installed to an initial thickness of ¾ in. and then tamped to a final thickness not to exceed ⅝ in. (No furring is necessary in conjunction with Plaster Base treatment.)

Preparation of Masonry Surfaces

All surfaces to be treated shall be prepared as follows: First, thoroughly clean by compressed air all dirt, mortar, and so forth. Second, a prime coat of 4 parts water to 1 part of emulsified asphalt shall be applied to the surface. (In case of extremely porous brick or stone, this operation should be repeated, after complete penetration of the first coat is achieved.) Third, Sprayo-Flake material shall then be applied to this prepared surface by air gun in such manner as not to exceed, in average, the above thickness.

Note: Where application is to be made on stonework, irregularities on the interior stone surface shall not exceed 1½ in. and all such depressions must, after having first been primed, be filled with air gun before regular application is made.

Finish

Standard finish for all plaster base applications: after tamping to a ⅝-in. thickness, Sprayo-Flake material shall first be troweled semismooth and the entire surface then given an overspray of same dilution as for the prime coat.

Important

A ⅝-in. ground shall be installed by others at top level of all walls to be treated.


INSULATION
Sprayed on
with GUNS
PAT. U. S. PAT. OFF.
COVERS LIKE A BLANKET

UNITED STATES MINERAL WOOL COMPANY

TELEPHONE
CAledonia 5-0588

280 Madison Avenue
NEW YORK, N. Y.

FACTORY: STANHOPE, N. J. (Railroad Station Netcong, N. J.)—Telephone, Netcong 65-W

WESTERN CONNECTION: COLUMBIA MINERAL WOOL COMPANY, SOUTH MILWAUKEE, WIS.

Product

Mineral Wool, a Non-combustible Insulator and Sound Deadener.

Character of Mineral Wool

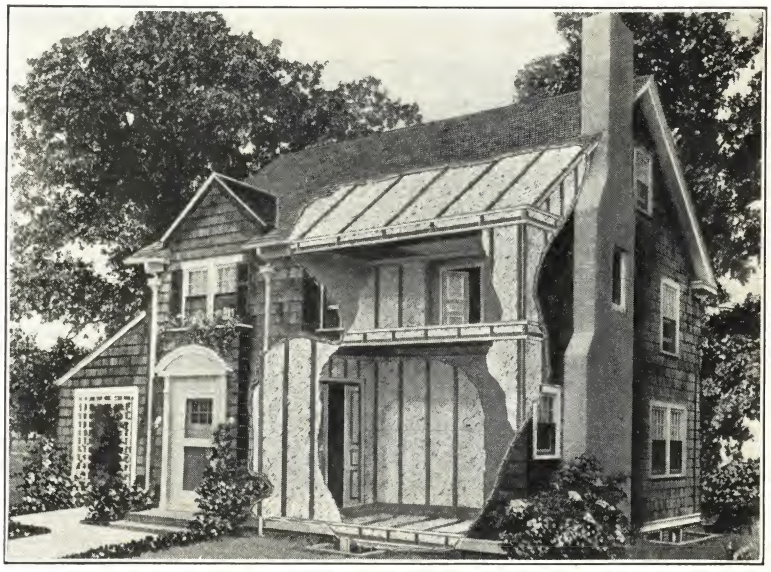
A mineral substance, made by converting melted scoria into a fibrous state.

It holds from 92% to 96% of air in suspension, the highest attained by any non-combustible substance.

Uses

In residences, Mineral Wool is used for lining walls, floors, roofs and ceilings, as partly shown in the accompanying illustration. It is cheap and easily applied.

A house lined with Mineral Wool is warm in winter, cool in summer, and is thoroughly deafened. The lining is verminproof, checks the spread of fire and keeps out dampness.



A Few Applications of Mineral Wool

Mineral Wool is extensively used for insulating ovens and heat treating furnaces; and by leading manufacturers of refrigerators, ice and refrigerating machinery, as well as for filtering acids and the packing of carboys.

How to Estimate

To find the quantity of Ordinary Mineral Wool required to fill the outside walls the full thickness of studding:

Rule—1 lb. per sq. ft. for each inch in thickness.

Take the entire distance around the building on a horizontal line and multiply by the height of the studding, which will give the square feet of outside surface. Deduct, ordinarily, one-third to one-half for space occupied by doors, windows, chimneys, studding, bracing, etc. Multiply the remainder by the thickness of the studding; the result will be the number of pounds of Mineral Wool required to fill the space.

Grades and Cost

The Ordinary grade of Mineral Wool (the quality invariably used in building construction) weighs about 1 lb. per sq. ft., 1 in. thick, or 12 lbs. per cu. ft.

It costs $32.00 (subject to change) per ton at factory. Within a radius of 200 miles from New York, N. Y., $10.00 per ton will usually cover freight charges. A laborer can apply from ½ to ¾ of a ton a day.

The Selected grade of Mineral Wool, which is used in chemical plants, is rarely called for in buildings.

Package

The material is packed in 3-bushel burlap bags, for which a charge of 15¢ (subject to change) each is made; if returned in good condition within 30 days, and free of all freight charges, they are credited at 10¢.

How to Specify

"Insulation of Mineral Wool (United States Mineral Wool Company, 280 Madison Avenue, New York) shall be provided for ..... For floors, it shall be [4 in.] thick and set upon boards placed between beams on cleats. For walls it shall fill the spaces between studs and be placed in position as the lathing is being proceeded with. For roofs, it shall fill the space between rafters from eaves to [collar beams]. The Wool shall be pressed compactly but lightly."

Samples

Samples and descriptive pamphlets will be gladly supplied, on application.

Also, list of tests made by the United States Bureau of Standards in which Mineral Wool is rated one of the highest in comparison with forty-two other insulating materials, as an insulator of heat and cold, will be sent on request.

SAMUEL CABOT, INC.

Building Insulation
141 Milk Street, BOSTON, MASS.

For List of Branch Offices and Agents, see our pages on Stains

Products

HEAT-INSULATING and SOUND-DEADENING QUILT.

For Stains, Collopakes (instead of paint), Wood Preservatives, see Manufacturers' Index.

Cabot's

Heat-Insulating Sound-Deadening

Quilt

Samuel Cabot Inc.

Insulation Values and Specifications

Below are given ten standard methods of applying Cabot's Quilt for Heat Insulation together with the K—or Heat Conduction values.

Cabot's Heat-Insulating and Sound-Deadening Quilt



Cabot's Quilt Being Applied to Under Side of Roof and Walls, for Heat Insulation

Uses—For insulating houses and other buildings to make them warm in winter and cool in summer; for insulating cold storage and ice houses, refrigerators, for deadening sound in floors and partitions of apartments, hotels, hospitals, schools, etc.

Description—Cabot's Quilt is a felted matting of Zostera Marina, a marine plant, stitched between two layers of very strong Kraft paper. Zostera Marina forms a matted structure full of tiny dead air cells. Dead air cells have the best insulation known. Cabot's Quilt has a heat insulating value, inch for inch, exceeded or equalled by only two other insulators, irrespective of cost. Quilt is exceedingly low in cost.

Permanency—Cabot's Quilt will not rot, foul or harbor insects or vermin. It has been used for nearly 40 years without deterioration.

Fire Resistance—Quilt is highly fire resistant. This has been proved in many buildings.

Flexibility—Being flexible, Quilt will fit any surfaces, corners, projections or jogs, without danger of cracking or impairment of its insulating efficiency.

Application—Quilt can be applied at the lowest labor cost like any common felt or paper, is cut easily with an ordinary knife or shears and requires no skill to apply.

18-inch Width—Quilt is now made in 18-in. as well as 36-in. width, for quick application between studs and roof rafters.

Weights, Sizes, etc.—Cabot's Quilt is made in four weights:

X Single-ply	about ⅓ in. thick
XX Double-ply	about ½ in. thick
XXX Triple-ply	about ⅔ in. thick
INCH Quilt	about 1 in. thick

Standard 36-in. width rolls contain 250 sq. ft. except for Inch-Quilt (125 sq. ft.). Weight per roll varies from approximately 40 lbs. for Single-ply to 130 lbs. for Inch-Quilt (per 250 sq. ft.).

Special Quilt, Waterproof Quilt, Asbestos Quilt and Quilt with special fire-resistant paper furnished on order.

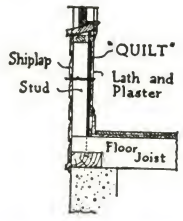


Fig. 1. Section Shiplap Construction with Cabot's Quilt

K or Conductivity: 0.165

(If Quilt is omitted K equals 0.317)

Specifications: Attach Cabot's XX (XXX, INCH) Quilt horizontally along vertical studs with nails and caps. Lath is applied directly over the Quilt.

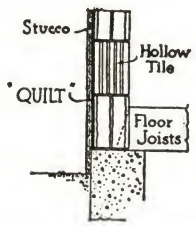


Fig. 4. Section Stucco Construction on 8" Hollow Tile Insulated with Cabot's Quilt

K or Conductivity: 0.165

(If Quilt is omitted K equals 0.245)

Specifications: Apply Cabot's XX (XXX, INCH) (waterproof) Quilt vertically on outside of hollow tile wall, nailing to stucco joints. Apply furring directly over Quilt to take lath.

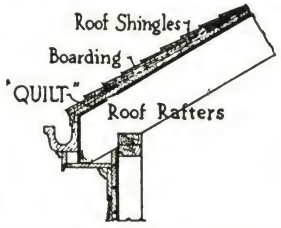


Fig. 2. Section Shingled Roof with Cabot's Quilt Insulation

K or Conductivity: 0.188

(If Quilt is omitted K equals 0.415)

Specifications: Push in Cabot's XX (XXX, INCH) Quilt (18" width) between rafters, securing edges with lath nailed to rafters.

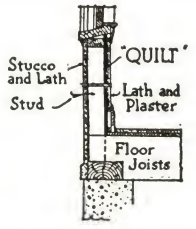


Fig. 5. Section of Stucco Exterior on Frame Construction, with Cabot's Quilt Insulation

K or Conductivity: 0.184

(If Quilt is omitted K equals 0.396)

Specifications: Attach Cabot's XX (XXX, INCH) Quilt horizontally along vertical studs with nails and caps. Apply furring directly over Quilt.

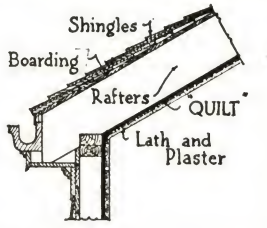


Fig. 3. Section Shingle Roof Plastered Inside, with Cabot's Quilt Insulation

K or Conductivity: 0.149

(If Quilt is omitted K equals 0.262)

Specifications: Attach Cabot's XX (XXX, INCH) Quilt horizontally across rafters with nails and caps. Apply furring directly over Quilt, to take lath

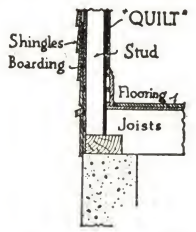


Fig. 6. Section Shingle Wall on Frame Construction, with Cabot's Quilt Insulation

K or Conductivity: 0.149

(If Quilt is omitted K equals 0.262)

Specifications: Attach Cabot's XX (XXX, INCH) Quilt horizontally along vertical studs with nails and caps. Apply furring directly over Quilt.

Insulation Values and Specifications (Continued)

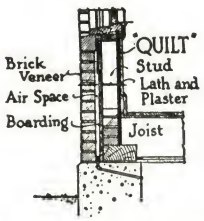


Fig. 7. Section Brick Veneer on Frame Construction, Insulated with Cabot's Quilt

K or Conductivity: 0.127

(If Quilt is omitted K equals 0.200)

Specifications: Attach Cabot's XX (XXX, INCH) Quilt horizontally along vertical studs with nails and caps. Apply furring directly over Quilt

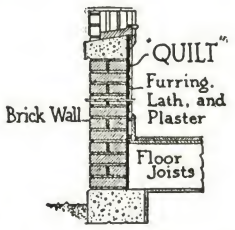


Fig. 9. Section 9" Brick Wall Construction, Insulated with Cabot's Quilt

K or Conductivity: 0.155

(If Quilt is omitted K equals 0.250)

Specifications: Hang Cabot's XX (XXX, INCH) (waterproof) Quilt vertically on inside surface of brick wall, fastening to joints with nails and caps. Apply furring, lath and plaster in the usual way.

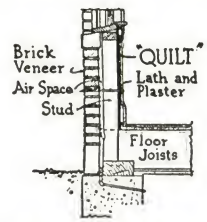


Fig. 8. Section Brick Veneer on Frame Construction, Cabot's Quilt Insulation

K or Conductivity: 0.163

(If Quilt is omitted K equals 0.312)

Specifications: Attach Cabot's XX (XXX, INCH) Quilt horizontally along vertical studs with nails and caps. Apply furring directly over Quilt

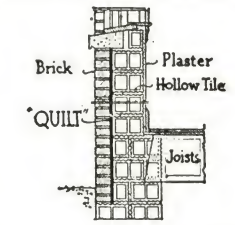


Fig. 10. Section Brick Veneer on 8" Hollow Tile Wall Construction Insulated with Cabot's Quilt

K or Conductivity: 0.158

(If Quilt is omitted K equals: 0.231)

Specifications: After erection of tile wall, and before applying brick veneer, attach Cabot's XX (XXX, INCH) (waterproof) Quilt vertically to outside suiface of tile with nails and caps in tile joints, then apply brick veneer.

Fuel Saving

The approximate fuel saving obtained by heat insulation with Cabot's Quilt as shown and specified above may be secured as follows: Buildings with conductivities, when insulated of 0.16 will show a heat saving of approximately 39-43 per cent, as compared to uninsulated structures. In some cases the heat saving is even greater.

Tests

Conductivity and heat saving values of Cabot's Quilt are fully covered by tests made at the U. S. Bureau of Standards. (U. S. Letter Circular No. 227, Bureau of Standards, Washington, D. C., and Tests made at Massachusetts Institute of Technology.) Copies of these will be forwarded on your request.



House at Portland Ore.

ROSCOE HEMENWAY Architect

ANGEL & SON Builder

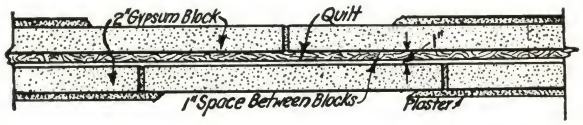
Insulated with Cabot's Quilt; roof stained with Cabot's Creosote Shingle and Wood Stains.

Cabot's Quilt for Sound-Deadening

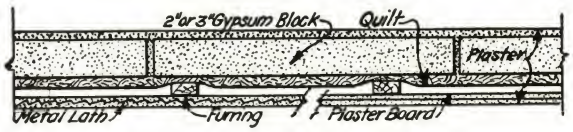
Cabot's Quilt has been used for sound-deadening for many years. Up to a very short time ago, it was difficult to find a sound recording instrument which would record actual measurements. Such instruments have now been developed and tests have been conducted on a number of different types of construction. Results of some of these tests are given in the opposite column together with methods of construction employed. The sound reduction figure is referred in each case to similar construction, not insulated.

Cabot's Quilt has the property of actually absorbing or destroying sound. Whenever sound strikes it the greater part of it is converted into heat or mechanical energy instead of being thrown back or reflected. Quilt absorbs sound much as a blotter absorbs ink.

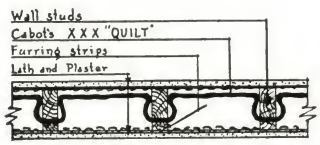
Sound-Deadening Partitions in Fireproof Apartments, Office Buildings, etc.



Specifications—For most effective sound-proofing with Gypsum Block Partitions, lay up double partitions of 2-in. Gypsum Block with 1-in. space between, within which Double or Triple-Ply Cabot's Quilt is to be hung. Plaster directly on outside of blocks.



Specifications—With single Gypsum Block Partitions nail Quilt vertically to one or both sides, apply furring strips or metal lath and plaster, or apply plaster board to outside surfaces.

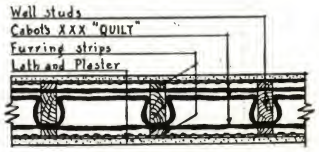


SOUND REDUCTION 67%

Specifications—In this type of construction, three layers of Cabot's XXX (Triple-Ply) Quilt are applied as shown. First, a single layer is wrapped around the studs, then two flat layers on each face of studs. Furring strips are then applied on both sides and then lath the plaster. This construction effects a sound reduction of 91%. Only 9% of the original sound transmitted, without insulation, can penetrate.

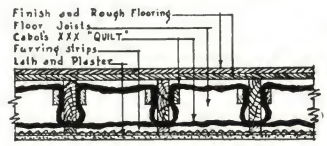
Sound-Deadening Partitions (Wood Construction)

Specifications—In this case a layer of Cabot's XXX (Triple-Ply) Quilt is wrapped around the stud on one side before lathing. The Quilt is carried away around each side of the stud and fastened with nails and caps as shown. Furring strips are then applied to face of studs and lath applied to these strips, leaving the Quilt between. A sound reduction of 67% results from this construction.



SOUND REDUCTION 91%

Sound-Deadening Floors (Wood Construction)



SOUND REDUCTION 60.6%

Specifications—In this case essentially the same method is employed, as above, except that here the Quilt is applied beneath the floor timbers, bent around each one and secured in place by light lath or strips as shown. An additional layer of Quilt is stretched loosely along the bottom of the timbers which are then furred, lathed and plastered in the usual manner.

Sound-Deadening in Sound Studios, etc.

Cabot's Quilt is finding a constantly increasing use in the insulation of Sound Studios for sound pictures and other special cases where complete silence must be secured. Write us for special data.

Acoustical Correction

Cabot's Quilt has wide use in this connection, for acoustical correction of theatres, office buildings, churches, etc. Problems of this kind are individual in nature. Our engineers are ready to assist you on problems of this kind.

Samples and Co-operation

Samples of all types of Quilt with full information promptly sent on request. We are always ready to co-operate fully, without obligation, on any question of heat insulation or sound deadening and to place our experience of nearly 40 years at your disposal.

FLAX-LI-NUM INSULATING COMPANY

GENERAL OFFICES AND FACTORY
ST. PAUL, MINN.

DISTRICT OFFICES

ALBANY, N. Y.
BALTIMORE, MD.
BOSTON, MASS.
BUFFALO, N. Y.
CHICAGO, ILL.
CLEVELAND, OHIO
DALLAS, TEX.
DENVER, COLO.
DES MOINES, IOWA
DETROIT, MICH.
DULUTH, MINN.
FORT WAYNE, IND.
GRAND RAPIDS, MICH.
GREEN BAY, WIS.
HARTFORD, CONN.
INDIANAPOLIS, IND.
KANSAS CITY, MO.
LOS ANGELES, CALIF.
MADISON, WIS.
MILWAUKEE, WIS.
MINNEAPOLIS, MINN.
MINOT, N. D.
NEW YORK, N. Y.
OKLAHOMA CITY, OKLA.
OMAHA, NEB.
PEORIA, ILL.
PROVIDENCE, R. I.
ROCHESTER, N. Y.
ST. LOUIS, MO.
ST. PAUL, MINN.
SAN FRANCISCO, CALIF.
SIOUX CITY, IOWA
SIOUX FALLS, S. D.
SYRACUSE, N. Y.
TOLEDO, OHIO
TULSA, OKLA.
WASHINGTON, D. C.

Products



Bi-Flax—an Insulating Plaster Base of Steel for thermal insulation and sound insulation.

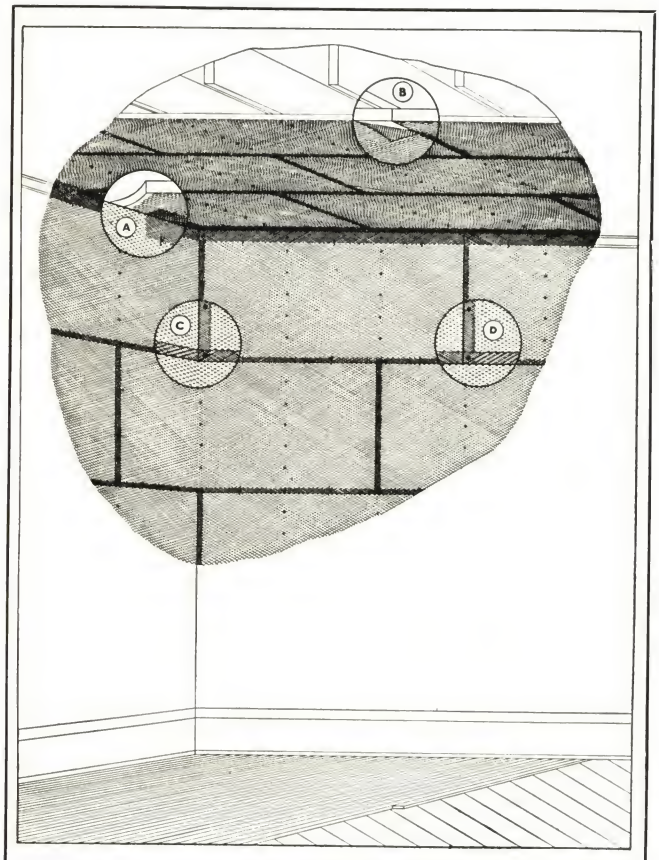
Flax-li-num Thermal Insulation—for reducing heat losses or heat penetration through walls, floors, ceilings, and roofs; for thermal insulation of refrigerators, railway refrigerator cars, trucks, refrigerating and cooling rooms, iceless shipping containers, etc.

Flax-li-num for Sound Control—for reducing the transmission of sound through floors and party walls, Flax-li-num—for Acoustical Treatment.

Bi-Flax

Flax-li-num Insulation combined with expanded metal lath. The metal lath extends 1 in. beyond the Flax-li-num at top and one side, providing an overlap at joints when applied. Water proof paper separates the two materials. Thus the insulation becomes a separate unit. It does not come in contact with the plaster. Under these conditions insulation functions more efficiently.

Thickness and Size—Bi-Flax is made in ½ and 1-in. thicknesses and in sheets 24x48 in.



(a) The enlargement shows the use of cornerites where the metal lath of the sidewall joins that of the ceiling.
(b) This illustration shows how the metal lath overlaps when the sheets of insulation are butted tightly together.
(c) This illustration shows two sheets of Bi-Flax jointed at corner with horizontal and vertical overlapping of metal lath. It also shows a continuous sheet around corner.
(d) This view shows overlapping of metal lath at vertical and horizontal joints.

Bi-Flax for Frame and Masonry Walls, Partitions and Ceilings—Specifications No. 20-A

(1) Material—Insulating plaster base shall be [1-in.] [½-in.] Bi-Flax (Patent No. 1,808,976) as manufactured by the Flax-li-num Insulating Company, St. Paul, Minnesota.

(2) Application—Bi-Flax shall be applied with the long dimension of the sheet across the supports. Bi-Flax shall be applied first to ceiling, carrying the insulation tightly into corners. Then, beginning at ceiling line, the Bi-Flax shall be applied to sidewalls so that the metal lath of the lower sheet laps over the metal lath of the upper sheet. The sheets of insulation shall be butted tightly together and all vertical joints shall be broken. Nails shall be so placed that a nail occurs where the metal lath overlaps at supports.

(3) Attachments—A 2-in. blued nail with $\frac{7}{16}$-in. head shall be used to attach 1-in. Bi-Flax and a 1½-in. blued nail with $\frac{7}{16}$-in. head shall be used to attach ½-in. Bi-Flax. Nails shall be driven to a penetration of not less than 1 in. into the wood, spaced not to exceed 4 in. on center.

(4) Tying—Bi-Flax shall be tied once between joists and studs where the metal lath overlaps. Tie wire shall be not less than No. 18 gauge soft annealed.

(5) Grounds—Grounds for ½-in. Bi-Flax shall be 1 in.; for 1-in. Bi-Flax they shall be 1½ in.

Flax-li-num

Made solely from the long, tough fibres of flax, felted into uniform sheets. Fibres are interwoven and interlocked giving to Flax-li-num its strength and durability. Flax-li-num was developed to give the greatest possible insulation value by correct application.

Form—Flax-li-num is semirigid in form. It is readily fitted to odd-shaped construction—easily handled.

Thickness and Size of Sheets—Flax-li-num is made in ½, ¾ and 1-in. thickness. The ½-in. thickness is made 16½ in. wide, 8, 9 and 10 ft. long, flanged on each side, to fit between the studs. The ¾ and 1-in. thicknesses are supplied in flat sheets 4 ft. wide and 4½ ft. long. ½-in. Flax-li-num can also be furnished in flat sheets, either 4 ft. wide and 4½ ft. long or 4 ft. wide and 8, 9 and 10 ft. long. Roof insulation is furnished in ½, ¾, and 1-in. thickness, 2 ft. wide by 4 ft. 6 in. long. Special sizes are made for "headers," to be set between floor joists, pads for placing under partition walls at floor and ceiling levels and for joist pads.

Principal Uses—(A) *Building Insulation*—Flax-li-num has a very high thermal insulating value. Through the two-air-space method of application, which is the standard specification, it increases its own insulating efficiency 50% after it is built into the walls. Heat losses are so materially reduced through the correct use of Flax-li-num that fuel savings of 25% to 30% result. A smaller heating plant and less radiation also adds to the saving.

(B) *Roof Insulation*—A very important use of Flax-li-num is for insulating roofs—either industrial, public, semi-public or apartment buildings. It reduces heat loss—heat penetration and prevents condensation. The semirigid form of Flax-li-num is especially fitted to roof insulation. It assures a

perfect bond between the material and the roof deck and it will not warp, curl, crack or break.

Flax-li-num serves as an expansion joint between the roofing and the roof deck. It reduces the temperature range of the roof deck, thus reducing the expansion of deck due to temperature change.

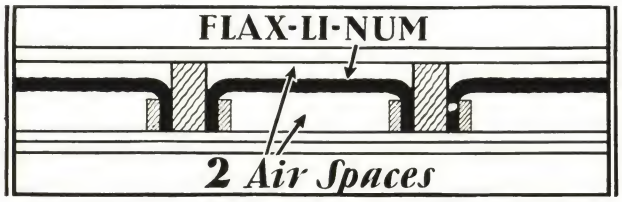
(C) ***Correcting Condensation***—In factories, mills and warehouses where excessive condensation is encountered. See specifications 2-A and 14-A.

(D) ***Refrigeration***—Flax-li-num has many advantages which recommend it for use in the construction of refrigerators and refrigeration equipment. It is used in a number of well-known refrigerators.

Hundreds of refrigerating and cooling rooms built with Flax-li-num bear out the claims that Flax-li-num is the correct insulating material for this purpose. Work of this type requires special treatment. The services of the Flax-li-num Engineering Department are available to architects and engineers, interested in this phase of Flax-li-num application.

(E) ***Sound Control***—When used for sound control and applied according to recommended specifications, Flax-li-num effectively reduces the transmission of sound through floors and walls. Flax-li-num is also extensively used for correcting acoustical difficulties in theatres, lecture or music halls, churches, broadcasting stations and talking motion picture studios.

Thermal Properties of Flax-Li-Num—Flax-li-num has a thermal conductivity of 0.31 B.t.u. per sq. ft. per 1° F. per hr. per 1 in. thickness (U. S. Bureau of Standards). 1 in. commercial thickness has a conductivity of 0.28 and ½ in. commercial thickness has a conductivity of 0.56. In addition there is an increase of more than 25% in the insulating value of 1 in. Flax-li-num, and 50% in the insulating value of ½ in. Flax-li-num when applied according to the two-air-space method.



The Flax-li-num Two-Air-Space Method of Application

A fundamental principle of thermal insulation approved by the U. S. Bureau of Standards and making possible maximum insulating value from an economical thickness of material:

The Flax-li-num method of application, as recommended in our specifications for more than twenty years, calls for the installation of Flax-li-num in the middle of the air space in sidewalls, and furred down on the ceilings, thus giving an adequate air space on *each side* of the material.

These specifications add two heat resisting surfaces, resulting in greater insulating efficiency.

The United States Bureau of Standards, in its recently published letter, Circular No. 227, says:

"If a layer of material (insulation) is placed in the middle of a wide air space, such as that between the studs in a frame wall, greater insulating value is obtained than if the material is placed in contact with the sheathing, or as a plaster base—*the addition of a half-inch layer of insulation in the middle of the air space in a frame wall, is therefore the equivalent of adding about ¾ in. layer at some other place in the wall.*"

Undiminishing Efficiency—Flax-li-num is guaranteed to stay in place during the entire life of the structure in which it is installed. In refrigerator cars, in service so long that the car sills had rotted away, Flax-li-num was found to be so well preserved that it was used over again. Flax-li-num is standard insulation on many refrigerator cars of the leading American railways.

Fits All Shapes—Flax-li-num is sufficiently flexible to easily fit around uneven or odd-shaped places, making tight joints.

Specification Suggestions

Specify the exact places where Flax-li-num is to be used, bearing in mind that heat insulation is most effective when placed half-way between inner and outer surfaces of exterior walls, and between studs from sill to top plate. For sidewalls use ½-in. Flax-li-num. Sheets should be notched and flanged top and bottom, and form continuous contact all around. Nail lath over flanged edges at top, bottom and sides. In gables, blocks of studding dimension should be inserted between studding, flush with bottom edge of ceiling joists. Insulation should be run to these headers and fastened to them with lath.

Below the Flax-li-num place 1x2-in. furring strips, to receive the lath and plaster.

Where top story is an attic, and it is desired to make this space easily usable, 1-in. Flax-li-num should be applied to underside of rafters and collar beams. At intersection of rafters and collar beams wood headers should be placed between rafters, and Flax-li-num nailed to headers. At all end joints of insulation insert wood headers and nail both sheets to these headers to assure tight joints.

Insulation for a One or Two-story House—Specification No. 13-A

Sidewall Insulation (Detail 3) Materials—Heat insulation for all outside walls shall be ½-in. Flanged Flax-li-num, manufactured by the FLAX-LI-NUM INSULATING COMPANY, St. Paul, Minn.

Application—½-in. Flanged Flax-li-num sheets shall be applied between studding from lower to top plate. Top and bottom of sheets shall be notched and flanged into place. Binding strips (lath) shall be securely nailed through flanged edges and top and bottom of Flax-li-num sheets to studdings and plates (to insure tight joints). In gables, blocks of studding dimension shall be inserted between studding flush with bottom edge of ceiling joists. Insulation shall be run to these headers and fastened to them with lath.

Roof Insulation (Detail 4) Materials—Heat insulation for roof shall be 1-in. Flax-li-num flat sheets, manufactured by the FLAX-LI-NUM INSULATING COMPANY, St. Paul, Minn.

Application—1-in. Flax-li-num flat sheets shall be applied to the underside of top story ceiling joists. Insulation shall be furred out with 1x2's under joists to receive lath and plaster. At all end joints of Flax-li-num insert wood headers and nail both sheets to these headers to insure tight joints.

Insulation for Story and One-half Semi-bungalow—Specification No. 4-A (Details 3 and 4)

Sidewall Insulation—Same as Specification No. 13-A.

Roof Insulation Application—1-in. Flax-li-num flat sheets shall be applied to the underside of rafters and collar beams. At intersection of rafters and collar beams wood headers shall be placed between rafters and insulation fastened to these headers (to provide tight joints). Insulation shall be furred out with 1x2's over rafters and collar beams to receive lath and plaster. At all end joints of insulation insert wood headers and nail both sheets to these headers to insure tight joints.

Heat Insulation for Brick Veneer Houses—Specification No. 8-A

Application for sidewalls and ceilings, same as in Specification No. 13-A, preceding. (See Details 3 and 4.)

Sound Control, Sidewall and Roof Insulation Where Studding Is Broken at Ceiling—Specification No. 3-A

Sound Control (Detail 2) Materials—Shall be 1-in. Flax-li-num flat sheets, and ½-in. Flax-li-num Joist and Plate Pads, manufactured by the FLAX-LI-NUM INSULATING COMPANY, St. Paul, Minn.

Floor Sound Control Application—Before placing joists all top plates shall be covered with ½-in. Flax-li-num Plate Pads (width of plates). Flax-li-num Joist Pads ½ x 3 in. x 3 ft. are to be placed on top edge of all joists and headers to receive underflooring, which is to be laid diagonally and tight.

All lower plates are to be placed on ½-in. Flax-li-num Plate Pads, which will project ¾ in. on each side of the plates on partition walls, and ¾ in. on the inside of outside walls, to receive grounds for lath and plaster.

Before lathing, ceiling of lower floors shall be covered with 1-in. Flax-li-num flat sheets applied to bottom edge of ceiling joists, all joints to be well fitted and butted tight (to receive end joists 1x2-in. headers shall be placed between the joists).

Headers, joist dimensions, shall be placed between the joists over all bearing sound controlled partitions. Extra joist shall be placed directly over and below where sound controlled partitions parallel the joists.

For Party Wall Application—See Specification No. 7-A, following (Detail 2).

Roof Insulation Material—Shall be 1-in. Flax-li-num flat sheets, manufactured by the FLAX-LI-NUM INSULATING COMPANY, St. Paul, Minn.

Application—Before placing partitions, 1-in. Flax-li-num flat sheets shall be applied to the underside of the top floor ceiling joists, to be butted tight against plate and ribbon board and furred out over joists with 1x2's for lath and plaster. At top floor ceiling line, headers, stud dimension, shall be placed between studs.

Sidewall Insulation Material—Shall be ½-in. Flax-li-num flanged sheets, manufactured by the FLAX-LI-NUM INSULATING COMPANY, St. Paul, Minn.

Application—See specification No. 13-A.

For Fireproof Construction—Application details for deadening are shown in Detail No. 1 on second following page.

Sound Control, Sidewall and Roof Insulation Where Studding Is Not Broken at Ceiling Line—Specification No. 7-A

Sound Control Materials—Shall be 1-in. Flax-li-num flat sheets, ½-in. Flax-li-num Joist and Plate Pads, manufactured by the FLAX-LI-NUM INSULATING COMPANY, St. Paul, Minn.

Floor Sound Control Application—Flax-li-num Joist Pads ½ x 3 in. x 3 ft., to be placed on top edge of all joists to receive underflooring which is to be laid diagonally and tight. At ceiling line and at floor line above, on all floors, headers of stud dimensions are to be fitted tightly between studdings in such manner as to completely close openings. Flanged Flax-li-num to be nailed to these headers same as plates. Before lathing, ceiling of lower floors shall be covered with a continuous layer of 1-in. Flax-li-num flat sheets nailed to underside of joists. All joints shall be fitted and butted tight. On ceilings fur out over Flax-li-num with 1x2-in. strips to receive lath and plaster.

Party Wall Control Application—Lay ½x4-in. Flax-li-num pads on sleepers below partitions before placing floor joists. Cut off corners of joists so that joists from one side of partition will not touch floor on the other side. Place ½x6-in. Flax-li-num pads between joists that support floor on one side of partition and joists that support floor on the other side. Insert wood headers, joist dimension, between joists directly under partition, separating headers from the joist with ½x3-in. Flax-li-num pads. Lay ½x4-in. Flax-li-num pads over these headers and intersections of joists and lay plate directly on pads. Apply ½-in. Flax-li-num sheets to partition on both sides, running Flax-li-num down to and butting against Flax-li-num pads under plate.

For Sidewall and Roof Applications—See Specification No. 13-A for sidewall and 3-A for roof.

For Fireproof Construction—Application Details for Deadening are shown in Detail No. 1 on following page.

Sound Control and Roof Insulation Where Outside Walls Are of Brick or Hollow Tile—Specification No. 5-A

Sound Control Materials—Shall be 1-in. Flax-li-num flat sheets, and ½-in. Flax-li-num Joist and Plate Pads, manufactured by the FLAX-LI-NUM INSULATING COMPANY, St. Paul, Minn.

Floor Sound Control Application—At ceiling line build wall offset 2 in. in from wall line and height of joists, making top of offset full and plumb with top of joist.

Place Flax-li-num Joist Pads ½ x 3 in. x 3 ft. on top edge of ceiling joists, also over the wall projections, to receive underflooring which shall be laid diagonally and tight.

Before lathing, ceiling of lower floor shall be covered with 1-in. Flax-li-num flat sheets applied to the bottom edge of the ceiling joists, all joints to be well fitted and butted tight (to receive end joints, 2x4-in. headers shall be placed between the joists).

Party Wall Control Application—Lay ½x4-in. Flax-li-num pads on sleepers below partitions before placing floor joists. Cut off corners of joists so that joists from one side of partition will not touch floor on the other side. Place ½x6-in. Flax-li-num pads between joists that support floor on one side of partition and joists that support floor on the other side. Insert wood headers, joist dimension, between joists directly under partition, separating headers from the joist with ½x3-in. Flax-li-num pad. Lay ½x4-in. Flax-li-num pads over these headers and intersections of joists and lay plate directly on pads. Apply ½-in. Flax-li-num sheets to partition on both sides, running Flax-li-num down to and butting against Flax-li-num pads under plate.

Roof Insulation Materials—Shall be 1-in. Flax-li-num flat sheets, manufactured by the FLAX-LI-NUM INSULATING COMPANY, St. Paul, Minn.

Application—Before placing partitions, cover ceiling of top floor with 1-in. Flax-li-num in flat sheets applied to the underside of the ceiling joists. Flax-li-num to be run under wall offset and butted tight to outside walls. Fur out over Flax-li-num with 1x2-in. strips to receive lath and plaster.

Sidewall Insulation—See Specification 11-A on preceding page. For details of sound control in Fireproof construction for floors and party walls see Detail 2 on following page.

Heat Insulation for Flat Roof Decks—Specification No. 2-A

Concrete Deck—(Detail 7)—*Roof Deck (Concrete)*—Shall be finished smooth, without depressions that could hold water, properly graded to drains, and thoroughly dry and clean.

Materials—Shall be 1-in. Flax-li-num, manufactured by the FLAX-LI-NUM INSULATING COMPANY, St. Paul, Minn. A good grade roofing composition or cement shall be used for all moppings. Roofing as specified elsewhere.

Application—Where asphalt roofing composition is used, prime concrete surface, using at least 1 gal. of priming per 100 sq. ft. Where coal tar pitch roofing composition is used, priming is not necessary. Mop thoroughly over deck and lay Flax-li-num into hot mopping, pressing down into mopping in workmanlike manner. Butt all ends tightly together to insure proper insulation at joints. Mop over Flax-li-num thoroughly and lay roof over hot mopping.

Important: Flax-li-num must be laid into roofing composition immediately after mopping or composition will become hard before sheets are laid. Do not lay more Flax-li-num than can be covered in a day. All edges or exposed parts of Flax-li-num to be covered with cap sheet mopped to deck, and re-opened when work is resumed.

Run insulation tight to all walls and butt tightly at all openings in roof, flashing as specified elsewhere.

Wood Deck Where Excessive Condensation Is a Factor—*Roof Deck (Wood)*—Shall be well seasoned, narrow width lumber, properly nailed and free from wide cracks, knots and imperfections. Roof surface shall be smooth, clean and properly graded to outlets, without depressions which could hold water. Cant strips shall be applied at fire walls and elevations.

Materials—Shall be 1-in. Flax-li-num, manufactured by the FLAX-LI-NUM INSULATING COMPANY, St. Paul, Minn. An approved roofing composition shall be used for all moppings. A thoroughly saturated waterproof felt shall be used under the Flax-li-num.

Application—Lay one thickness of waterproof felt, overlapping joints at least 4 in. Lay Flax-li-num sheets over waterproof felt, butting ends and sides carefully to insure a continuous sheet of insulation. Run Flax-li-num to all walls and fit tightly around all openings in roof, nailing Flax-li-num every 12 in. along edges with large head roofing nails. Mop entire surface thoroughly, using sufficient roofing composition to waterproof insulation. Lay roof while mopping is hot. Do not lay more Flax-li-num than can be covered in a day. All edges and exposed parts of Flax-li-num to be covered with cap sheet mopped to deck and reopened when work is resumed.

Wood Deck Under Normal Humidity Conditions—*Roof Deck*—Same as above.

Materials—Flax-li-num mopping and roofing same as preceding roof. Omit waterproof paper under Flax-li-num.

Application—Same as above, except that waterproof paper under Flax-li-num may be eliminated.

Heat Insulation for Steel Deck Roofs—Specification 14-A

Steel Deck—(Detail 8)—*Roof Deck (Steel)*—Properly graded to drains, and thoroughly dry and clean.

Insulating Material—Shall be 1-in. Flax-li-num manufactured by the FLAX-LI-NUM INSULATING COMPANY, St. Paul, Minn. A good grade roofing cement shall be used for all moppings. Roofing as specified elsewhere.

Application—Mop thoroughly over steel deck with standard grade roof composition and lay Flax-li-num into hot mopping, pressing down into mopping in workmanlike manner. Butt all ends tightly together to insure proper insulation at joints. Run Flax-li-num tight to all walls and butt tightly at all openings in roof. Mop over Flax-li-num thoroughly and lay roof into hot mopping.

Important: See paragraph 4 in Specification 2-A.

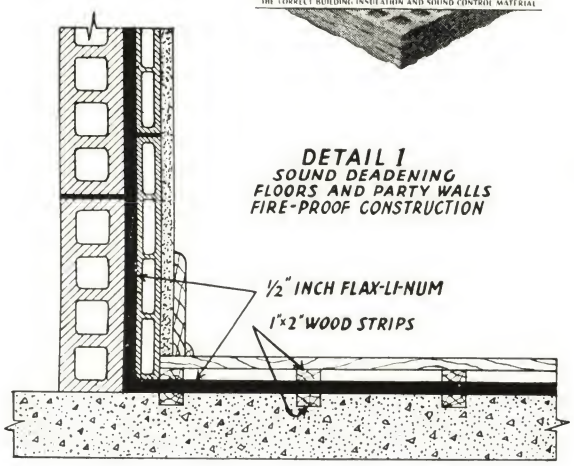
Technical Information and Engineering Service

The foregoing specifications briefly review the various applications recommended by the FLAX-LI-NUM INSULATING COMPANY.

Many jobs, particularly in the refrigeration field and in the field of sound control and acoustics, demand special handling. Here the experience of our own Engineering Department, in applying data and information collected by us, correlated with the best information procurable from noted refrigeration and acoustical engineers, is put at the disposal of architects and engineers who wish to make use of it.

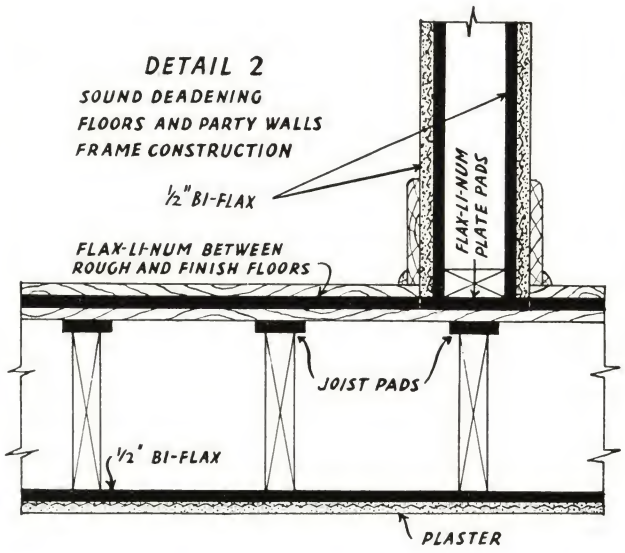
Flax-li-num

THE CORRECT BUILDING INSULATION AND SOUND CONTROL MATERIAL



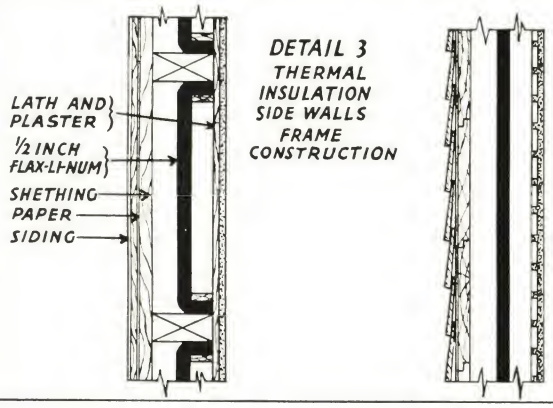
DETAIL 1
SOUND DEADENING
FLOORS AND PARTY WALLS
FIRE-PROOF CONSTRUCTION

½" INCH FLAX-LI-NUM
1"x2" WOOD STRIPS

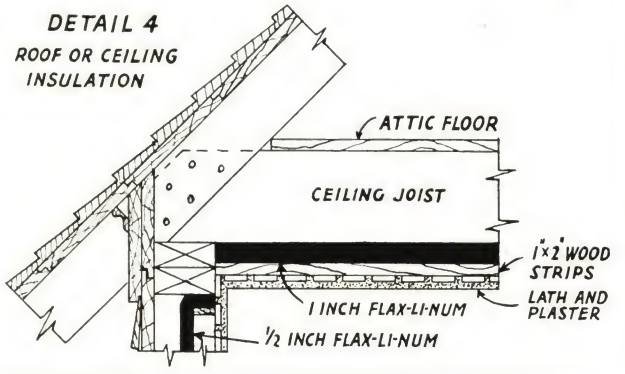


DETAIL 2
SOUND DEADENING
FLOORS AND PARTY WALLS
FRAME CONSTRUCTION

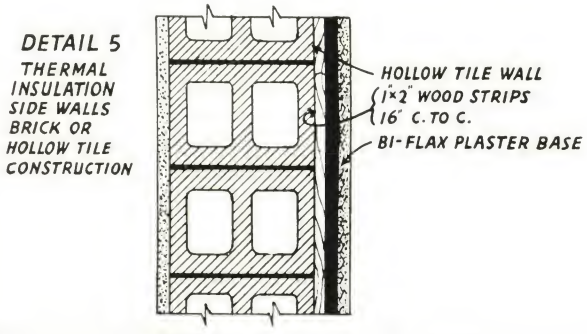
½" BI-FLAX
FLAX-LI-NUM BETWEEN ROUGH AND FINISH FLOORS



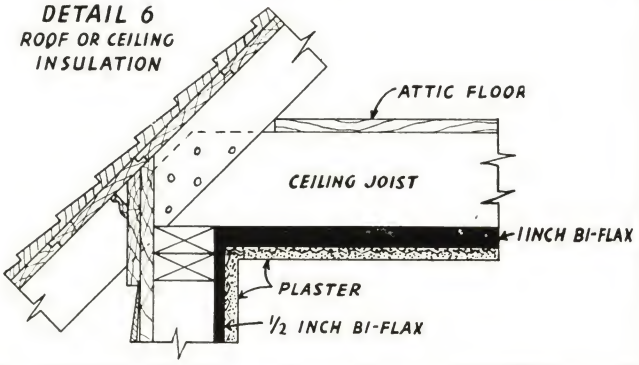
DETAIL 3
THERMAL INSULATION
SIDE WALLS
FRAME CONSTRUCTION



DETAIL 4
ROOF OR CEILING
INSULATION

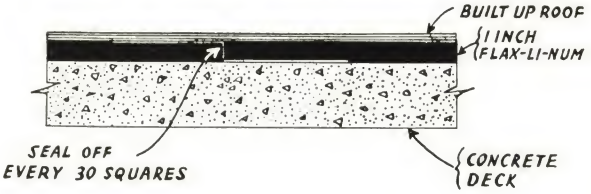


DETAIL 5
THERMAL
INSULATION
SIDE WALLS
BRICK OR
HOLLOW TILE
CONSTRUCTION

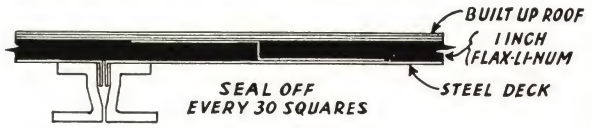


DETAIL 6
ROOF OR CEILING
INSULATION

DETAIL 7
ROOF INSULATION
CONCRETE, TILE AND WOOD DECKS



DETAIL 8
ROOF INSULATION
STEEL DECKS



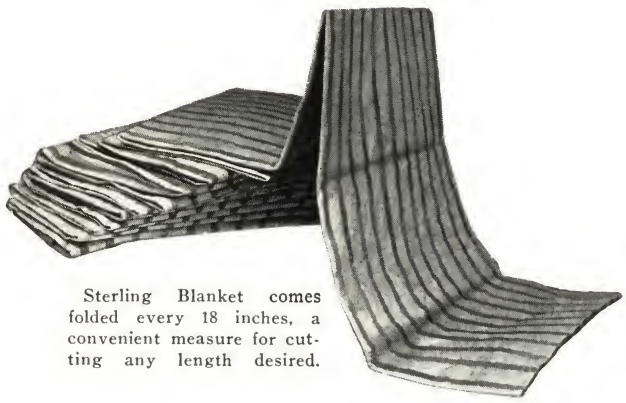
STERLING FIBRE COMPANY

Manufacturers of Sterling Building Blanket
WALTHAM, MASS.

Sterling Building Blanket

Sterling Building Blanket is a soft, pliable quilted padding for insulating against heat losses from the inside, the penetration of heat or cold from the outside, and for sound deadening.

It is composed of a resilient, non-decaying filler or mat of tough vegetable fibres, entirely free from organic matter, sealed between two sheets of strong paper (plain or waterproof).



Sterling Blanket comes folded every 18 inches, a convenient measure for cutting any length desired.

In the Standard Grade the filler is sealed between two sheets of strong Kraft paper. In the Waterproof Grade the filler is sealed between a sheet of famous Brownskin Resilient (rippled) Building Paper on one side and a Duplex Rippled Waterproof Kraft paper on the other—making a blanket impervious to the penetration of air, water and moisture. The use of strong rippled waterproof papers as protective coverings for Sterling Blanket insures flexibility and resistance to punching and tearing. In the Waterproof Blanket the Brownskin side is faced toward the weather, the Rippled Kraft facing into the house. Rats, mice, and other vermin hate asphalt, and will not penetrate the blanket.

In the process of manufacturing, the long, tough, vegetable fibres become interwoven and interlocked, forming millions of tiny dead air spaces, producing thereby the finest sort of insulating blanket.

Special Value with Stucco Work—The waterproof blanket used under the lath for stucco makes a perfect bond, as Brownskin Building paper, widely used in concrete and stucco work for its ability to prevent the penetration of water or moisture, creates a perfect bond with the stucco or other material.

Stands Abuse—Sterling Building Blanket is scientifically constructed to withstand rough handling without the filler scattering, sifting, packing down, or otherwise destroying its insulating value.

Grades—Sterling Building Blanket is made in Standard ½ inch thick, and double-thick; and in Waterproof ½ inch and double-thick.

Fire Resistance—The Waterproof Grade is also fire resisting, the fibres having been chemically treated to resist fire.

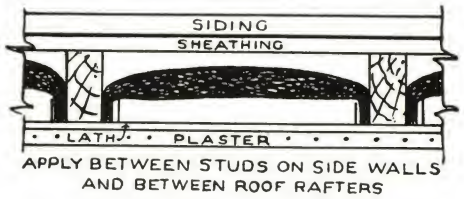
Uses

Sterling Blanket used in concrete, brick veneer, or stucco work may be laid directly across the outside of the studs or boards before applying the metal lath and stucco, or brick, and in wood construction it is laid between the rough boarding and the shingles, or between studs, as desired.

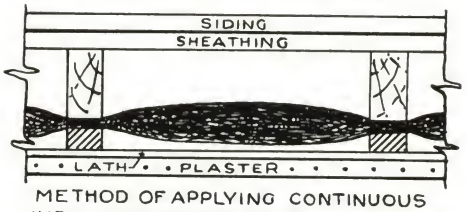
In unfinished rooms or attics Sterling Blanket may be laid entirely across the studs, forming a continuous unbroken blanketing surface, or it may be laid in the usual manner between the studs. It is also used between or across roof rafters as in the case of studs, and under finished floors to keep out dust and sub-floor dampness.

Sterling Building Blanket is put up in bundles of 125 and 250 square feet, 36 inches wide. It is easily cut into desired widths without waste.

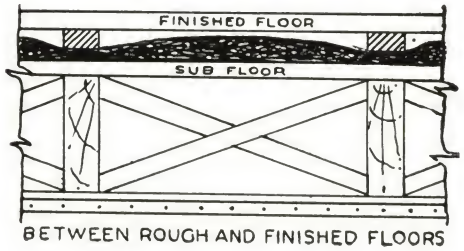
Samples and further information will be mailed on request.



APPLY BETWEEN STUDS ON SIDE WALLS AND BETWEEN ROOF RAFTERS



METHOD OF APPLYING CONTINUOUS INSULATION ACROSS STUDS AND RAFTERS



BETWEEN ROUGH AND FINISHED FLOORS

BALSAM-WOOL

NU-WOOD

A Catalogue of HEAT INSULATING
•
SOUND DEADENING and
•
ACOUSTICAL TREATMENTS
•
for buildings

LOCAL REPRESENTATIVE

WOOD CONVERSION COMPANY • A Weyerhaeuser Industry
Cloquet, Minnesota

WOOD CONVERSION COMPANY

Manufacturers of the Balsam-Wool and Nu-Wood lines of Insulating Materials for the Control of Heat, Cold and Sound

Mills and General Offices at Cloquet, Minnesota

DISTRICT SALES OFFICES

NEW YORK, N. Y.	3107 Chanin Building
DETROIT, MICH.	515 Stephenson Building
CHICAGO, ILL.	360 No. Michigan Avenue
KANSAS CITY, MO.	231 W. 47th Street
MINNEAPOLIS, MINN.	414 Baker Building
SEATTLE, WASH.	621 Liggett Building
SAN FRANCISCO, CAL.	149 California Street

RETAIL DISTRIBUTION BY LUMBER DEALERS EVERYWHERE

BUILDING PRODUCTS

Balsam-Wool Standard Insulation

for preventing heat losses through walls, roofs, floors and ceilings; for insulating commercial and domestic refrigerators, etc., and for the sound deadening of floors and walls.

Balsam-Wool Quietile and
Balsam-Wool Acoustical Blanket

for acoustical treatment in offices, banks, auditoriums, theatres, churches, hospitals, schools, broadcasting studios, etc.

Nu-Wood Insulating Board
Nu-Wood Insulating Lath
Nu-Wood Roof Deck Insulation
Nu-Wood Bevel-Lap Tile

for decorative and acoustical treatment in auditoriums, theatres, churches, etc.

INDUSTRIAL PRODUCTS

Balsam-Wool Refrigerator Car Insulation
Balsam-Wool Steel Passenger Car Insulation
Balsam-Wool Airplane Insulation
Balsam-Wool Sealed Slabs

for insulation of mechanical refrigerators.

All products of Weyerhaeuser, world's largest manufacturers of home-building materials. The organization which has pioneered almost every important improvement in lumber manufacture, in scientific logging, in forest conservation and utilization. Owner and operator of 20 lumber mills, 4 central distributing plants, 923 miles of standard gage railroad, 4 steamships for lumber transportation to Eastern markets. Lumber products include Weyerhaeuser 4-Square Lumber, Weyerhaeuser Standard Lumber, Weyerhaeuser Laboratory Designed and Cut-to-size Crating, Weyerhaeuser Poles and Piling (see pages of Weyerhaeuser Sales Company in this issue). Insulation products include Balsam-Wool and Nu-Wood. Pulp and Paper products include Book, Publication and Writing Papers, Kraft and special Converter Papers, Newsprint and Sodite Cellulose.

GENERAL INFORMATION ON BALSAM-WOOL

A Wood Product—Balsam-Wool is made from pure wood fibers in fleecy wool form, permanently matted together and treated chemically to resist fire. For building purposes it is furnished ½ and 1 in. thick between two sheets of asphalt-coated, tough, creped kraft paper.

Highly Efficient as a Heat Insulator—In Balsam-Wool the natural heat resistance of the wood is multiplied many times by a rearrangement of the cellular wood fibers into a "wool" form which retards the circulation of air. The still air space in Balsam-Wool is approximately 92%, while its density in pounds per cubic foot is only 3.62. The fact that the paper liners of Balsam-Wool are not stitched or punctured in any way adds further to its heat, moisture and wind resisting qualities.

An Effective Sound Deadener—The ability of the wool to absorb sound, and the tendency of the paper covering to reflect sound waves, account for the remarkable efficiency of Balsam-Wool as a sound deadener.

Puncture-proof—The creped paper liners on standard Balsam-Wool are capable of 25% stretch rendering them virtually puncture-proof. By reason of this new, patented feature, Balsam-Wool is stronger, tougher, more flexible than ever before.

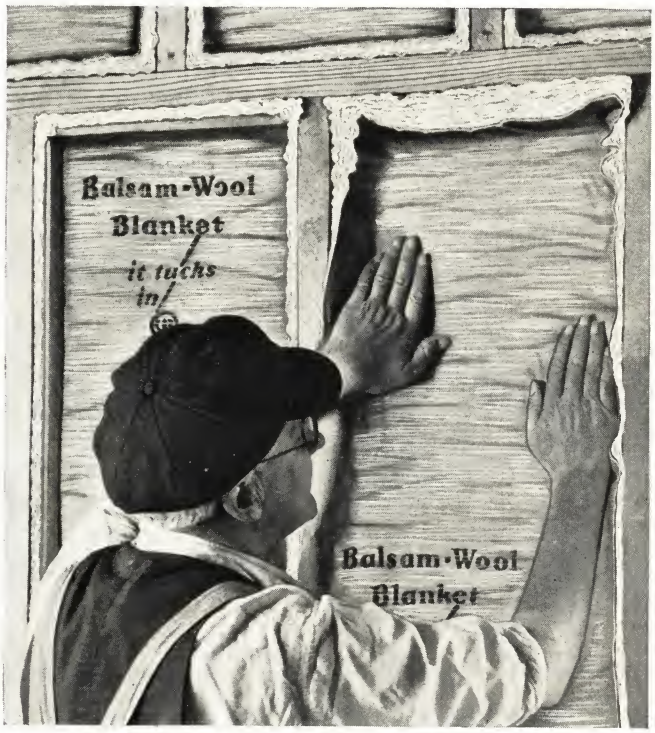
Waterproof—The film of asphalt which lines the paper coverings protects the wool from moisture, and at the same time keeps dampness out of the building.

Fire Resistant—The wool is chemically treated against fire. It will char while exposed to flame, but will not smolder or burn after the flame is removed. Balsam-Wool in itself will not support combustion.

Verminproof and Sanitary—Balsam-Wool contains no animal matter. It does not attract or harbor rats, mice or vermin. It is clean, odorless and sanitary.

Permanent—The wool can not sift or settle because each fiber is coated with an adhesive which cements it to adjoining fibers. The asphalt coating provides a permanent bond between wool and paper. Balsam-Wool is as permanent as the walls which hold it.

Uniform in Quality—During the process of manufacture, Balsam-Wool is under constant laboratory supervision for uniformity.



Simplicity of Balsam-Wool Application Is Well Illustrated Above

Low Cost of Installation—Three standard widths meet all average construction requirements. Thus, the carpenter cuts only to length. Being flexible, Balsam-Wool can be fitted easily into corners and around projections without waste of material. Being light and easily installed, it speeds up the work and keeps down installation costs.

Widths and Thicknesses—The standard widths are 17, 25 and 33 in. The standard thicknesses are ½ and 1 in. The ½-in. thickness weighs 240 lb. per 1000 sq. ft., and the 1-in. thickness 370 lb. per 1000 sq. ft.

How Distributed—Balsam-Wool Standard Building Insulation is distributed through retail lumber dealers. Stocks are carried by dealers in all sections, and any retail lumber dealer can promptly obtain a supply.

A Weyerhaeuser Product—Balsam-Wool bears the name of an organization which for more than 70 years has been known for the high standard of quality maintained in all its products. On every roll of genuine Balsam-Wool will be found the Weyerhaeuser Forest Products trade-mark, the maker's pledge of personal responsibility.



Cross Section of Standard Balsam-Wool Blanket
This efficient insulator is 92% still air

HEAT TRANSMISSION COEFFICIENTS FOR THE CALCULATION OF RADIATION REQUIREMENTS AND FUEL SAVING

Radiation Reduction

Standard Practice—It is now a generally accepted practice to reduce the amount of radiation in a heat-insulated house as compared to one uninsulated. Both in laboratory tests and actual practice it has been proved beyond question of doubt that the house properly insulated with Balsam-Wool can be comfortably heated with 20% to 30% less radiation and a smaller boiler than the same house unprotected against loss of heat.

More Wall Space—Radiation reduction has another important advantage in the additional wall space it provides. Frequently the cutting off of a few coils from the radiator in the living room or bedrooms means just enough extra wall space to take care of an additional piece of furniture.

Test Data—To assist heating engineers and architects in figuring the radiation required for houses insulated with Balsam-Wool, coefficients for various types of wall, ceiling and roof sections are shown on the following pages. The value for Balsam-Wool used in computing these coefficients is the result of tests made by unbiased authorities and in accordance with standard testing methods. The results of these tests are shown in the table below.

TABLE I—TEST RESULTS

Hot Plate Method

Material	Mean Temp.	Thermal conductivity per inch thick	Authority
Balsam-Wool	70°F.	.246	Peebles
Balsam-Wool	90°F.	.27	Bureau of Standards

Hot Box Method

Description	Mean Temp.	Heat transmission Factor U	Authority
*⅜-in. Wood Lath and ⅜-in. Plaster, ¾-in. fir sheathing, building paper, 4-in. lap siding, insulation "C," flanged midway in air space between studding..	40.2°F.	.115	Rowley

*Taken from Journal of A. S. H. & V. E., Vol. 34 No. 7 (July, 1928), Page 536.
Insulation "C"—½-in. Balsam-Wool.

B.t.u. Method of Calculation

General—It is generally conceded that the B.t.u. method of calculating radiation requirements is the best which has been developed to date because it takes into consideration the actual heat loss through the glass areas, walls, floors and roof as well as that due to infiltration. There is a loss of heat in each instance whenever a difference in temperature exists between the inside and outside of the room. The addition of Balsam-Wool to a wall, ceiling, or roof reduces the heat loss through that section by as much as 75%.

Glass, Walls, and Other Component Sections—Each of these sections has a known coefficient of heat transmission which, when multiplied by its area and the temperature difference, gives the number of heat units lost each hour. The sum of these losses together with the heat necessary to raise the temperature of the incoming air to room temperature, divided by the number of heat units given off per hour per square foot of radiation, gives the amount of radiating surface required.

Infiltration—The losses through the glass, walls and other component sections of a room may be accurately estimated, but infiltration is dependent upon the tightness of the windows, doors, and their frames, the windproofness of the wall itself and the exposure to the prevailing winds. It is estimated that the air in a room changes from ½ to 3 times per hour, depending upon conditions. In most cases, it is good practice to assume the air changes in a room according to the number of walls exposed. Table III gives a schedule for rooms in connection with residences.

Method of Computation

To compute the amount of radiation required for any given space proceed as follows:

(1) Compute the loss through the windows and doors; i.e., area × coefficient × temperature difference = B.t.u. loss per hour. (Table II.)

(2) Compute the loss through the walls, floors and ceiling; i.e., area × coefficient × temperature difference = B.t.u. loss per hour. (Table V.)

(3) Compute the loss due to infiltration; i.e., volume × coefficient × temperature difference = B.t.u. loss per hour. (Table IV.)

(4) The sum of these losses divided by 150 for hot water or 240 for steam radiation gives the number of square feet of radiation required.

TABLE II—CONDUCTANCE COEFFICIENTS FOR WINDOW AND DOOR AREAS

C = B.t.u. per sq. ft. per hour per 1° F. temperature difference per thickness as applied.	C
Glass, Single	1.10
Glass, Double	.55
Doors, Wood—2-in.	.38

TABLE III—NUMBER OF AIR CHANGES PER HOUR EXCLUSIVE OF VENTILATING EQUIPMENT

Basement Rooms	½-1
Rooms, one side exposed	1
Rooms, two sides exposed	1½
Rooms, three sides exposed	2
Garages	1-2
Entrance Halls	2-3
Bathrooms	2-3
Rooms with Fireplaces	2-3

TABLE IV—AIR COEFFICIENT

B.t.u. per cu. ft. per 1° F. temperature difference	
½ change per hour	.009
1 change per hour	.018
1½ changes per hour	.027
2 changes per hour	.036
3 changes per hour	.054

TABLE V. HEAT TRANSMISSION COEFFICIENTS FOR VARIOUS TYPES OF BUILDING CONSTRUCTION

U = B.t.u. Transmitted per Hour per Sq. Ft. per Degree Difference in Air Temperature on Either Side of the Section

Section No.	TYPE OF CONSTRUCTION	Plastered direct	Furred wood lath & plaster	½" B-W single furring	½" B-W double furring	1" B-W single furring	1" B-W double furring
	Walls, Masonry						
1	9" Brick	.332	.209	.141	.116	.112	.096
2	13" Brick	.263	.179	.127	.107	.103	.089
3	18" Brick	.208	.152	.113	.097	.093	.082
4	6" Hollow Tile, Stucco	.299	.196	.135	.112	.108	.093
5	8" Hollow Tile, Stucco	.273	.184	.129	.108	.104	.090
6	12" Hollow Tile, Stucco	.193	.144	.108	.093	.090	.079
7	4" Brick Veneer, 4" H.T.	.277	.186	.130	.109	.105	.091
8	4" Brick Veneer, 6" H.T.	.246	.171	.122	.104	.100	.087
9	4" Brick Veneer, 8" H.T.	.228	.162	.118	.100	.097	.084
10	4" Brick Veneer, 12" H.T.	.169	.130	.100	.087	.084	.075
11	12" Stone	.415	.239	.154	.125	.120	.102
12	16" Stone	.356	.218	.145	.119	.114	.098
13	20" Stone	.311	.200	.136	.113	.109	.094
14	8" Concrete, Stucco	.437	.246	.157	.127	.121	.103
15	10" Concrete, Stucco	.395	.232	.151	.123	.118	.100
16	12" Concrete, Stucco	.361	.220	.146	.120	.115	.098
17	16" Concrete, Stucco	.308	.199	.136	.113	.109	.094
18	6" Cinder Concrete, Stucco	.403	.234	.152	.124	.119	.101
19	8" Cinder Concrete, Stucco	.348	.214	.143	.118	.113	.097
20	10" Cinder Concrete, Stucco	.307	.199	.136	.113	.109	.093
21	12" Cinder Concrete, Stucco	.274	.184	.129	.108	.104	.090
22	8" Concrete Block	.348	.215	.144	.119	.114	.097
23	10" Concrete Block	.305	.198	.136	.113	.108	.093
24	12" Concrete Block	.271	.183	.128	.108	.104	.090
	Walls, Frame	**Not insulated**		**½" B-W**		**1" B-W**	
25	Siding or Wood Shingles, Paper, Sheathing, Wood Lath and Plaster	.227		.122		.099	
26	Brick Veneer, Paper, Sheathing, Wood Lath and Plaster	.216		.118		.097	
27	Stucco, Paper, Sheathing, Wood Lath and Plaster	.257		.130		.105	
	Ceilings						
28	Wood Lath and Plaster, No Floor Above	.502		.172		.131	
29	Wood Lath and Plaster, 1" Pine Flooring Above	.234		.124		.101	
30	Wood Lath and Plaster, 1" Pine, 13/16" Oak or Maple Flooring Above	.202		.114		.094	
	Partitions						
31	Studding, Wood Lath and Plaster One Side	.502		.172		.131	
32	Studding, Wood Lath and Plaster Both Sides	.251		.128		.104	
33	4" Hollow Tile, Plaster One Side	.31 *		.181**		.135**	
	Roofs						
34	Built-up Roofing on 1" Roof Boards, Wood Lath and Plaster Inside	.258		.130		.105	
35	Same as 34, with 2" Roof Boards	.213		.117		.097	
36	Wood Shingles on Roof Boards, No Inside Finish	.483		.170		.129	
37	Same as 36, Wood Lath and Plaster Inside	.246		.127		.103	
38	Asphalt or Asbestos Shingles on Roof Boards, No Inside Finish	.515		.174		.131	
39	Same as 38, Wood Lath and Plaster Inside	.259		.130		.105	
40	Slate or Tile on Roof Boards, No Inside Finish	.549		.177		.134	
41	Same as 40, Wood Lath and Plaster Inside	.262		.131		.105	
	†Roof & Ceiling Combined—Use Ceiling Area						
42	Wood Shingles, Wood Lath and Plaster Ceiling, No Attic Floor	.289		.137		.110	
43	Same as 42, with Single Floor	.174		.105		.088	
44	Asphalt or Asbestos Shingles, Wood Lath and Plaster Ceiling, No Attic Floor	.297		.139		.111	
45	Same as 44, with Single Floor	.177		.106		.089	
46	Slate or Tile, Wood Lath and Plaster Ceiling, No Attic Floor	.305		.141		.112	
47	Same as 46, with Single Floor	.180		.107		.089	
	Floors						
48	1" Yellow Pine on Joists	.440		.164		.126	
49	13/16" Maple or Oak Flooring on 1" Yellow Pine on Joists	.339		.148		.116	
50	Same as 49 with ¾" Matched Ceiling Boards Below	.270		.133		.107	
51	4" Concrete on 3" Cinder Concrete on Ground	.556					
52	Same as 51 with 1" Tile Flooring on Concrete	.526					
53	Same as 51 with 1" Pine on Wood Sleepers Imbedded in Concrete	.388					
54	Same as 53 with 13/16" Oak or Maple Flooring	.308					

*Plastered Direct **One furring strip

†Figured on basis of one-half pitch roof; sufficiently accurate for roofs of one-quarter pitch or more.

GENERAL DATA ON THE APPLICATION OF BALSAM-WOOL

How to Obtain Greatest Efficiency

To obtain the greatest efficiency and maintain continuity there are certain parts of the construction in the walls and roof which need special conscientious care. The properly insulated structure is heat-tight throughout. Any break in the insulating blanket leaks heat, just as a hole in a pan leaks water. Every effective means should be employed to conserve fuel and at the same time maintain a uniform, comfortable, healthful temperature.

The specifications and details given on the following pages are for roof and sidewall construction. They have purposely been made as brief as possible to avoid confusion and complication. For that reason vital points where insulation should be used have not been included, the insertion of these additional specifications being left to the discretion of the architect. Special attention of the designer and supervising architect is called to the following vital points:

(1) Insulation should be applied between the floor joists against the beam filling or wall at the first story joist level.

(2) Always carry the wall insulation continuously through the floor thickness at the second and attic story joists—that is, be sure to insulate the outside walls between the heads of all joists.

(3) Be sure the insulation is tightly nailed at the roof plate (where the rafters join walls) and at the ridge. Great care should be taken here since, usually, it is difficult to reach and is often neglected, causing much heat loss.

(4) Window and door frames should be given special attention. Calk or pack with Balsam-Wool all open spaces acces sible from the inside and wherever possible continue the wall insulation around the frames. In brick veneer construction with double hung windows, pulley pockets should be insulated on the outside by applying a strip of insulation over the sheathing and running around the frame.

(5) Pay special attention to insulation of all roof areas or decks over heated rooms, as in the case of sunrooms, and to floors of heated rooms which project out over open porches or other unheated areas.

Where to Insulate the Roof

In specifying insulation for homes there is sometimes a question as to where to put the insulation for the roof. If the attic space is to be used for living quarters it is always advisable to place the insulation on or between the roof rafters. If the attic is to be used for storage space only, place the insulation on the ceiling line. This reduces the number of cubic feet necessary to heat and requires the minimum amount of insulation.

For this reason, the standard specifications cover the application of the roof insulation placed in both the roof line and ceiling line. The location of the insulation is left entirely to the specification writer after determining the use to which the attic space is to be devoted.

Due to the fact that heat naturally rises, the greatest heat loss per square foot of surface is through the roof. In the summer most of the heat comes in the same way. For these reasons it is always advisable to use 1-in. thickness Balsam-Wool for roof insulation.

Condensation — In the northern climates where extreme low temperatures prevail, the problem of condensation of moisture under the roof boards will have a bearing on the placing of the insulation. Condensation difficulties are the result of warm, moisture-laden air coming in contact with extremely cold roof surfaces. While there are many factors which may affect a condensation problem, generally speaking, difficulties of this kind can be avoided by placing the insulation between the roof rafters or, if the insulation is placed in the attic floor, by providing ventilation openings in the attic to carry off the warm, moist air.

The Engineering Department of the Wood Conversion Company, Cloquet, Minnesota, will be glad to submit their recommendations on any specific condensation problem.

Added Insulation Is an Economy

Were insulation a luxury—were the cost prohibitive in the house of moderate cost, it would be logical to install it only in the most vital parts of a building. The cost of insulation is, however, well within the reach of all and will pay for itself many times over during the life of a house in fuel savings. Care and attention given to the insulation and sound deadening of certain rooms ordinarily overlooked add but little to the original cost of the house, but add much to the comfort and liveableness of the home.

Since insulation can only, in most instances, be installed during the construction of the building, insulation should be considered in the following places in addition to those where it is customarily installed.

Basement Ceiling — The basement is always at much lower temperature than the living portions of the house. This usually results in cold floors, draughts, and greater heat loss. Therefore, it is advisable to insulate the first story floor or the basement ceiling. This must include the underside of the stairway to the second story and the partition walls enclosing the basement stairs.

Bedroom Floors and Walls—General custom and hygienic rules dictate that we sleep in cold bedrooms. At night, when the bedroom heat is turned off and the windows opened, we immediately create over the first story the equivalent of an unheated attic space for a period of at least one-third of each day. During this period there is a large loss of heat from the first story ceiling to the second story. By insulating the bedroom floors the temperature of the first story can be maintained uniformly day and night with resulting fuel economy, in addition to which there is the satisfaction of finding all, except the sleeping rooms, warm and comfortable in the morning.

To carry this further and add to the economy and maintain an even temperature throughout the house it is well to insulate the inside partition walls surrounding bedrooms which are kept at low temperatures during the night. This will insure warm, cozy bathrooms and dressing rooms. It is suggested that the doors be weatherstripped to further insure absolute temperature control.

The insulating of floors and partitions will also serve to sound deaden them, which is always a desirable feature. For this reason it is also advisable to insulate bathroom partition walls and wrap the soil pipe.

SPECIFICATIONS AND DETAIL DRAWINGS FOR THE APPLICATION OF HEAT INSULATION

HEAT INSULATION SPECIFICATION NO. 1

Frame, Brick Veneer or Frame Stucco

Balsam-Wool Flanged Between Studdings, Rafters and Joists

Materials

Heat insulation shall be standard Balsam-Wool, manufactured by the Wood Conversion Company, Cloquet, Minnesota The ½-in.* thickness shall be used for sidewalls and the 1-in thickness for top-floor ceiling or roof insulation. Widths shall be as specified hereinafter. (Stock widths are 17, 25, and 33 in.)

*Note: Additional thickness is advisable where the more expensive fuels are to be used.

Heat Insulation—General

Continuity of insulation shall be maintained. Where floors, ceilings or roofs are insulated, as well as outside walls, insulate walls thoroughly between joist and rafter ends.

Throughout, all joints shall be made airtight, especially at door and window openings.

Use full length strips of insulation. End joints, where necessary, shall be lapped and covered with lath, nailed through insulation to boarding or header.

Insulation strips shall in all cases run in the same direction as studding, joists and rafters.

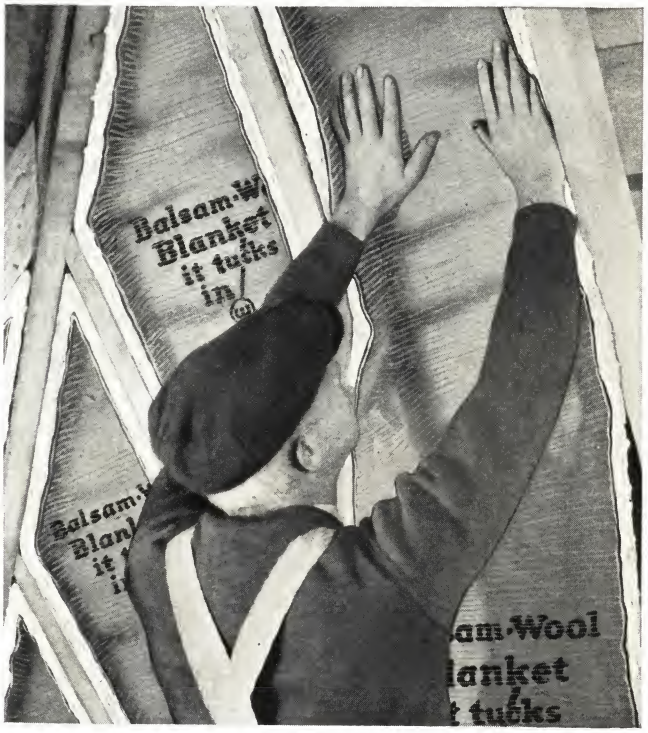
Sidewall Insulation (Detail No. 1)

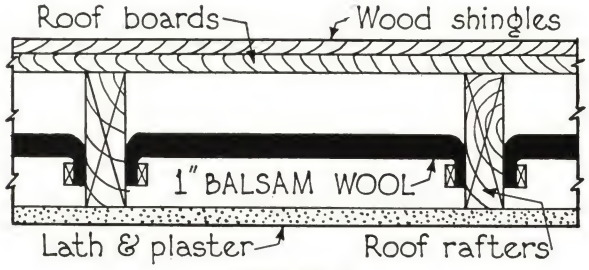
Apply 17-in. width Balsam-Wool, vertically, between studding on all outside walls leaving an air space between sheathing and insulation. The flanges or turnouts shall be continuously fastened by means of lath or strips nailed securely through insulation to the studdings on the sides, and to sills, plates, or headers at top and bottom.

Roof or Ceiling Joist Insulation

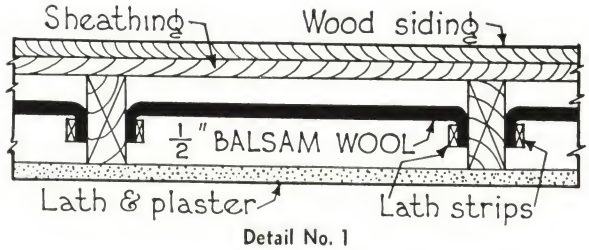
(A) Between Rafters (Detail No. 2)—Apply 17-in. width Balsam-Wool between all rafters leaving an air space between roof boards and insulation. The flanges or turnouts shall be continuously fastened by means of lath or strips nailed securely through insulation to the sides of rafters, plates, ridges, etc.

(B) Between Ceiling Joists (Detail No. 3)—Apply 17-in. width Balsam-Wool between all top floor ceiling joists. The flanges or turnouts shall be continuously fastened by means of lath or strips nailed through insulation to sides of joists, plates, headers, etc.

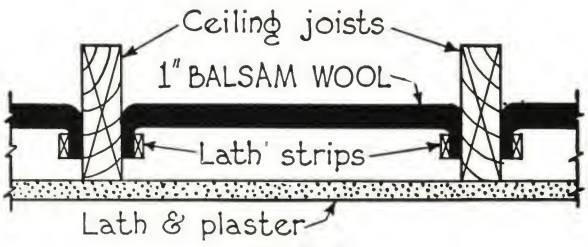




Detail No. 2



Detail No. 1



Detail No. 3

HEAT INSULATION SPECIFICATION NO. 2

Frame, Brick Veneer or Frame Stucco

Balsam-Wool Applied to Face of Studding, Rafters and Joists

Materials

Heat insulation shall be standard Balsam-Wool, manufactured by the Wood Conversion Company, Cloquet, Minnesota. The ½-in.* thickness shall be used for sidewalls and the 1-in. thickness for top-floor ceiling or roof insulation. Widths shall be as specified hereinafter. (Stock widths are 17, 25, and 33 in.)

**Note:* Additional thickness is advisable where the more expensive fuels are to be used.*

Heat Insulation—General

Continuity of insulation shall be maintained. Where floors, ceilings or roofs are insulated, as well as outside walls, insulate walls thoroughly between joist and rafter ends.

Throughout, all joints shall be made airtight, especially at door and window openings.

Use full length strips of insulation. End joints, where necessary, shall be lapped and covered with lath, nailed through insulation to boarding or header.

Insulation strips shall in all cases run in the same direction as studding, joists and rafters.

Sidewall Insulation (Detail No. 4)

Apply 33-in. width Balsam-Wool, vertically, on inside face of studding, edges butted together on every other stud. Fur over insulation with 1x2-in. furring strips on each stud to receive the lath and plaster.

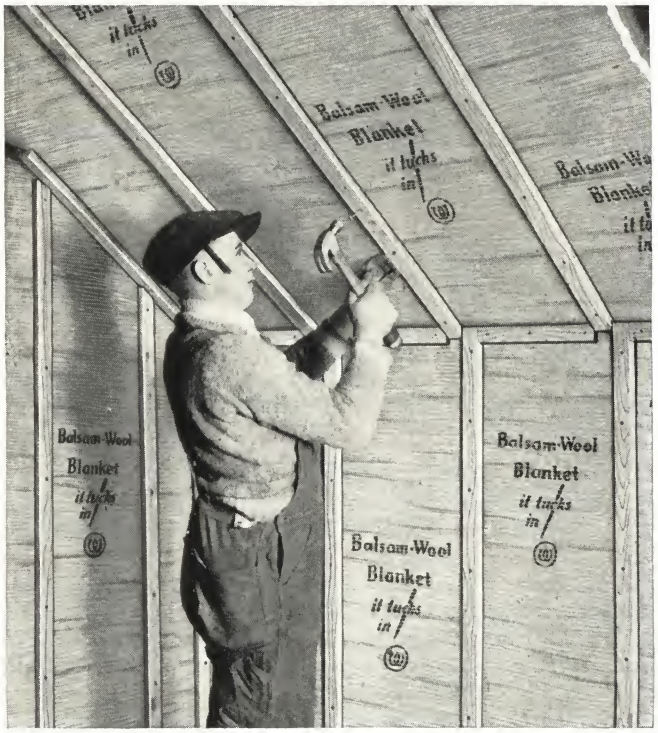
Where heating or plumbing pipes are installed in space between studs of outside walls insulate back of all such pipes with 17-in. Balsam-Wool flanged between studding, in addition to insulation as above.

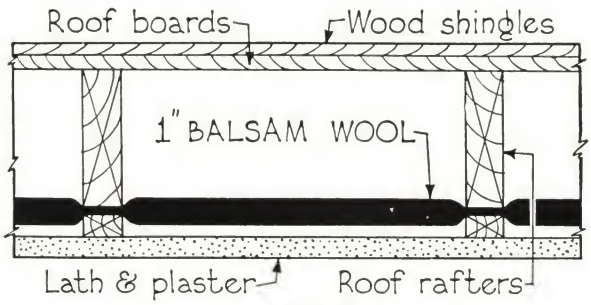
Note: This method requires special width door and window frames.

Roof or Ceiling Joist Insulation

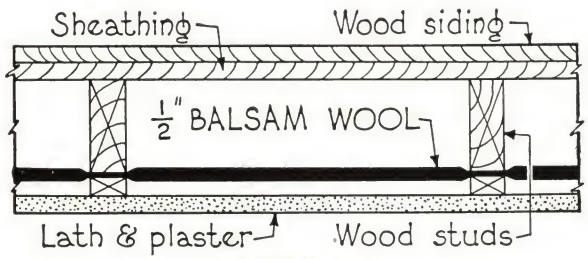
(A) On Face of Rafters (Detail No. 5)—Apply 33-in. width Balsam-Wool on the inside face of rafters, edges butted together on every other rafter. Fur over insulation with 1x2-in. furring strips on each rafter to receive lath and plaster.

(B) On Ceiling Joists (Detail No. 6)—Apply 33-in. width Balsam-Wool on the bottom of top-floor ceiling joists, edges butted together on every other joist. Fur over insulation with 1x2-in. strips on each joist to receive lath and plaster for ceiling.

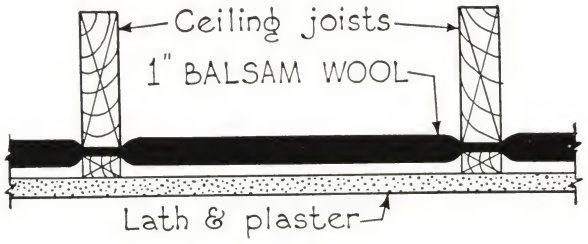




Detail No. 5



Detail No. 4



Detail No. 6

HEAT INSULATION SPECIFICATION NO. 3

Solid Brick, Hollow Tile, Stone, Concrete or Cinder Block Construction

Balsam-Wool Applied on Masonry Walls



Materials

Heat insulation shall be standard Balsam-Wool, manufactured by the Wood Conversion Company, Cloquet, Minnesota. The ½-in.* thickness shall be used for sidewalls and the 1-in. thickness for top-floor ceiling or roof insulation. Widths shall be as specified hereinafter. (Stock widths are 17, 25, and 33 in.)

**Note:* Additional thickness is advisable where the more expensive fuels are to be used.

Heat Insulation—General

Continuity of insulation shall be maintained. Where floors, ceilings or roofs are insulated, as well as outside walls, insulate walls thoroughly between joist and rafter ends.

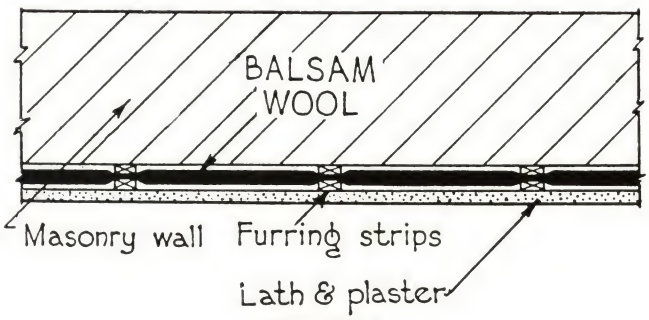
Throughout, all joints shall be made airtight, especially at door and window openings.

Use full length strips of insulation. End joints, where necessary, shall be lapped and covered with lath, nailed through insulation to boarding or header.

Insulation strips shall in all cases run in the same direction as studding, joists and rafters.

Sidewall Insulation—Method A (Detail No. 7)

Fur the wall with 1x2-in. furring strips, 16-in. on centers shimmed plumb and true. Apply 33-in. width Balsam-Wool, vertically, on the inside face of furring, edges butted together on every other strip. Insulation strips shall in all cases run in same direction as furring strips. Fur over insulation with 1x2-in. furring strips on each wall strip, to receive lath and plaster.

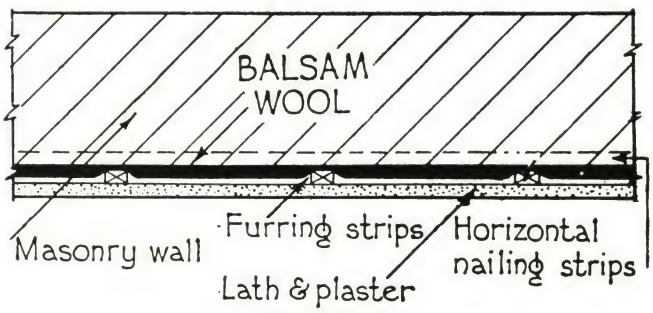


Detail No. 7

Sidewall Insulation—Method B (Detail No. 8)

Instead of the usual nailing course of brick into which the furring strips are nailed, 1x2-in. furring strips shall be embedded into the masonry wall every 16 to 24 in., depending on size units used in constructing the wall. These strips should project not over ¼ in. from the surface of the wall. Plumb and true these strips to receive the insulation.

Apply 33-in. width Balsam-Wool, vertically, on the inside wall, edges butted together. Fur over insulation with 1x2-in. furring strips 16-in. on centers nailed through insulation to the horizontal furring strips in walls to receive lath and plaster. Vertical furring strips shall be so spaced as to cover joints in insulation.



Detail No. 8

Roof or Ceiling Joist Insulation

(A) On Face of Rafters (Detail No. 5)—Apply 33-in. width Balsam-Wool on the inside face of rafters, edges butted together on every other rafter. Fur over insulation with 1x2-in. furring strips on each rafter to receive lath and plaster.

(B) On Ceiling Joists (Detail No. 6)—Apply 33-in. width Balsam-Wool on the bottom of top-floor ceiling joists, edges butted together on every other joist. Fur over insulation with 1x2-in. strips on each joist to receive lath and plaster for ceiling.

SPECIFICATIONS AND DETAILED DRAWINGS FOR THE APPLICATION OF SOUND DEADENING

The Need for Sound Insulation—During the past few years the problem of sound deadening all types of buildings has received increased attention because of an insistence by the public for a greater degree of quiet.

The demand by renters of apartments for the privacy and comfort to which they are entitled, the necessity for quiet rooms in hospitals, hotels and offices, has led architects and engineers to seek a method to arrest the transmission of sound through walls and floors of such buildings.

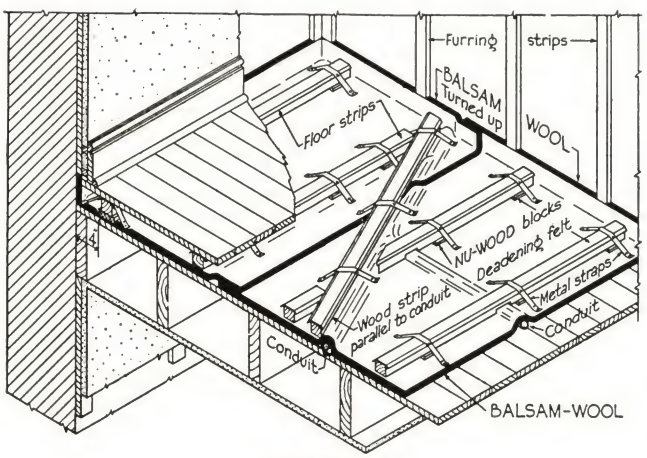
Problem Confronting the Architect—The problem confronting an architect or engineer today is to build a multiple dwelling so that a livable condition of privacy and quiet is assured the tenants without sacrificing space and without resorting to a massive, expensive type of construction and without interfering with standard practices. To do so means the careful selection of a sound insulating material, system, and supervision of the installation to insure the maximum results, for only by the proper materials correctly used are these conditions assured.

Architects and Engineers are urged to use the engineering and supervisory service maintained by the WOOD CONVERSION COMPANY in the solution of sound insulation problems.

BALSAM-WOOL FLOOR DEADENING TREATMENT

Years of experience in the manufacture and sale of Balsam-Wool for sound insulation in many types of multiple dwellings, combined with laboratory research, have resulted in the perfecting of a complete sound deadening treatment for floors which meets all requirements. This patented system is known as Balsam-Wool Floor Deadening Treatment and is composed of standard Balsam-Wool plus a system of eliminating all direct contact between finished floor and the sub-floor. Over the Balsam-Wool are placed squares of Nu-Wood Insulating Board placed 16 in. on center on which are laid, without nailing, 2x2-in. wood furring strips. On top of each furring strip is placed a 3-in. width strip of heavy deadening felt to which are attached metal straps 16 in. apart. These metal straps are then nailed to the sub-floor through Balsam-Wool insulation holding the furring strips rigidly to the floor. The finished flooring is then applied to the furring strips. The felt strips insulate the finished floor from the furring strips, which in turn are insulated from the sub-floor by the small squares of Nu-Wood and the layer of Balsam-Wool. The spanning of the furring strips from the small blocks of Nu-Wood reduces the compression of the sound insulation to only 2.4% of the total floor area, which in addition to the elimination of all wood to wood contact accounts for the efficiency of the system.

Packed in Units—Balsam-Wool Floor Deadening Treatment is packed in conveniently sized packages, two cartons comprising a unit and containing sufficient blocks, felt strips, and metal straps to apply 1000 sq. ft. of Balsam-Wool.



Detail No. 9

Detail showing application of Balsam-Wool Floor Deadening Treatment—Patent No. 1,745,171 (other patents pending)

Balsam-Wool Is the Correct Insulation—Probably the most important part of this patented system of sound insulation is the Balsam-Wool insulation which so admirably meets the exacting requirements of sound deadening. The asphalted, creped kraft paper liners present a hard surface to reflect sound waves, the thick "wool" blanket has proved a most efficient sound absorbing material. Thus sound waves coming in contact with the material are both reflected and absorbed.

Tests—Exhaustive tests by nationally known physicists who are recognized authorities in the testing of sound deadening methods are summarized as follows:

Test panel of floor section was made up following ordinary construction practices, consisting of 8-in. joists, ceiling of metal lath, a scratch and brown coat of gypsum plaster and white finish. Rough floor was laid on top of joists, over which was applied Balsam-Wool Floor Deadening Treatment. The finish floor was then applied.

RESULTS

Reduction Factor in Decibels at Frequency Bands

118-138	241-271	487-537	974-1074	1948-2148	3896-4296	Average
26	36	48	56	70	Over 80	52.8

Standard Specification Balsam-Wool Floor Deadening Treatment

Material—Sound deadening material (Insulation) shall be Standard Balsam-Wool ½ in. thick, 33 in. wide, applied in conjunction with Balsam-Wool Floor Deadening Treatment, manufactured by WOOD CONVERSION COMPANY, Cloquet, Minnesota.

Application (Detail No. 9)—Apply width of Balsam-Wool over sub-floor at one end of room, running at right angles to direction of finish flooring. Turn insulation up to plaster ground on side and ends. Place 2x2-in. furring strips 16 in. on centers over and parallel to insulation allowing approximately 4 in. between first strip and wall. Cover top of furring strip with deadening felt, with metal straps on top, fastening with small nails at several points along furring strip to hold felt in place. Place a Nu-Wood block under furring strip exactly below each metal strap, striking the furring strip a sound blow to imbed the block into Balsam-Wool. Nail metal straps to sub-floor using 1¼-in., 10-gauge barbed, large-headed, galvanized roofing nails, placing nails in holes nearest ends of strap. If first nails do not hold furring strip tightly, nail one or both of remaining holes.

Lay second width of Balsam-Wool overlapping first width 3 in. and turn up at walls to plaster ground. Continue as above until entire surface of sub-floor is completed. Lap all joints 3 in., thoroughly calk all pipe and conduit outlets with trimmings.

Note: If pipe or electric conduits are laid on sub-floor, apply Balsam-Wool over them. If pipe or conduits run under furring strips at right angles notch strips to receive conduits, making notch of sufficient size to prevent compression of Balsam-Wool over conduit. If conduit runs diagonally under furring strips run a furring strip parallel to conduit on one side as shown in detail, taking care that these strips do not come in contact with other furring strips.

Note: In Fireproof Construction beveled sleepers are imbedded into concrete. Balsam-Wool Floor Deadening Treatment is then applied with furring strips running at right angles to sleepers and metal straps nailed into sleepers.

SPECIFICATIONS AND DETAIL DRAWINGS FOR SOUND INSULATION OF PARTITIONS

Material

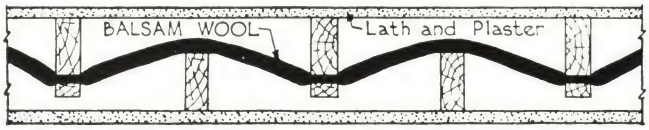
Sound deadening material (Insulation) shall be standard 1-in.* Balsam-Wool manufactured by Wood Conversion Company, Cloquet, Minnesota.

*While 1-inch is the recommended thickness, Balsam-Wool is also available in ½-in. thickness.

General

Continuity of the sound deadening material shall be maintained. Lap all joints at least 3 in. Tension on all strips shall be as nearly equal as possible. Use full length strips of insulation.

FRAME CONSTRUCTION



Detail No. 10

Application—Method A (Detail No. 10)

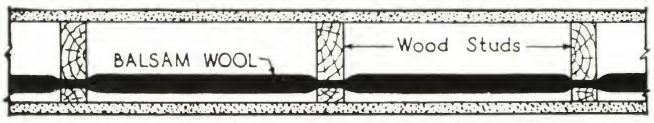
Wood Frame Partitions. All partitions where specified shall be built of staggered studding construction, each set of studding set 16 in. on centers, one set centering between the other. On the same side of the partition there shall be at least 1 in. from the face of one set of studding to the face of the other. Weave Balsam-Wool between the two sets of studding and secure it to the face of one set with lath or strips (or tin discs) nailed through insulation. End joints where necessary shall be lapped and nailed to studding.



Detail No. 11

Application—Method B (Detail No. 11)

Wood Frame Partitions. Apply one layer of 33-in. width Balsam-Wool, vertically, on each of the two faces of studding, butting edges together on every other studding. End joints where necessary shall be butted and covered with lath nailed through insulation to stud or header. Fur over insulation with 1x2-in. furring strips to receive lath and plaster.

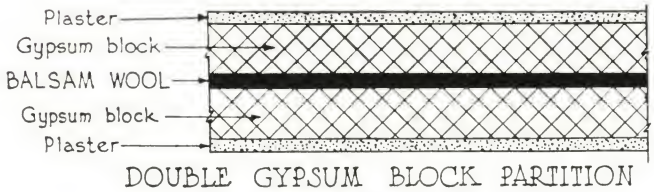


Detail No. 12

Application—Method C (Detail No. 12)

Wood Frame Partitions. Apply 33-in. width Balsam-Wool, vertically, on one face of partition studding, butting edges together on every other studding. End joints where necessary shall be butted and covered with lath nailed through insulation to stud or header. Fur over insulation with 1x2-in. furring strips over each stud to receive lath and plaster.

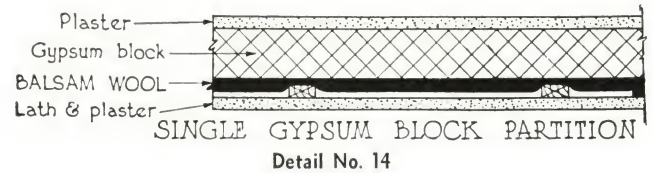
GYPSUM BLOCK CONSTRUCTION



Detail No. 13

Application—Method D (Detail No. 13)

Double Gypsum Block Partitions. Erect one side of partition walls of gypsum blocks from floor to ceiling as elsewhere specified and directed. Apply 33-in. width Balsam-Wool, vertically, covering the entire surface of partition, lapping joints not less than 3 in. Nail to gypsum blocks with large headed nails. Particular care should be taken to bring Balsam-Wool to ceiling, floor and wall lines of partition. Then erect the other side of partition wall with inside face of gypsum blocks flush with surface of sound insulation.



Detail No. 14

Application—Method E (Detail No. 14)

Single Gypsum Block Partition Walls. Erect gypsum block partition as elsewhere specified and directed. Apply 33-in. width Balsam-Wool, vertically, covering the entire surface of partition, lapping joints not less than 3 in. Nail to gypsum blocks with large headed nails. Particular care should be taken to bring Balsam-Wool tightly to ceiling, floor and wall lines of partition. Apply 1x2-in. furring strips, vertically, 16 in. on centers, nailing through sound insulation to gypsum blocks. Furring strips shall be so placed that laps in sound insulation will come between them. All furring strips shall be plumb and true. Apply plaster base as specified to furring strips.

Note: If building code demands steel furring strips and metal lath, apply Balsam-Wool in the same manner and substitute specifications covering this particular construction.

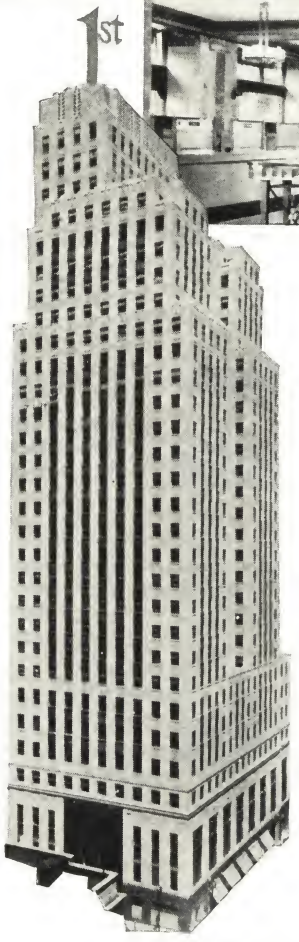
BALSAM-WOOL ACOUSTICAL TREATMENTS

Balsam-Wool An Efficient Sound Absorbent

Early in the research of the WOOD CONVERSION COMPANY it became clear that there was a real need for a basic sound-absorbing material—one efficient in "soaking up" noise, readily adaptable to many different types of construction, low in cost per absorption unit applied.

Such a basic material was available in Balsam-Wool. Today, this basic sound absorbent material is available in the form of two commercial acoustical products, Balsam-Wool Quietile and Balsam-Wool Acoustical Blanket.





First National Bank's New Building, St. Paul, Minn.
Thousands of square feet of Balsam-Wool Quietile on ceilings keep banking rooms and offices quiet

Balsam-Wool Quietile

A metal-covered acoustical tile formed by encasing a panel of Balsam-Wool mat or "wool" in a special screen wire. The open mesh of the screen covering leaves the Balsam-Wool free to absorb its maximum measure of sound, and at the same time provides the necessary strength and rigidity to make the completed tile a practical, easy-to-handle-and-apply material.

Efficiency—Tests conducted by the U. S. Bureau of Standards establish Balsam-Wool Quietile's position as a leader in absorbing quality at all practical ranges of sound. Compared at low sound frequencies, such as a man's voice, at medium frequencies, such as a woman's voice, or at high frequencies, such as the clatter of a typewriter, Balsam-Wool Quietile shows a consistently high absorption value.

REPORT OF TESTS ON BALSAM-WOOL QUIETILE MADE BY U. S. BUREAU OF STANDARDS

Frequency cycles per Sec.	128	256	512	1024	2048	4096
Pitch	C2	C3	C4	C5	C6	C7
Coefficient of sound absorption	0.12	0.24	0.62	0.76	0.76	0.83

Appearance and Light Reflection—Architects who have seen it declare Quietile has the most satisfactory surface, from the standpoint of appearance, of all sound absorbents. The screen covering gives the appearance of a flat surface and reflects light with a minimum of loss. Authorities state that a wall or ceiling surface should have a reflection factor of from .55 to .70 in order to provide satisfactory lighting conditions.

The following results of tests on an absolute type of Reflectometer are averages of many tests:

Material	Color	Reflection in Per Cent
Balsam-Wool Quietile	Blue White	62.3
Balsam-Wool Quietile	Blue White with Tan Stipple	60.2

Decoration and Cleaning—Standard colors for Balsam-Wool Quietile are cream and white. Special colors or stenciled tile can be supplied to meet any decorative specifications, or the tile can be stippled or otherwise decorated on the job. Unlike many acoustical treatments, Balsam-Wool Quietile may be washed, brushed, vacuum cleaned or repainted without reducing its sound absorption efficiency.

Ease of Application—Balsam-Wool Quietile is applied without nailing, without special stripping of ceiling or wall, without heavy fastening devices of metal or other material. *Balsam-Wool Quietile is simply glued into place with a special adhesive.*

Low Cost—Balsam-Wool Quietile per square foot will represent in most cases an economy in first cost over other methods and materials of comparable efficiency. *It offers a remarkably low cost per absorption unit.*

Specification

Materials—Sound absorbing (acoustical) material shall be standard Balsam-Wool Quietile, 1⅛ in. thick, 12x12-in. size tile, as manufactured by WOOD CONVERSION COMPANY, Cloquet, Minn.

Special adhesive to apply Quietile shall be furnished by WOOD CONVERSION COMPANY, Cloquet, Minn.

Preparation—*New Work*—Areas to be treated shall have a finished coat of plaster or a putty coat of plaster brought to a true level plane.

Old Work—Surface of areas to be treated shall be clean, free from loose dirt or grit. Whitewash, calcimine and loose paint shall be removed sufficiently to obtain bond between Balsam-Wool Quietile and base beneath paint.

Application—Balsam-Wool Quietile shall be applied in strict accordance with recommended practice of manufacturer.

Balsam-Wool Acoustical Blanket

This is perhaps the simplest of all sound absorbents. One inch thick, paper covered on the reverse side and fabric covered on the face,, it comes in rolls 34 in. wide. The base material is the same Balsam-Wool as used in Quietile.

Balsam-Wool Acoustical Blanket is applied with special adhesive or with large headed nails, covered with glazed chintz, burlap or monk's cloth, and the covering decorated with stain or paint.

Low in cost, Balsam-Wool Acoustical Blanket meets ideally the requirements for many acoustical problems where an effective yet less costly treatment than Quietile is desired. Approved by leading manufacturers of talking picture equipment, it has been used in the correction of acoustics in picture theatres the country over.

REPORT OF TESTS ON 1-INCH BALSAM-WOOL ACOUSTICAL BLANKET MADE BY U. S. BUREAU OF STANDARDS

Frequency cycles per Sec.	128	256	512	1024	2048
Pitch	C2	C3	C4	C5	C6
Coefficient of sound absorption	0.18	0.36	0.55	0.65	0.67

Specification

Material—Sound absorbing (acoustical) material shall be Balsam-Wool Acoustical Blanket, 1 in. thick, 34 in. wide as manufactured by WOOD CONVERSION COMPANY, Cloquet, Minn.

Preparation—Over all areas indicated or specified shall be applied 1¼x2-in. wood furring strips, set accurately 34¼ in. from edge to edge.

Application—Between these furring strips shall be applied Balsam-Wool Acoustical Blanket, cloth side exposed, either nailed with large headed roofing nails or glued with approved grade of linoleum cement.

Finish—All panels to be finished with cloth as selected, stretched tightly and evenly and tacked to furring strips. Around edges of panels so formed apply moulded trim as specified.

Acoustical Advisory Service

The WOOD CONVERSION COMPANY maintains a staff of experts to assist in the solution of acoustical problems. Without charge or obligation this service is available to architects and engineers.

GENERAL INFORMATION ON NU-WOOD

Insulating Wall Board, Lath, Tile

Nu-Wood is a many-purpose product, made from the clean new fibers of northern coniferous trees. It is made in three forms—as Nu-Wood Insulating Board for use as wall board and decorative finish; as Nu-Wood Insulating Lath for use as plaster base; and as Nu-Wood Bevel-Lap Tile for decorative and acoustical treatments in buildings of all types.

The following Nu-Wood qualities apply alike to all three forms since the basic material in Nu-Wood Board, Lath, and Tile is the same:

Full Half-inch Thick—For almost every insulating purpose, *thickness* is an important consideration. Nu-Wood is uniformly a *full half-inch thick.* An important point to remember when specifying an insulating board.

Thermal Conductivity—Various nationally known laboratories have made tests to determine the conductivity of Nu-Wood. The following test conducted by Prof. J. C. Peebles of the Armour Institute of Technology expresses the average conductivity in B.t.u.'s per hour, per square foot of surface, per degree Fahrenheit of temperature difference for a one-inch thickness and for the actual thickness tested. Test conducted at a mean temperature of 72 degrees Fahrenheit.

Thickness Inches	Density Lbs. Cu. Ft.	Conductivity B.t.u. per hour	
		For 1" thick	For 0.509" thick
0.509	15.0	0.324	0.636

Extremely Rigid—Because of its thickness and its 3-way fiber construction Nu-Wood is extremely rigid.

Water Proofed—A special water proofing process is used in the manufacture of Nu-Wood as assurance against warping and to maintain its insulating efficiency under all conditions. Laboratory tests show that Nu-Wood has an extremely low absorption factor.

Bond With Plaster—Laboratory tests over a period of years show Nu-Wood Lath to be one of the most efficient plaster base materials on the market. The rough texture surface takes plaster easily and millions of fine fibers grip it in a perfect bond. Tests prove its bond greater than is ever necessary, resisting a pull of up to 1,526 lbs. per square foot. Even then the rupture occurs in the board itself rather than at the bonding point.

Appearance—Pleasing color and interesting texture combine to make Nu-Wood an exceptionally attractive finishing board. It may be left in its natural finish with either the rough side or the smooth side exposed, or it may be finished to suit the user's taste with ordinary paint, enamel, stain, calcimine, or the new plastic finishes. Because of the special sizing process Nu-Wood requires a minimum of paint.

Works Easily—In ease of working Nu-Wood resembles large, grainless panels of lumber, free of all defects. It saws and cuts easily and with smooth edges to any desired shape or size and nails without cracking.

GENERAL SPECIFICATION NO. 1

Nu-Wood Insulating Lath as Plaster Base for Outside and Partition Walls and Ceilings

Material

Plaster base shall be Nu-Wood Insulating Lath ½ in. thick, 16x48 in. with "V" joint on 48-in. edges, as manufactured by Wood Conversion Company, Cloquet, Minnesota.

Framing

Frame studs, joists, sills and plates as in ordinary frame construction, all studs being placed accurately 12 or 16 ins. on center.

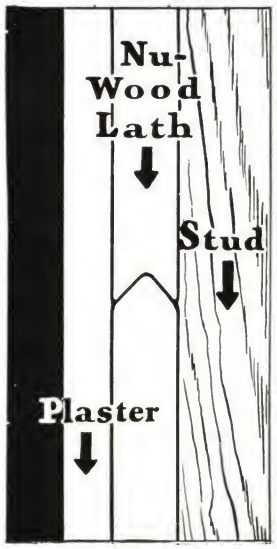
Application for Frame Construction

Apply Nu-Wood Lath rough side exposed at right angles to studding, joists or rafters. Apply lath to break joints, space ¼ in. apart at ends. Bring "V" joint to moderate contact and when cutting is necessary trim scant. Do not force boards into place.

Nailing—Nail Nu-Wood Lath with 4d coated or blued nails spaced 4 in. on centers.

Nail intermediate studs first, then the ends.

Reinforcing—Apply 6-in. strips of expanded metal lath at right angles to all inside corners and standard corner beads to all exterior corners. Nail metal reinforcing through Nu-Wood to wood framing at intervals of 12 in.



"V" Joint

Makes Nu-Wood Lath self-aligning and self-locking, assuring a strong, smooth base for plaster

Application for Masonry Construction

Furring Strips—Wood furring strips 1x2 in. shall be applied vertically, secured in the usual manner to masonry walls placed 12 or 16 in. on centers. (Nu-Wood Lath may then be applied to furring strips as specified above.)

Plaster

Note: Do not wet Nu-Wood Lath before plastering.

Keep rooms well ventilated. Keep building dry. Screen windows if plastering during hot winds. In cold weather use artificial heat to dry plaster. Gypsum plaster containing not more than 2% lime shall be used. Apply plaster directly to surface of Nu-Wood. The total thickness of plaster shall be not less than ½ in.

Note: Do not apply plastic paints to Nu-Wood Insulating Lath. For this type application use large size sheets applied according to Specification No. 3.

GENERAL SPECIFICATION NO. 2—Nu-Wood Insulating Board as an Interior Finish

Material

All interior walls and ceilings shall be covered with Nu-Wood Insulating Board ½ in. thick, as manufactured by Wood Conversion Company, Cloquet, Minn.

Framing

Frame studs, joists, sills and plates as in ordinary frame construction, all studs being placed accurately 16 in. on centers. Where horizontal joints in Nu-Wood are necessary use 2x4-in. headers cut in between studs.

Consideration shall be given for the design of the paneling desired, using extra studs and headers where necessary. Headers shall be provided back of chair rails or similar mouldings.

Application

Nu-Wood boards shall be applied directly to the framing members with (rough side) (smooth side) exposed, (Architect should make his selection of texture from samples as extremely interesting decorative effects may be secured by this choice of texture), allowing ample bearing surface for nailing on all edges. Horizontal joints shall only be made over headers previously installed. Boards shall be placed ¼ in. apart at all edges and ends. Do not force boards into place. Nail in a 3-in. wide strip of Nu-Wood to build up back of all outside window and door casings.

Nailing

Beginning at the top, first nail to intermediate studs with 1½-in. finishing nails driven at a 30° angle every 6 in. Heads shall be countersunk with nail set. Then nail entirely around all edges and ends using 4d box nails, spacing them 3 in. apart and ⅜ in. away from the edges of the boards.

Trim

Apply wood panel strips over joints and elsewhere as needed to secure the desired panel effect. Nail strips secure to framing, headers, etc., with 6d finishing nails set at a 30° angle.

Alternate Specification. Joints shall be covered with Nu-Wood panel strips ½x4 in. beveled at a 45° angle on each edge. For corners or angles, bevel one edge only. Do not bevel ends.

GENERAL SPECIFICATION NO. 3—Nu-Wood as Base for Plastic Paints

Material

All interior walls and ceilings shall be covered with Nu-Wood Insulating Board ½ in. thick in large size sheets (not Lath), as manufactured by Wood Conversion Company, Cloquet, Minnesota.

Framing

Follow framing specifications contained in General Specification No. 2.

Application of Nu-Wood

Follow application specifications contained in General Specification No. 2, applying Nu-Wood with the smooth side of the board exposed.

Nailing

Follow nailing instructions contained in General Specification No. 2, then set all nail heads on intermediate studs with a ball head hammer.

Application of Plastic Paint

Plastic paint shall be applied in accordance with specifications and directions of manufacturer.

GENERAL SPECIFICATION NO. 4

Nu-Wood Roof Insulation Over Concrete, Gypsum, Wood and Steel Decks

Material

Roof Insulation shall be Nu-Wood Roof Insulation ½ in. thick, size 24x47 in., as manufactured by Wood Conversion Company, Cloquet, Minnesota.

Preparation of Wood Decks

The roof deck shall be swept clean before laying Nu-Wood. All nails shall be driven flush with boards. Deck must be dry and reasonably smooth.

Application—The first layer of Nu-Wood shall be nailed to wood deck with joints $\frac{1}{16}$ in. apart, using 1½-in. standard roofing nails with ⅜-in. heads. First nail center of sheets with nails 12 in. on centers and staggered, then nail edges and ends 12 in. on centers. Nails shall be driven flush with surface.

If more than one layer of Nu-Wood is to be used, mop the surface of the first layer with a uniform coating of not less than 30 lbs. of pitch or asphalt per 100 sq. ft. of surface, breaking all joints in relation to the first layer. Tamp, press or roll Nu-Wood firmly into the hot pitch or asphalt. Apply roofing in accordance with roofing specifications.

Note: If dressed and matched lumber is not used or if shrinkage has opened up joints sufficiently to allow hot pitch to run through joints in insulation and roof boards it is recommended that a layer of dry felt be applied over roof boards before insulation board is applied.

Preparation of Concrete and Gypsum Decks

The roof shall be reasonably smooth, dry and well cured. If not well cured, deck shall be primed with not less than one gallon of approved concrete primer per 100 sq. ft. of surface. Sweep deck clear of all rubbish.

Application—Mop deck thoroughly with hot pitch or asphalt using not less than 30 lbs. per 100 sq. ft. of surface. While pitch or asphalt is hot, tamp, press or roll Nu-Wood firmly into place. All edges of Nu-Wood shall be brought to moderate contact. Do not force boards into place. Transverse joints shall be broken. If more than one layer of Nu-Wood is to be applied, mop top surface of previous layer with a uniform coating of not less than 30 lbs. of pitch or asphalt per 100 sq. ft. of surface, breaking all joints in relation to the first layer.

Tamp, press or roll Nu-Wood firmly into the hot pitch or asphalt. Apply roofing in accordance with roofing specifications.

Preparation of Steel Decks

Decks shall be free from grease, oil, dirt and rubbish and the top surface properly coated with approved asphalt primer. All sharp angles shall be rounded out so as to avoid rough, sharp edges. Lay a strip of roofing felt 6 ins. wide without cement over expansion joints at ridge, cementing Nu-Wood over it.

Application—Apply Nu-Wood as specified above.



Scottish Rite Temple, Minneapolis, Minn.

Nu-Wood Tile, in variegated colors, applied over the entire vaulted ceiling greatly enhanced the appearance of the auditorium and completely remedied troublesome acoustical defects

NU-WOOD BEVEL-LAP TILE

For theaters, churches, schools, auditoriums, banks and offices—wherever the application of large areas of acoustical material is practical—Nu-Wood Bevel-Lap Tile is admirably suited to the combined use of interior decoration, insulation and acoustical treatment.

Sound Absorbing Efficiency

Tests by U. S. Bureau of Standards establish the following sound absorption coefficients for Nu-Wood Tile:

Frequency cycles per second	128	256	512	1024	2048	4096
Pitch	C2	C3	C4	C5	C6	C7
Coefficient of absorption ½ in. thick	0.12	0.19	0.30	0.40	0.40	0.51
1 in. thick	0.14	0.19	0.37	0.37	0.41	0.56

Nu-Wood Tile used in these tests was applied directly to plastered surface. It has been found that if applied to furring strips a substantial increase in sound absorption efficiency will result.

Variegated Colors

In variegated colors, which are enough alike to blend harmoniously, yet with sufficient contrast to relieve the monotony of a single tone wall, Nu-Wood Bevel-Lap Tile has won instant approval of architects and designers. Nu-Wood Tile can also be had in a single color, ready for any type of decorating treatment desired. Another unique feature is the choice between a rough and a smooth texture.

Improved Bevel-Lapped Joint

The improved bevel-lap, which is a feature of this new product, makes a perfect bevel edge tile that will not show plaster or light through the joints. Easily and quickly applied by nailing or with a special adhesive, Nu-Wood Tile permits a varied and artistic interior decoration at remarkably low cost.

Sizes

Nu-Wood Bevel-Lap Tile, a full half-inch thick, is available in the following sizes: 6x12, 12x12, 8x16, 16x16, 24x24, 16x32, 16x48, 24x32, and 24x48 in. Other sizes may be obtained on special order.

SPECIFICATIONS

Material

Sound absorbing (acoustical) material shall be Nu-Wood Bevel-Lap Tile in [here insert selection of sizes, texture (rough or smooth side exposed) and color (uniform or variegated)] as manufactured by Wood Conversion Company, Cloquet, Minnesota.

Adhesive

Special adhesive to apply Nu-Wood Bevel-Lap Tile shall be furnished by Wood Conversion Company, Cloquet, Minnesota.

Preparation

New Work—Areas to be treated shall have a finish coat of plaster or a putty coat of plaster brought to a true level plane.

(If Nu-Wood Bevel-Lap Tile is to be applied on wood nailing strips, strips shall be 12 in. on centers or in accordance with the design.)

Old Work—Surface of areas to be treated shall be clean, free from loose dirt or grit. Whitewash, calcimine and loose paint shall be removed sufficiently to obtain bond between tile and base beneath paint.

Application

Nu-Wood Bevel-Lap Tile shall be applied in strict accordance with recommended practice of manufacturer.

BALSAM-WOOL

NU-WOOD

A Catalogue of HEAT INSULATING • SOUND DEADENING and • ACOUSTICAL TREATMENTS • for buildings

LOCAL REPRESENTATIVE

WOOD CONVERSION COMPANY • A Weyerhaeuser Industry
Cloquet, Minnesota

UNION FIBRE SALES CO.

All Forms of Insulation for Cold, Heat, Sound, Mechanical Vibrations, Condensation and Acoustical Corrections

WINONA, MINN.

DISTRIBUTER OF PRODUCTS MANUFACTURED BY
UNION FIBRE CO., INCORPORATED
Engineers and Manufacturers, WINONA, MINN.

AGENTS IN ALL LARGE CITIES

Union Fibre Co., Incorporated Products—the Result of Thirty-one Years' Service and Experience

Materials to absorb as well as to prevent transmission of heat and sound:

LINOFELT.	ROCK WOOL.
FIBROFELT.	ACOUSTIMAT
LITH.	ACOUSTIFIBROBLOCK.
PIPE COVERING.	ANTI-VIBRO-BLOC.

Note: Rock Wool for both low and hig temperature work.

Standard Specifications, Bulletins and Service

Standard drawings and specifications for the use of our products will be mailed gratis.

We cheerfully furnish without charge bulletins and engineering advice concerning the use of our products.

Linofelt

A quilt, of highest efficiency, of selected flax fibre batt between tough Kraft or Waterproof paper. In rolls of varying widths and thicknesses.

Approximate Thickness—$\frac{5}{16}$ in.; ½ in.; ¾ in.

Standard Widths—18, 24, 26, 32, 36, 48, and 54 in.; also any other special widths up to, and including, 108 in.

Approximate Weights per 100 Sq. Ft.—$\frac{5}{16}$-in. Kraft, 17 lb.; ½-in. Kraft, 28 lb.; ¾-in. Kraft, 39 lb.; $\frac{5}{16}$-in. waterproof, 23 lb.; ½-in. waterproof, 32 lb.; ¾-in. waterproof, 43 lb.

Fibrofelt

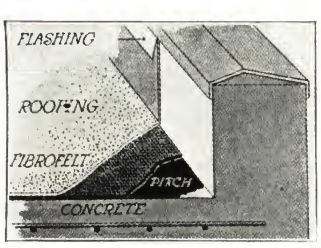
A pressed, flexible felt board of highest efficiency, of selected flax and rye straw fibres. In boards of varying widths, lengths, and thicknesses ($\frac{5}{16}$ to 1 in.), and especially adapted for roof insulation.

Approximate Thickness—$\frac{5}{16}$ in.; ½ in.; ¾ in.; 1 in.

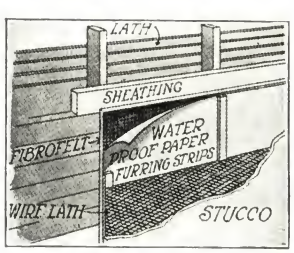
Widths—$\frac{5}{16}$ and ½-in. thicknesses are flanged for studding 16 and 24 in. on center. Also furnished flat in 32 and 36-in. widths; ¾ and 1-in. thicknesses furnished only in 32 and 36-in. widths.

Lengths—8, 8½, 9, 9½, and 10 ft.

Approximate Weights per 100 Sq. Ft.—$\frac{5}{16}$ in., 50 lb. uncrated, 60 lb. crated; ½ in., 60 lb. uncrated, 70 lb. crated; ¾ in., 100 lb. uncrated, 110 lb. crated; 1 in., 115 lb. uncrated, 125 lb. crated.



On Concrete Roof



On Exterior Walls Finished in Stucco

Plans for Application of Fibrofelt

Lith

A pressed board and prepared water repellent, 18x48 in., of selected flax fibre of highest efficiency. Especially adapted for cold storage and roof insulation.

Thicknesses—1, 1½, 2 and 3 in.

Approximate Weights per Square Foot—1 in., 1.25 lb. uncrated, 1.39 lb. crated; 1½ in., 1.88 lb. uncrated, 2.09 lb. crated; 2 in., 2.50 lb. uncrated, 2.79 lb. crated; 3 in., 3.75 lb. uncrated, 4.18 lb. crated.

Pipe Covering

Pressed and truly shaped from selected flax fibres. Used for cold pipes and sound deadening. Highest efficiency. Three thicknesses.

Brine Thickness—For brine and ammonia pipes with refrigerant from zero to 25° F. Also used for sound deadening. Thickness of covering from 2 to 3 in.

Special Thick Brine—For brine and ammonia pipes with refrigerant at a temperature below zero. Thickness of covering from 3 to 4 in.

Ice Water—For pipes carrying cold liquids, such as ice water, where temperatures are between 25 and 50° F. Thickness of covering from 1½ to 1¾ in.

Rock Wool

Highest quality, no dust, and is not objectionable to handle when prepared by our patented process, which anneals and makes the fibres pliable and tough and prevents fibres from breaking up again into dust form.

We can furnish Rock Wool in the following forms:

Loose Rock Wool	Rock Wool Blanket
Granulated Rock Wool	Union Rock Wool Jacket

Acoustimat

Economical in cost and economical to install, gives high test for sound absorption and has exceptional decorative possibilities.

Sheets 3x10 ft. Thicknesses ¼, ½, ¾ and 1 in.

Acoustifibroblock

Highest grade and efficiency applied directly to surfaces. Its outer surface is the finished wall surface, in plain or tile effect. No surface membrane needed. Made in slabs 18x48x1⅜ in. Weights, approximately, 1.80 lb. uncrated, 2 lb. crated.

Anti-vibro-bloc

A super-insulation for elimination and deadening of severe vibrations and noises. Placed under machinery, in floors, walls, etc. Made in slabs 18x48 in. and in thicknesses of 1, 1½, 2 and 3 in.

Approximate Weights per Square Foot—1 in., 1.33 lb. uncrated, 1.47 lb. crated; 1½ in., 2 lb. uncrated, 2.21 lb. crated; 2 in., 2⅔ lb. uncrated, 2.96 lb. crated; 3 in., 4 lb. uncrated, 4.43 lb. crated.

THE UPSON COMPANY

Upson Blue-Stripe* Insulation

10 Upson Point
LOCKPORT, N. Y.

For Upson Processed Board, Fibre-Tile, etc., see Manufacturers' Index

UPSON BLUE-STRIPE—THE NEW EFFICIENT FLEXIBLE INSULATION

What Economical, Highly Efficient Insulation Is

Modern building construction demands that all exterior walls, upper floor ceilings and roofs be insulated in order to conserve heat.

The insulation used, however, must definitely show sizeable returns on the investment through:

(1) Fuel savings.
(2) Lower cost of heating plant.
(3) Increase in comfort.
(4) Maintenance of healthful living conditions.

The real cost of an insulating material is the cost per square foot of insulating value.

The insulating value of a material increases with an increase in its thickness. The cost of the material per square foot of area increases with the thickness. But insulating value does not always increase in direct proportion to an increase in thickness and the increase in cost.

There is a point, therefore, in this matter of thickness beyond which it is not economical to go.

The economical thickness, therefore, lies between the extremes of the relatively thin layer and the relatively thick layer.

Over six years ago, Upson Engineers surveyed the entire field to determine the economical thickness to meet all conditions. Their objective was to find, not only the kind of materials, but the type or form best suited to meet the requirements.

Only after exhaustive research and experiment were the final specifications of Upson *Blue*-Stripe Insulation adopted. The results of this survey indicated that high efficiency, and economy, could be obtained in an insulation that was:

(1) Flexible, cellular and fibrous.
(2) Light in weight.
(3) Of sufficient thickness to secure economy.
(4) Added to the wall in such position as to form two air spaces.

Upson Blue-Stripe Insulation Fulfills Every Requirement

Upson *Blue*-Stripe Insulation fulfills these requirements:

(1) Upson *Blue*-Stripe Insulation is *flexible, cellular* and *fibrous*. It can be fitted or folded into and around corners and odd shaped places. Convenient to install, and practically every crack and crevice in wall or roof can be effectively sealed up, thus securing real effective insulation. The liners, waterproofed on the outside, likewise, stop the passage of air.

(2) It is *light in weight*. A density of 4.11 pounds per cubic foot. The filler of the Upson *Blue*-Stripe Insulation is made of light, woolly, fibers especially chosen for their insulating efficiency.

(3) While its commercial thickness is approximately three-fourths of an inch, it fluffs out or expands to almost double this thickness when installed in the wall, thereby decreasing density and adding to its insulating value.

(4) Upson *Blue*-Stripe Insulation is not a structural material nor does it replace any structural material. It is *added* to the wall or roof, thereby adding its own insulating value to the insulating value of the wall or roof itself.

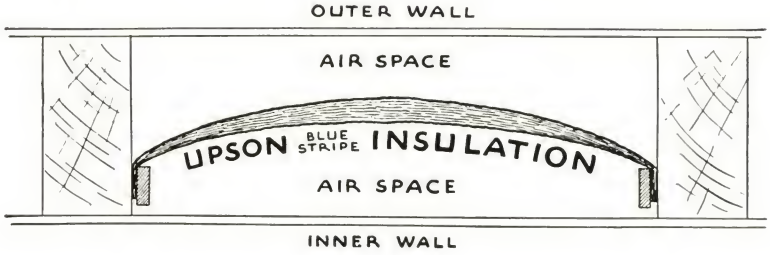
Should be applied midway the depth of studs or joists. This application divides the air space into two and therefore gives an additional air space.

The illustration below shows how Upson *Blue*-Stripe Insulation is installed to form the two air spaces, which materially increase the over-all heat resistance of the wall.

The high insulating value of Upson *Blue*-Stripe Insulation maintaining the temperature of inside surfaces of exterior walls well above the dew point, prevents condensation, even under conditions of relatively high humidity. Protected on the outside by waterproofed liners, which prevent absorption of moisture from the air.

Description

Upson *Blue*-Stripe Insulation is compressed at the edges, making it easily flanged and quickly applied. Each edge is sewed and reinforced with heavy craft tape. The stitching does not, however, penetrate the outside liners. Each surface is effectively waterproofed on the outside with a heavy coat of asphalt to bar the passage of air and moisture. The insulation is fire-resistant and offers an addition safety factor for frame walls.



*Patents applied for.

The blue stripe down the center of the seventeen-inch Upson *Blue*-Stripe Insulation makes it easy to center the insulation between studs or joists. The "dot every foot" makes it easy to measure to desired lengths.

The fibers in Upson *Blue*-Stripe Insulation are interlocked and felted, preventing easy shifting or settling. Moreover, the edges are reinforced and sewed.

Contains no undestroyed vegetable matter. Will not harbor rats, mice, or vermin, since it is chemically treated.

Does not flame readily, nor does it smolder or burn easily.

Comes in attractive dustproof cartons. A form of packing that is easily handled, keeps product clean, is easily stored, and protected from damage.

Requires no special skill for installation. Full directions as to application are included in every carton.



Close-up, Full-size Photographic Reproduction of a Section of Upson Blue-Stripe Insulation

Note the ¾-in. thickness—the fabrication of the specially selected vegetable fibers—and the "dead-air" spaces

Tests

Tests made at Pennsylvania State College and other authoritative laboratories show Upson *Blue*-Stripe Insulation to have a Resistance or Insulating Value of 3.03.

Conductance of Commercial Thickness—0.33 B.t.u. per square foot per hour per one degree Fahrenheit Temperature Difference, based on a density of 4.11 lbs. per cubic foot and a mean temperature of 93.5 F.

Conductivity per one inch of thickness — 0.29 B.t.u. per square foot per hour per one degree Fahrenheit Temperature Difference.

Typical reductions in heat losses are indicated by the following coefficients of transmission based on the above values for *Blue*-Stripe Insulation computed according to formulae and data given in the Text Section of The American Society of Heating and Ventilating Engineers Guide:

Frame Wall — clapboards, sheathing, wood lath and plaster:

No insulation	0.262
With Upson *Blue*-Stripe	0.129

Brick Veneer—wood lath and plaster on furring:

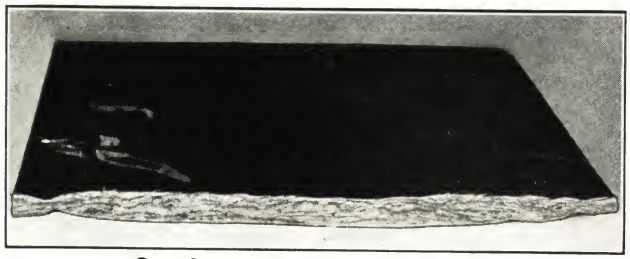
No insulation	0.247
With Upson *Blue*-Stripe	0.125

8-in Brick Wall—plaster on wood lath furred:

No insulation	0.250
With Upson *Blue*-Stripe	0.126

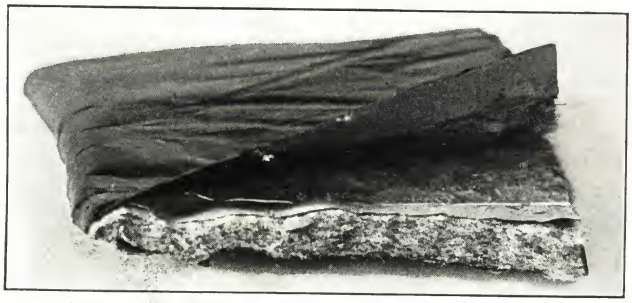
Stucco on metal lath—wood sheathing, wood lath and plaster:

No insulation	0.302
With Upson *Blue*-Stripe	0.138



Cross Section View of the 17-in. Width

Showing the edges which are especially compressed and scored for easy flanging



Section with Kraft Paper Lifted Showing Construction

The method of stitching the kraft paper tape *to the filler* is clearly shown. As the waterproof kraft paper liner is stuck to this tape (not stitched through from side to side) there are no punctures and a perfect airtight union is assured

Sizes

Upson *Blue*-Stripe Insulation is about ¾ in. thick and comes folded fan-fold, packed in strong cartons.

There are three standard widths, as follows:

17 in. for use between studs on 16-in. centers, 166⅔ sq. ft. or 118 lin. ft. to carton; 25½ in. for use between studs on 24-in. centers or less, 250 sq. ft. or 118 lin. ft. to carton; and 34 in. for looping on alternate studs on 16-in centers, 166⅔ sq. ft. or 59 lin. ft. to carton.

How Upson Blue-Stripe Insulation Should Be Applied

Upson *Blue*-Stripe Insulation should be applied as follows:

(a) All work of insulation shall be continuous. All joints and sides shall be airtight.

(b) Full widths of insulation shall be used and they shall *run in the same direction* as studs, joists or rafters.

(c) All insulation applied midway the depth of studs, joists or rafters shall be fastened on all four sides with wood lath securely nailed.

(d) All open spaces, such as between joists and rafter ends, shall be thoroughly insulated.

(e) Where the attic is used, roof insulation will be substituted for insulation of the top floor.

(f) All odd spaces to be filled to avoid air leakage or infiltration.

How Identified

Upson *Blue*-Stripe Insulation may be easily identified by the inch wide blue stripe running lengthwise of one side. The blue stripe is for identification and measuring purposes and may be removed after insulation is installed.

The blue stripe is marked with orange colored dots at each foot making it unnecessary to measure the desired lengths with a rule.

Where Obtained

Like famous Upson Board and Upson Fibre-Tile, Upson *Blue*-Stripe Insulation is sold by discriminating lumber dealers everywhere.

If you do not know the name of your nearest Upson dealer we shall be glad to supply it.

Service

Upson Engineers are ready to assist in the solution of your insulating problems.

ARMSTRONG CORK & INSULATION COMPANY

Manufacturers of Insulation for All Classes of Buildings

935 Concord Street, LANCASTER, PA.

BRANCHES

ALBANY, N. Y.	*CHICAGO, ILL.	*DETROIT, MICH.	LOUISVILLE, KY.	*PITTSBURGH, PA.
*ATLANTA, GA.	*CINCINNATI, OHIO	GRAND RAPIDS, MICH.	MILWAUKEE, WIS.	ROCHESTER, N. Y.
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MONTREAL, QUE.	*TORONTO, ONT.	WINNIPEG, MAN.	*LONDON, ENGLAND	

AGENTS

*BALTIMORE, MD., John R. Livezey, 526-530 St. Paul Street

*LOS ANGELES, CAL., Gay Engineering Corp., 2650 Santa Fe Avenue

*NEW ORLEANS, LA., H. T. Steffee, 928-930 Tchoupitoulas Street

*PHILADELPHIA, PA., John R. Livezey, Glenwood Avenue, West of 22nd Street

PORTLAND, ORE., Gillen-Cole Co., 15th and Overton Streets

*SAN FRANCISCO, CAL., Van Fleet-Freear Co., 557 Howard Street

WASHINGTON, D. C., John R. Livezey, 902 Woodward Building

*These maintain ample warehouse stocks of Armstrong's Corkboard

THE COMPANY—ITS PRODUCTS AND RESPONSIBILITY

Products

ARMSTRONG'S CORKBOARD for the insulation of walls and roofs of all normally heated buildings.

See Manufacturers' Index for Armstrong's Temlok, a fibreboard insulation for the walls and roofs of all normally heated buildings; Armstrong's Corkboard for the insulation of refrigerated structures and equipment, Armstrong's Cork Covering for insulation of refrigerated lines and for lagging of brine coolers and other special low temperature apparatus; Armstrong's Corkoustic for sound-quieting and acoustical treatment for churches, schools, hospitals, and all classes of buildings; Armstrong's Vibracork for absorbing vibration and reducing noise in connection with fans, pumps, motors, printing machinery, and to completely isolate floor slabs from steel framing members.

The Company

THE ARMSTRONG CORK & INSULATION COMPANY is a subsidiary of the Armstrong Cork Company—a concern long established in its special field and with a financial standing and reputation sufficient to guarantee its integrity and responsibility and to assure efficient, dependable service.

During the years corkboard insulation has been on the market, it has been used in many thousands of installations under practically all conditions. Long practical experience has built thorough familiarity with the material and its uses and has established dependable data and statistics.

Sales and Service Organization

The ARMSTRONG CORK & INSULATION COMPANY'S main offices are at Lancaster, Pa. Complete testing laboratories, under the direction of a corps of specially trained and experienced insulation engineers, also are maintained at Lancaster, Pa. Here, any special insulation problem may be referred for prompt and thorough investigation and solution. Factories engaged in the manufacture of cork insulations are located at Camden, N. J., and Beaver Falls, Pa., in the United States, and at Algeciras, Palamos, and Seville, Spain. Temlok, Armstrong's new fibreboard insulation, is manufactured at Pensacola, Fla.

In addition to the main office, branch offices are maintained in the principal cities of the United States, each in charge of a district manager immediately responsible to the general sales manager of the Company. Under many branch offices are sub-branch offices located in the larger cities in the district territory.

Each branch office carries a staff of representatives with engineering education and training who are competent to advise on insulation design and installation. Each branch also carries a corps of trained erection superintendents and foremen.



Stripping Cork Trees in Algeria

Cork is the outer bark of the cork oak tree which flourishes in the Spanish peninsula and in Northern Africa

Architects, engineers, builders, and owners are invited to avail themselves of the Company's facilities for information and service.

Corkboard Erection Contracts

The erection of Armstrong's Corkboard for the insulation of walls and roofs (other than cold storage buildings) is generally done by the building contractor or by his subcontractors. For refrigerated structures, however, the ARMSTRONG CORK & INSULATION COMPANY will contract to furnish and erect corkboard insulation. A thorough knowledge of the best erection methods insures proper installation.

WHY ALL CLASSES OF BUILDINGS NEED INSULATION

What Insulation Accomplishes

Heat Loss Occurs in All Classes of Buildings—Authentic engineering data show enormous heat losses from buildings. These losses are due primarily to the building construction and are independent of heating equipment efficiency. They occur through the more or less rapid transmission of the heat that is generated in the building through the enclosing walls, ceilings, and roofs of buildings of good construction *but which are not insulated.* This preventable heat loss occurs in all *uninsulated* buildings whether used for domestic, public, semi-public, commercial, or industrial purposes.

Insulated Buildings Save Fuel and Promote Comfort—With present-day fuel costs, heating is a major item of building operating expense. In insulated buildings, *the conservation of heat,* reflected in fuel savings, *is an obvious economy* added to which are the equal, though less tangible, benefits of greater comfort, better health, and increased efficiency of human endeavor.

Insulated Buildings Are Cool in Summer—*Insulated buildings* not only conserve heat in winter, but in addition they *keep out the heat in summer,* vitally important in the maintenance of maximum comfort, health, and efficiency. Efficient roof insulation in commercial and industrial buildings effects noticeable efficiency increases during the hot summer period, and in residences comfort is increased by cool, upper story sleeping rooms.

Insulation Prevents Condensation—Many industrial plants, such as textile mills, tobacco factories, and paper mills, require or produce in their manufacturing processes high temperatures with high relative humidity. In cold weather, the high moisture content of the heated air is condensed to such an extent on the underside of *uninsulated roofs* (or ceilings immediately beneath roofs) as to drip quantities of water, discoloring, if not materially injuring, the manufactured product; damaging costly machine equipment, and producing difficult and unpleasant working conditions. *Insulation of walls and roofs (or ceilings) is the most practical and economical method of preventing condensation.*

Where Heat Losses Occur

33% Heat Conservation Possible—In the average uninsulated residence, it is estimated that approximately 45% of the heat loss is through and about the exterior doors and windows and that approximately 55% escapes through the walls and roof. *Of the heat loss through walls and roofs an average saving of 60% may be effected through the use of efficient insulation—i. e., 60% of 55% equals 33% net heat saving reflected in an equivalent fuel saving.*

Heat Losses at Windows and Doors—Heat loss through doors and windows cannot be eliminated, though material savings may be made by the use of well-constructed frames, thoroughly wind-flashed and insulated in frame construction and calked in masonry construction; or storm sash and efficient metal weatherstrips. Heat losses due to infiltration (wind driven air) in and about door and window openings, have been established and have been proved preventable to a large degree.

Wall Infiltration—Heat losses due to infiltration through solid masonry walls have been proved, by careful laboratory tests, to exist.

Greatest Heat Loss Through Roofs—Of the heat escaping through walls and roofs, by far the greater loss is obviously through the roof or the top floor ceiling and roof combined, not only because the materials of which they are ordinarily constructed are relatively good heat conductors, but because the heat in the rooms naturally tends to rise to the ceiling or roof.

The best evidence of the enormous quantities of heat which pass through roofs is to observe what occurs after a heavy fall of snow. In a comparatively short time most roofs are bare. Some snow may blow off, but most of it melts off, though the outside temperature may be far below freezing. The melting is accomplished by the heat from within the building escaping through the roof construction. It is obvious that it is illogical to equip heating plants with fuel-saving devices, insulate steam lines and in other ways, through engineering design and scientific operation, attempt to conserve heat, and then permit the same heat to escape through the roof in a sufficient volume to melt snow.

Summer Heat Is Transmitted Through Roof—Conversely, during the summer, since the roof is exposed to the direct rays of the sun, it is through the roof, as ordinarily constructed, that the greatest amount of summer heat is transmitted into the top story or that portion of the building immediately below the roof. Until recently, the main function of the roof was assumed to be its protection against the elements, and to that end it was built strong, fire resisting, and weathertight. But today architects and engineers recognize the *necessity that the roof, especially, must also be heat-tight.*

All Commonly Used Building Materials Are Heat Conductors

Building Materials Transmit Heat Readily—*All commonly used building materials*—metal, concrete, stone, brick, hollow tile, stucco, plaster, lumber, etc., *are, relatively speaking, heat conductors,* rather than insulators, since in the thicknesses used and as assembled in modern building construction, the *heat flow through them is rapid.*

The degree to which a building material is a heat conductor depends on its structure and its density. *Heavy, dense materials transmit heat* more readily and rapidly than do light, less dense materials.

The absorption of a material (its proclivity to take up moisture by capillary attraction under various climatic or weather conditions) plays an important part in its conductivity of heat. *Moisture destroys insulating efficiency. Any material, even those which are insulators when dry, will conduct heat readily when moist or saturated with water.*

A comparison shows that 1 in. of Armstrong's Corkboard has the same conductance of heat as 10 in. of hollow tile, 15 in. of brick, or 22 in. of concrete; 1 in. of Armstrong's Temlok has the same conductance of heat as 9 in. of hollow tile, 13½ in. of brick, or 20 in. of concrete.

ARMSTRONG'S CORKBOARD—PHYSICAL CHARACTERISTICS AND ADVANTAGES

That Armstrong's Corkboard meets the most exacting requirements for high insulating efficiency is indicated by the following summary of its physical characteristics.

(1) Ideal Physical Structure—Armstrong's Corkboard is made up entirely of microscopic air-containing cells, hermetically sealed—the ideal insulating structure.

(2) Low Density—Relatively, the less dense a material, the better its insulating value. Armstrong's



Armstrong's Corkboard Under the Microscope, Showing the Cellular Structure
Enlarged 180 diameters

Corkboard weighs but .75 (average) lb. per board foot (1 in. thick, 1 ft. square area). Armstrong's Type LK Corkboard weighs only .65 lb. per board foot.

(3) Low Thermal Conductivity—The thermal conductivity of Armstrong's Corkboard, depending upon the density, is .27 to .30 B.t.u. per hour, per square foot, per inch thickness, per degree temperature difference between the two sides. (U. S. Bureau of Standards.)

(4) Highly Moisture Resistant—Because of its cellular structure, Armstrong's Corkboard is highly moisture resistant. For years, cork insulation has been the standard for cold storage warehouses, ice plants, packing plants, test rooms, cold pipes, etc., because in addition to its excellent insulating qualities, it has demonstrated its resistance to moisture under the severest insulating conditions.

(5) Does Not Shrink or Swell—Because of its low moisture absorption, Armstrong's Corkboard does not shrink or swell. Changes of temperature or humidity in the ordinary ranges have no effect on the stability of the material. It will not expand or contract, or loosen from the base to which it is applied.

(6) Fire Retarding—Armstrong's Corkboard will not support combustion and does not smolder or carry fire. Flame in contact with Armstrong's Corkboard produces surface charring, which serves effectively to check the spread of fire.

(7) Structurally Strong—Armstrong's Corkboard will not tear or break under ordinary strains and, properly applied, will always remain in the same position and condition as when installed. As roof insulation, where applied over the roof construction under the finished roofing material, Armstrong's Corkboard remains permanently firm and compact. When nailed against studs and joists in frame construction no intermediate stiffening or bracing members are required.

(8) Does Not Disintegrate—Armstrong's Corkboard is entirely free from mold and decay and will not disintegrate in service.

(9) Sanitary—Since Armstrong's Corkboard is structurally non-absorbent and does not mold or decay, it will remain indefinitely in its original clean, sanitary condition. It is thoroughly sterile and has no offensive odor.

(10) A Good Base for Plaster—All commercial, interior plastering materials may be satisfactorily and easily applied upon Armstrong's Corkboard. For years portland cement interior plaster has been applied to corkboard in cold storage rooms with highly satisfactory results, even in rooms where there is considerable vibration.

(11) Convenient Size, Thickness, and Weight—Armstrong's Corkboard is furnished in rigid boards 12 in. wide by 36 in. long, and 12 in. wide by 32 in. long, in several thicknesses: 1, 1½, 2, 3, 4, and 6 in. Hence the thickness of Armstrong's Corkboard which will prove most effective always can be installed in a single layer.

(12) Easily Installed—Armstrong's Corkboard is a rigid board and can be cut, sawed, and nailed in place as easily as lumber. It is quickly erected against masonry walls in a backing of portland cement mortar with which it forms a secure bond.

(13) Reasonable in Cost—The initial cost of Armstrong's Corkboard is reasonable and it is not expensive to install. Except in cold storage work, it is generally installed in a single layer of the thickness required to assure the greatest economy and effectiveness, thereby reducing installation cost. No lath is required where corkboard is used—an initial saving in construction cost.

(14) Investment Return—On an average, from 20% to 40% fuel savings may be assured in the building completely insulated with Armstrong's Corkboard. The actual return in reduced fuel bills naturally is dependent on a number of factors, such as climatic conditions, cost of fuel, construction of the building, and thickness of the insulation, but in practically all cases the initial cost of corkboard insulation will be entirely paid for out of actual fuel saving within a comparatively few years, and thereafter the annual fuel savings may be applied as cash returns on the original building investment.

THE INSULATION OF LARGE BUILDINGS

See details below

Corkboard Adapted for Fireproof Construction

Armstrong's Corkboard Insulation has proved itself economical in first cost and thoroughly practical for use in all types and kinds of buildings. *Since Armstrong's Corkboard adds no fire hazard,* it is especially well adapted to use in skeleton steel or concrete fireproof construction, with its moderately thin heat-conducting exterior curtain walls.

Thicknesses Recommended

Corkboard is made in thicknesses of 1, 1½, 2, 3, 4, and 6 in., so that a single thickness of insulation may be economically applied in one operation to provide the requisite efficiency for a definite investment return. In most instances the 1½-in. thickness is that recommended for walls and 1½ or 2-in. for roofs.

The Insulation of Roofs

Every Roof Needs Insulation—It has already been pointed out that the greatest preventable winter heat loss in buildings is through the uninsulated roof, and again, that through the uninsulated roof is the greatest transmission of summer heat with all its consequent discomforts.

How Corkboard Is Applied on Roofs—(1) ***Flat Roofs***—The roofs of the larger buildings are in the majority of cases flat. Whether of timber or fireproof construction Armstrong's Corkboard Insulation is best laid directly over the roof, secured with nails to the wood construction and cemented in pitch or asphalt over the fireproof construction. Over the corkboard, the finished roofing material is applied exactly as it would be laid over a standard concrete roof slab. On existing buildings, corkboard may be cemented in pitch or asphalt directly over old built-up roofing (gravel, if any, removed) and covered with new roofing.

(2) ***Pitched Roofs***—Where the finished roof is of metal or standard built-up roofing, the corkboard insulation on pitched roofs may be applied as described for flat roofs.

Where the finished roof is of shingles, slate, or tile, the corkboard is best applied to the underside of the roof construction, nailed to timber construction or put up in a ½-in. portland cement backing to fireproof construction. The forms of poured concrete construction may be lined with the corkboard which adheres to the concrete when this is poured.

Where it is impractical to apply corkboard beneath the roof construction for shingle, slate, or tile pitched roofs, the insulation may be applied on top **of** the roof as described in (1) and 1x2-in. wood strips secured *through the corkboard* to the roof construction, spaced to take the nails of the finished roofing material. Cover the corkboard with heavy waterproof building paper or felt laid beneath the strips, as would be required were there no corkboard.

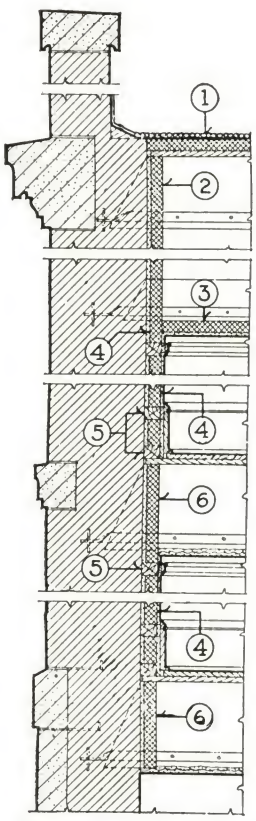
The Insulation of Masonry Walls

Masonry Walls Need Insulation—Much heat loss may be prevented by insulating exterior masonry walls, and especially the comparatively light curtain walls in fireproof construction. Armstrong's Corkboard Insulation may be substituted for wall furring, at little added cost, with all its advantages as a nonconductor of heat. It will prove as substantial and permanent a plaster base as the wall itself or the furring it displaces.

How Corkboard Is Applied to Masonry Walls—The ideal position for insulation on exterior masonry walls is directly against the interior wall surface. Armstrong's Corkboard is applied in a ½-in. portland cement mortar backing against the inside of the wall and the finished plaster applied to the exposed corkboard surface.

SECTIONS—WALLS AND ROOFS OF PUBLIC BUILDINGS

(E) Masonry Construction Details and Methods



Wood Joist Construction

(1) Roof Insulation—*Armstrong's Corkboard* nailed over roof boards. Any standard built-up roofing may be applied directly to the corkboard under the same specification as required over a concrete slab. This insulation may be omitted if top story ceiling is insulated as at 3.

(2) Attic or Roof Space Wall Insulation—*Armstrong's Corkboard* applied to masonry in a ½-in. backing of portland cement mortar. Required if roof is insulated—may be omitted if roof is not insulated and top-story ceiling is insulated as at 3. No plaster is required over the corkboard in unfinished portions of the building.

(3) Top-Story Ceiling Insulation—*Armstrong's Corkboard* nailed to ceiling joists forming plaster base. This insulation may be omitted if roof is insulated.

(4) Wall Insulation—*Armstrong's Corkboard* applied to masonry in a ½-in. backing of portland cement mortar. The corkboard forms a plaster base.

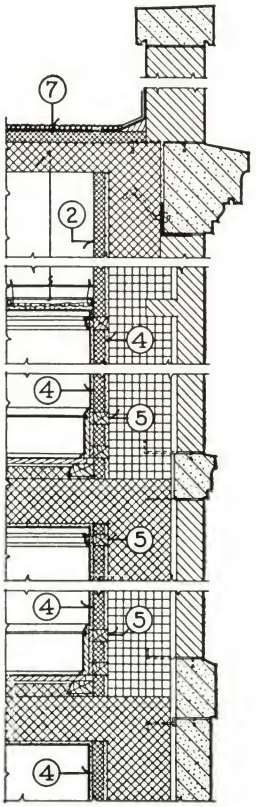
(5) Rough grounds secured to masonry with face flush with interior corkboard surface. These form nailing for plaster grounds to receive wood trim. Wood soldiers or blocks should not be built into exterior masonry walls to form nailing members. Rough grounds should be substantially and permanently secured to the masonry in any of the standard methods of attachment best adapted to the construction (expansion or toggle bolts, metal wall plugs, etc.).

(6) Corkboard cut in and fitted tight between joists—vital points often neglected.

(7) Roof Insulation—*Armstrong's Corkboard* applied over concrete slab in hot pitch or asphalt mopping. Finished roofing over corkboard applied as described in 1. (Corkboard may be applied in similar manner over any type of fireproof construction.)

Note: Use special care to maintain continuity of insulation at exterior window reveals and at doors.

Note: For fireproof pitched roofs covered with slate or tile, apply corkboard and roofing, assuming the same provisions for nailing of finished roofing as would exist were corkboard not installed.



Fireproof Construction

THE PREVENTION OF CONDENSATION

Insulation the Simplest Method

In addition to the general need for insulation in all classes of buildings for the retention of heat in winter and the exclusion of heat in summer, *insulation as a preventive of condensation is a positive necessity in many industries.*

Condensation results from the contact of warm, humid air with a cold surface. Of the methods which may be employed to correct this condition, insulation will prove the simplest, most practical, and economical, since it in no way disturbs the humidity condition, which is frequently essential to the manufacturing process.

How Condensation Affects Industrial Processes

Condensation affects a great variety of industries in varying degrees, from a troublesome moisture film on ceilings and walls to an actual dripping of water in such quantities as to cause serious damage or nuisance.

In textile mills, it is necessary for the proper handling of yarns and fabrics to maintain a comparatively high degree of humidity (70° F. temperature and 75% humidity for example). This can be easily accomplished when the inside and outside temperatures are substantially the same. However, when the weather turns cold the cooling of the exterior walls and roof quickly lowers the temperature of their exposed surfaces inside the building to or below the dewpoint, causing the moisture of the air to condense upon them and resulting in damage to materials and machinery.

Condensation with its resultant evils is by no means limited to the textile industry, however. It must be reckoned with in any plant where it is necessary in a manufacturing process to maintain a high relative humidity or where the processes themselves expose large quantities of water to evaporation or give off steam or water vapor. In many industries so much steam and water are used that the humidity is almost constantly near the saturation point, needing only a slight temperature drop to induce condensation.

While incomplete, the following list will serve to indicate the types of buildings subject to and most seriously affected by condensation:

Bakeries	Printing and lithographing plants
Creameries	Swimming pools
Laundries	Textile mills—cotton, wool, silk
Lumber drying rooms and kilns	Tobacco factories
Packing houses—Killing rooms	Turkish baths
Paper mills	Twine mills
Powerhouses	



Armstrong's Corkboard Insulation Being Applied to Roof of Adler Planetarium, Chicago, Ill.



Armstrong's Corkboard Insulation Being Applied to Roof of Factory of Mars, Inc. (Nationally Known Candy Manufacturer), Chicago, Ill.

Causes of Condensation

Humidity—The capacity of air to absorb and hold moisture (water vapor) in suspension varies with its temperature. Warm air is capable of holding more moisture than cold air. When warm, humid air is cooled, its moisture capacity is lowered until a temperature is reached at which the air can no longer hold all of its moisture in suspension. This is known *as the point of saturation or dewpoint.* Any diminution of temperature to or below the saturation or dewpoint causes the moisture to condense. A familiar example is the "sweating" of a cold water pipe—when the moisture content is such that the temperature of the air in contact with the colder surface of the pipe is cooled to or below the dewpoint, its vapor condenses as water on the pipe surface.

Relative humidity is the term used to express the percentage of moisture in the air, 100% being saturation. The point of saturation varies with the temperature and means the percentage of moisture content of the air at a given temperature.

Surface Temperature—When considering the causes of condensation, it is the interior surface temperatures of exterior walls, roofs, or ceilings with which we are concerned. The air temperature in a room may be 70° F. or over, while if it is cold outside, the temperature of the inside surface of the exterior walls and roofs of the building may be many degrees lower and at or below the dewpoint.

Armstrong's Corkboard is an efficient insulator, and transmits heat so slowly that it retains practically all of the warmth on the high temperature side.

Armstrong's Corkboard Is the Ideal Insulation to Prevent Condensation

Armstrong's Corkboard combines those physical characteristics which are most essential to the permanent and practical solution of problems of condensation.

Considering the possible damages to materials caused by condensation of ceiling sweat, and that makeshift methods do not correct the real cause, it is obvious that it is true economy to install an adequate thickness of Armstrong's Corkboard Insulation. Its high insulating efficiency plus permanent resistance to moisture and the fact that an adequate thickness can be applied in a single layer, have made Corkboard the choice of many industries in which the condensation problem is acute.

How the Insulation Thickness Is Determined

The thickness of insulation required to prevent condensation under all conditions cannot be determined by haphazard methods or conjecture. Exact data on humidity, wall and roof construction, and maximum temperature difference are prime factors and must all be given consideration.

To eliminate the otherwise intricate calculations that would be required to determine effective thicknesses of Armstrong's Corkboard Insulation under varying conditions, there is included under this Section (see Armstrong Page 8) a special chart which will greatly simplify the method of selection. Through use of this chart the exact *resistance to heat flow* required to prevent condensation under all varying conditions may easily be determined for both wall and roof construction and this obviously is the determining factor for selection of the insulation thickness.

The thermal *resistance* of any material is the reciprocal of its transmission value. (The transmission through an uninsulated 8-in. thick concrete wall is .512. Its resistance is therefore $.5\frac{1}{12} = 1.95$.)

The resistance for uninsulated walls may be determined from the sections given on page 7, or if not given definitely, information may be obtained on the specific problem from the Engineering Department of the nearest branch office (see page 1).

To illustrate the method of using the chart the following typical example is given:

A manufacturing plant requires for its processes a relative humidity of 78% and an inside temperature of 70° F. in a locality where the minimum outside temperature is —10° F. The building is of reinforced concrete with 13-in. thick brick curtain walls and a 4-in. thick concrete roof slab covered with a standard built-up roofing. The essential data are therefore:

Inside temperature	70°	
Minimum outside temperature	-10°	
Maximum temperature difference	80°	(70°—(-10°))
Inside humidity	78%	

On the chart (page 8) locate the lower lefthand line 70° (room temperature); follow this upward vertically to its intersection with a diagonal which will represent 78% humidity; from this intersecting point project a line horizontally to the right to a point forming an intersection with a vertical line which will pass through 80° (maximum difference in temperature) on the lower right-hand line; this point of intersection gives the heat resistance necessary to prevent condensation, which in this case is 7.6.

Since the roof is the vital point of consideration for condensation a table is included on page 7 of roof construction resistances. Turning to this table it will be seen that the resistance of the roof construction of the building under consideration (a 4-in. concrete slab covered with standard roofing) is 1.76. To raise the total resistance to 7.6 it is necessary to add Armstrong's Corkboard in a thickness sufficient to add 5.84 (7.6 — 1.76 = 5.84). The resistance of 1 in. of Armstrong's Corkboard is 3.3 (1/.30=3.3), and the thickness required will be 1.75 in. (5.84÷3.3=1.75). The nearest standard thickness of Armstrong's Corkboard is 2 in. Or by further use of the table on page 7 the thickness of corkboard may be determined by merely choosing the resistance nearest that required (7.6), opposite the roof construction considered—this will be found to be 8.40 resistance, requiring 2 in. of Armstrong's Corkboard.

To determine the thickness of cork required on the walls to prevent condensation it is necessary to consider the heat transmission through a 13-in. uninsulated brick wall which is .278—its resistance is therefore 3.60 ($.2\frac{1}{7}8 = 3.60$). The resistance required is 7.6 and that lacking in the wall is 4.00 (7.6 — 3.60 = 4.0). The thickness of Armstrong's Corkboard required is therefore 1.2 in. (4.00÷3.3=1.21) and the thickness to use is 1 in., the nearest standard thickness.

Results Confirmed by Actual Examples

That solutions of condensation problems as illustrated in the typical example above are not academic or theoretical, but are actually workable and effective, is evidenced by actual results as disclosed by many authentic reports, which will gladly be furnished on request.



Applying Armstrong's Corkboard to Insulate the Roof of the Thomas Jefferson High School at Indianapolis, Ind.

ROOF RESISTANCE TABLE

Construction	Resistance factor*	Transmission in B.t.u. per sq. ft., per deg. F., temp. dif. per hour
2 -in. Concrete Slab and Roofing, no insulation	1.52	.66
2 -in. Concrete Slab and Roofing with 1 -in. Armstrong's Corkboard and Roofing	4.86	.21
2 -in. Concrete Slab and Roofing with 1½-in. Armstrong's Corkboard and Roofing	6.54	.15
2 -in. Concrete Slab and Roofing with 2 -in. Armstrong's Corkboard and Roofing	8.19	.12
2 -in. Concrete Slab and Roofing with 3 -in. Armstrong's Corkboard and Roofing	11.52	.09
2 -in. Concrete Slab and Roofing with 4 -in. Armstrong's Corkboard and Roofing	14.86	.07
3 -in. Concrete Slab and Roofing, no insulation	1.64	.61
3 -in. Concrete Slab and Roofing with 1 -in. Armstrong's Corkboard and Roofing	4.97	.20
3 -in. Concrete Slab and Roofing with 1½-in. Armstrong's Corkboard and Roofing	6.62	.15
3 -in. Concrete Slab and Roofing with 2 -in. Armstrong's Corkboard and Roofing	8.34	.12
3 -in. Concrete Slab and Roofing with 3 -in. Armstrong's Corkboard and Roofing	11.67	.09
3 -in. Concrete Slab and Roofing with 4 -in. Armstrong's Corkboard and Roofing	15.00	.07
4 -in. Concrete Slab and Roofing, no insulation	1.76	.57
4 -in. Concrete Slab and Roofing with 1 -in. Armstrong's Corkboard and Roofing	5.10	.20
4 -in. Concrete Slab and Roofing with 1½-in. Armstrong's Corkboard and Roofing	6.75	.15
4 -in. Concrete Slab and Roofing with 2 -in. Armstrong's Corkboard and Roofing	8.40	.12
4 -in. Concrete Slab and Roofing with 3 -in. Armstrong's Corkboard and Roofing	11.73	.09
4 -in. Concrete Slab and Roofing with 4 -in. Armstrong's Corkboard and Roofing	15.07	.07
6 -in. Concrete Slab and Roofing, no insulation	2.00	.50
6 -in. Concrete Slab and Roofing with 1 -in. Armstrong's Corkboard and Roofing	5.32	.19
6 -in. Concrete Slab and Roofing with 1½-in. Armstrong's Corkboard and Roofing	6.99	.14
6 -in. Concrete Slab and Roofing with 2 -in. Armstrong's Corkboard and Roofing	8.68	.12
6 -in. Concrete Slab and Roofing with 3 -in. Armstrong's Corkboard and Roofing	12.00	.08
6 -in. Concrete Slab and Roofing with 4 -in. Armstrong's Corkboard and Roofing	15.35	.06
1¾-in. Yellow Pine and Roofing, no insulation	2.90	.34
1¾-in. Yellow Pine and Roofing with 1 -in. Armstrong's Corkboard and Roofing	6.25	.16
1¾-in. Yellow Pine and Roofing with 1½-in. Armstrong's Corkboard and Roofing	7.93	.13
1¾-in. Yellow Pine and Roofing with 2 -in. Armstrong's Corkboard and Roofing	9.51	.10
1¾-in. Yellow Pine and Roofing with 3 -in. Armstrong's Corkboard and Roofing	12.84	.08
1¾-in. Ye low Pine and Roofing with 4 -in. Armstrong's Corkboard and Roofing	16.17	.06
2¾-in. Yellow Pine and Roofing, no insulation	3.91	.26
2¾-in. Yellow Pine and Roofing with 1 -in. Armstrong's Corkboard and Roofing	7.25	.14
2¾-in. Yellow Pine and Roofing with 1½-in. Armstrong's Corkboard and Roofing	8.93	.12
2¾-in. Yellow Pine and Roofing with 2 -in. Armstrong's Corkboard and Roofing	10.52	.10
2¾-in. Yellow Pine and Roofing with 3 -in. Armstrong's Corkboard and Roofing	13.85	.07
2¾-in. Yellow Pine and Roofing with 4 -in. Armstrong's Corkboard and Roofing	17.19	.06
Sheet Steel Deck and Roofing, no insulation	1.28	.78
Sheet Steel Deck and Roofing with 1 -in. Armstrong's Corkboard and Roofing	4.61	.22
Sheet Steel Deck and Roofing with 1½-in. Armstrong's Corkboard and Roofing	6.25	.16
Sheet Steel Deck and Roofing with 2 -in. Armstrong's Corkboard and Roofing	7.94	.13
Sheet Steel Deck and Roofing with 3 -in. Armstrong's Corkboard and Roofing	11.27	.09
Sheet Steel Deck and Roofing with 4 -in. Armstrong's Corkboard and Roofing	14.61	.08
4 -in. Hollow Tile, ⅝-in. Roofing, no insulation	3.00	.33
4 -in. Hollow Tile, ⅝-in. Roofing with 1 -in. Armstrong's Corkboard and Roofing	6.00	.17
4 -in. Hollow Tile, ⅝-in. Roofing with 1½-in. Armstrong's Corkboard and Roofing	7.67	.13
4 -in. Hollow Tile, ⅝-in. Roofing with 2 -in. Armstrong's Corkboard and Roofing	9.34	.11
4 -in. Hollow Tile, ⅝-in. Roofing with 3 -in. Armstrong's Corkboard and Roofing	12.67	.08
4 -in. Hollow Tile, ⅝-in. Roofing with 4 -in. Armstrong's Corkboard and Roofing	16.00	.06
6 -in. Hollow Tile, ⅝-in. Roofing, no insulation	3.47	.29
6 -in. Hollow Tile, ⅝-in. Roofing with 1 -in. Armstrong's Corkboard and Roofing	6.80	.15
6 -in. Hollow Tile, ⅝-in. Roofing with 1½-in. Armstrong's Corkboard and Roofing	8.47	.11
6 -in. Hollow Tile, ⅝-in. Roofing with 2 -in. Armstrong's Corkboard and Roofing	10.13	.10
6 -in. Hollow Tile, ⅝-in. Roofing with 3 -in. Armstrong's Corkboard and Roofing	13.47	.08
6 -in. Hollow Tile, ⅝-in. Roofing with 4 -in. Armstrong's Corkboard and Roofing	16.80	.06

*Total resistance is the reciprocal of transmission.

INSTRUCTIONS FOR USE OF ROOF RESISTANCE CHART

For determining the thickness of Armstrong's Corkboard necessary to prevent condensation

This chart, in conjunction with the roof resistance table, affords a simple means of determining the thickness of Armstrong's Corkboard required in addition to the structure of the roof itself to give the roof resistance to the transmission of heat that will prevent condensation. It provides for all requisite factors. When these have been established, their relations can be quickly determined on the chart and the final point is the factor sought.

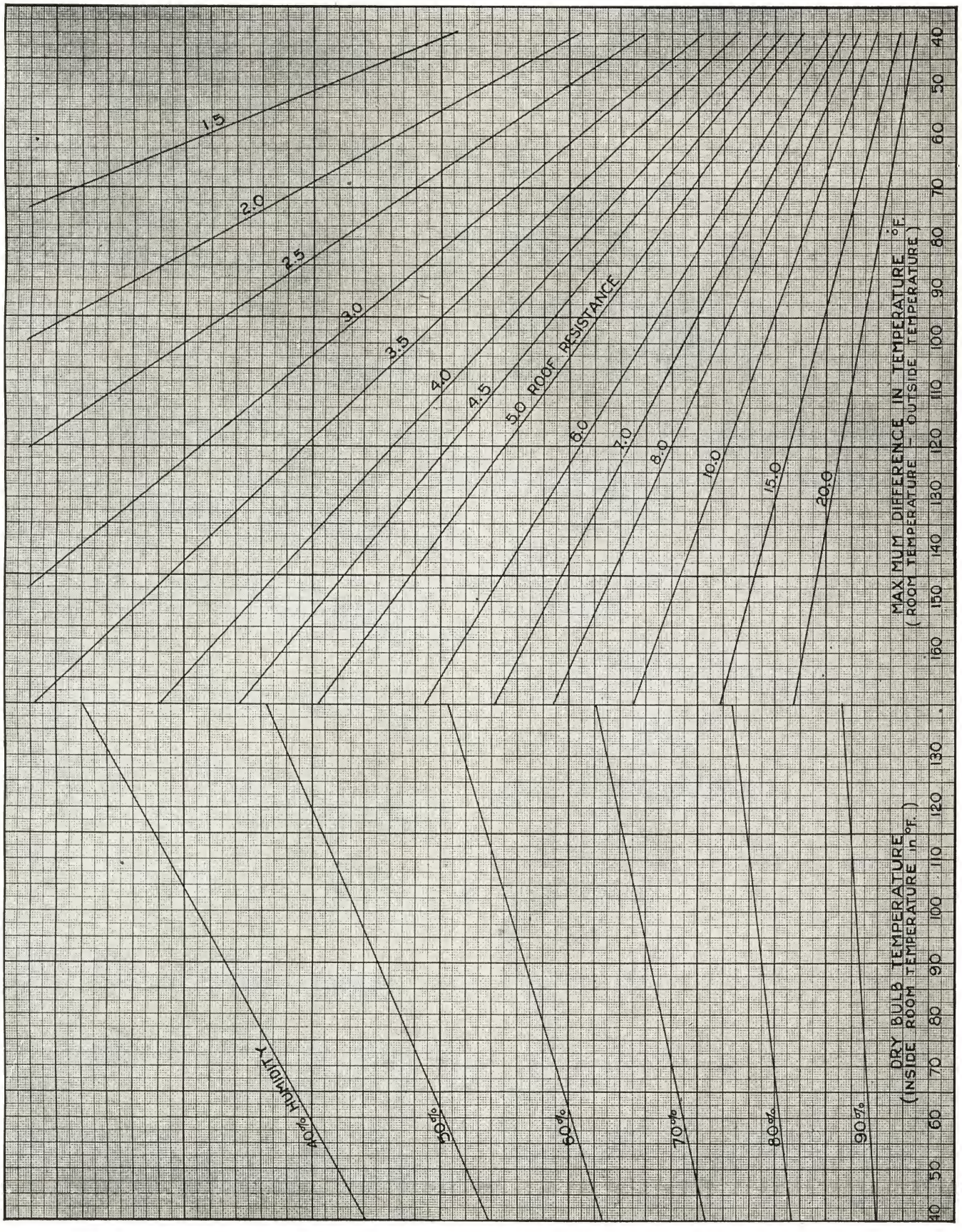
Method

First, locate at the bottom, left, of the chart the inside room temperature in degrees Fahrenheit. Follow upward until this line intersects the line of humidity percentage. From the point of intersection follow the horizontal line to the right to its intersection with the line of maximum temperature difference. The point of intersection is then read as the roof resistance required for the total roof structure including insulation. Reference is then made to the Roof Resistance Table for the construction and insulation.

For a specific working out of this operation, see previous page.

This chart may also be used in a similar manner for determining the thickness of Armstrong's Corkboard required for walls. The roof resistance table does not, however, include wall construction. Similar data for this will be supplied on request or the thickness may be determined as suggested in the typical example given on previous page.

ROOF RESISTANCE CHART



MASTER SPECIFICATIONS

for the Installation of Armstrong's Corkboard Insulation

(for Other Than Cold Storage Purposes)

PRELIMINARY PROVISIONS

Note: *That Armstrong's Corkboard Insulation may be installed with the greatest ease and economy of labor, the following suggestive provisions should be included under other specification headings where and when they apply.*

Carpentry Work

Framing—Studs, joints, and rafters shall, where possible, be framed to space 16 in. on center to fit the 32-in. length of corkboard sheet. Spacing of 12 or 18 in. on center will fit the 36-in. sheet. Where conditions require spacing other than 12, 16, and 18 in., 2x4-in. pieces shall be cut in between and at right angles to the framing members, spaced 18 in. on center to fit the 12x36-in. corkboard sheets applied parallel with the main framing members.

Rough Grounds—Where corkboard is applied directly against the interior of masonry walls in a ½-in. backing of portland cement mortar, rough grounds shall first be installed to form nailing base for finish grounds for plaster and trim. (See detail Armstrong Page 4.) Grounds shall be of sufficient thickness to finish flush with the exposed corkboard surface and shall be securely attached in a manner best suited to the type and kind of masonry.

Nails—Wherever (except where rough grounds are installed) finish grounds or furring strips are required over corkboard, these shall be secured with casing or common nails of sufficient length to pass through the corkboard and penetrate the wood beneath the corkboard at least 1 in., the final hammer blow to countersink beneath the corkboard surface.

Finish Grounds—Furnish and set accurately ½-in. thick wood plaster grounds to form nailing for all interior trim. In frame construction grounds shall be secured with long nails to wood base beneath the corkboard. In masonry construction, finish grounds shall be secured in the usual manner to the exposed face of rough grounds.

Waterproof Paper—Where corkboard is installed on the exterior of frame walls or over pitched roofs under shingles, slate, or tile, the corkboard shall be covered as soon as laid with heavy waterproof building paper (same quality and weight as customarily used over sheathing and roof boards) well lapped at joints and secured to corkboard with large headed galvanized wire felt nails.

* ***Note:*** *Omit paper if magnesite stucco is used.*

Wall Furring Strips—Where corkboard is applied on the exterior of frame buildings over sheathing, furnish and apply 1x2-in. furring strips applied over waterproof paper spaced to receive the nails for exterior wall finish (metal lath and portland cement stucco—wood siding—shingles and all exterior trim, etc.). Furring strips shall be thoroughly secured with nails to the wood beneath the corkboard.

Note: *Applicable particularly to alteration work.*

Note: *Omit paper if magnesite stucco is used.*

Roof Furring Strips—Where corkboard is applied on the exterior of frame buildings over roof boarding under shingles, slate, or tile, lay lath, tacked to the corkboard over waterproof paper, parallel with and centering over each rafter (approximately 16 in. on center). Over and at right angles to the laths (and rafters), lay 1x2-in. furring strips accurately spaced to take the nails of the finished roofing (shingles, slate, or tile) and secured with nails passing through the lath and corkboard and into the wood beneath. Secure boarding over corkboard at eaves, valleys, ridges, etc., to take metal flashing, gutter aprons, valley linings, ridges, etc., as may be required.

Note: *Applicable particularly to alteration work.*

Note: *May be used over fireproof construction.*

Door and Window Frames—Door and window frames shall be so designed for frame construction, that width of pulley stiles, jambs, etc., shall fit the wall thickness necessitated by the added corkboard thickness.

Masonry Work

Metal Wall Plugs—Where rough grounds are best secured by nails driven into metal wall plugs, these shall be accurately spaced and built into the masonry work.

Concrete Forms—Where corkboard insulation is laid in and on floor, ceiling, and roof slab forms, the contractor for the reinforced concrete forms shall construct these to allow for the lining of corkboard of thickness specified.

Roofing

Laying—The first layer of felt over the corkboard to be laid in asphalt or pitch, using 45 to 50 lbs. per square. Roofing contractor to completely cover all insulation laid in one day

Built-up Roofing—Any type of built-up roofing may be applied directly over the corkboard surface under the same specification adapted to its application over a concrete or similar fireproof roof surface.

Shingles, Slate, or Tile—Shingles, slate, or tile shall be applied in the usual manner, except that they shall be attached to furring strips.

Plastering

Note: *Armstrong's Corkboard is an excellent plaster base. No lath is required over corkboard on walls or ceiling.*

Interior Plastering—Any standard type of interior plaster may be applied directly to the corkboard under the same specification as would be required on masonry, gypsum, or clay tile. Interior plaster shall be laid to ½-in. grounds.

No interior plaster is required over corkboard in unfinished or unexposed portions of the building.

Exterior Stucco—Where corkboard is installed over exterior sheathing, portland cement stucco shall be applied on metal lath over furring strips or on self-centering metal lath secured with nails passing through corkboard into wood beneath.

Magnesite stucco may be applied directly to the corkboard surface where this is installed over exterior sheathing.

WORK INCLUDED

Note: *Include such clauses as apply to the particular work or construction.*

Exterior Walls—

Note: *Locate definitely. Where roof is insulated, wall insulation shall be carried through attic or roof space, if any, to roof slab or roof insulation. All dormer walls, skylight curbs, and similar openings through roofs shall be insulated.*

Ceilings—

Note: *Locate definitely. This applies particularly to top story ceilings (where roof is not insulated) and shall include soffits and cheek walls of stairways leading from top story to roof space or attic, ceiling breaks (where roof breaks through ceilings) and similar construction irregularities.*

Floors—

Note: *Locate definitely. This applies particularly to floors over unheated areas.*

Miscellaneous—

Note: *List any miscellaneous insulating not included above.*

MATERIALS

Note: *Include such clauses as apply to the particular work or construction.*

Insulation

Insulation shall be Armstrong's Corkboard manufactured by Armstrong Cork & Insulation Company, Lancaster, Pa.

Size and Thickness

Note: *Armstrong's Corkboard is made in boards—12 in. wide x 32 in. long and 12 in. wide x 36 in. long. Each size may be obtained in the following thicknesses: 1, 1½, 2, 3, 4 and 6 in. In frame construction where framing members are 16 in. on centers, use 12 x 32-in. size; where 12 or 18 in. on centers, use 12 x 36-in. size. In masonry construction or where insulation is applied over flat frame or concrete roof surfaces use 12 x 36-in. size.*

Wall Insulation—Insulation for walls shall be 12x.. in. (give size) and .. in. thick (give thickness).

Note: Under average conditions, 1½-in. thickness is recommended.

Roof Insulation—Insulation for roofs shall be 12x.. in. (give size) and .. in. thick (give thickness).

Note: Under average conditions, 1½ or 2-in. thickness is recommended.

Ceiling Insulation—Insulation for ceilings shall be 12x.. in. (give size) and .. in. thick (give thickness).

Note: Under average conditions, 1½ or 2-in. thickness is recommended.

Miscellaneous—

Note: Give size and thickness of any miscellaneous insulation required.

Nails

Nails for attaching corkboard insulation in frame construction shall be common galvanized or casing wire nails of sufficient length to pass through the corkboard and penetrate the wood 1 in. (2 in. for 1-in. corkboard, 2½ in. for 1½-in. corkboard, 3 in. for 2-in. corkboard, etc.). Countersink with extra blow of hammer.

Portland Cement Mortar

Note: For corkboard backing where insulation is applied to masonry.

Portland Cement—Cement shall be "American Portland" fulfilling the requirements of the current specification for portland cement of the American Society for Testing Materials.

Sand—Sand shall be composed of grains graded from coarse to fine, clean and free from loam, dust, and dirt and passing a satisfactory colorimetric test.

Mixtures—

(1) ***For Masonry Wall Insulation***—Mortar for backing shall be mixed in the proportions of 1 part of portland cement to 3 parts of sand.

(2) ***For Underside of Fireproof Roofs, Floors, and Ceilings***—Mortar for backing shall be mixed in the proportions of 1 part of portland cement to 2 parts of sand.

Note: Corkboard may be applied to suspended metal lath ceilings in this backing—on special applications consult nearest Armstrong office.

INSTALLATION

Note: Include such clauses as apply to the particular work or construction.

General

The corkboard insulation shall be applied in a *continuous* sheet covering completely the surfaces to be insulated.

Corkboard shall be laid with all joints driven tight, each successive course breaking joints over those below.

Corkboard shall be accurately sawed with a sharp saw to fit snugly into all spaces not covered by the full sized sheet.

The length of the corkboard sheets shall run at right angles to the structural wood members with end joints centering over the studs, joists, or rafters.

Note: For frame construction, standard spacing.

The length of the corkboard sheets shall run parallel with the wood structural members with end joints centering over special nailing strips spaced 18 in. on centers.

Note: For frame construction, not standard spacing.

Where corkboard is applied to masonry walls or under fireproof ceiling or roof construction in a backing of portland cement mortar and forms the plaster base, the surfaces of the corkboard shall be carefully set level, plumb, true and allowing for a uniform ½-in. plaster thickness.

Special care shall be exercised to install corkboard insulation tight around all window and door openings in exterior walls.

All masonry surfaces to be insulated shall be thoroughly cleaned of all loose materials and dirt.

Where roofs are insulated over the roof construction, they shall be free from moisture and clean.

Frame Construction

Corkboard insulation of size and thickness previously specified shall be installed where required as follows:

On Inside Face of Studs, Joists, or Rafters—Corkboard shall be attached to the wood structural members with 9 nails to each sheet (3 to each bearing).

Under Mill Construction Floors, Ceilings, or Roofs—Carefully cut and fit the corkboard *tight* between structural members. Sheets shall run at right angles to planking. Corkboard shall be attached to the underside of mill construction planking with 9 nails to each sheet.

Over Sheathing on Outside of Stud Walls—Corkboard shall be attached over the wood sheathing with 6 nails to each sheet (2 to each bearing). Cover with waterproof paper as soon as laid.

Note: Use 9 nails to each sheet (3 to each bearing) and omit paper if magnesite stucco is used.

Over Roof Boarding Under Shingles, Slate, or Tile—Corkboard shall be attached over roof boarding with 6 nails to each sheet (2 to each bearing). Cover with waterproof paper or felt as soon as laid.

Over Wood Decks Under Built-up Roofing—Corkboard shall be attached over roof boarding (or planking) with 6 nails to each sheet. Carry the corkboard tight against all parapets, curbs, and similar walls. Cover with the finished roofing as soon as laid.

Masonry and Fireproof Construction

Corkboard insulation of size and thickness previously specified shall be installed where required as follows:

On Inside Face of Masonry Walls—Corkboard shall be attached to the masonry surface in a ½-in. backing of portland cement mortar.

Over Fireproof Roofs Under Slate, Tile, or Metal—Corkboard shall be attached to (sleepers, grounds, or roof surface?) with 6 nails to each sheet (2 to each bearing). Cover with waterproof paper or felt as soon as laid.

Note: It is assumed that provisions have been made to receive nails for attaching finished roofing either by installing wood sleepers to receive cross furring, or a nailable concrete or other similar surface.

Over Fireproof Roof Slabs, Under Built-up Roofing on Flat Surfaces—The roof surface shall first be flooded with hot pitch or asphalt.

The corkboard shall be laid in the hot roofing compound, shoved into place so as to fill the end and side joints with pitch or asphalt in one operation. Cover with the finished roofing as soon as laid.

Over Fireproof Roofs, Under Built-up Roofing on Inclined Surfaces—The inclined surface shall first be mopped with hot pitch or asphalt.

The corkboard sheets shall be dipped in hot pitch or asphalt on the surface to be laid next the roof and on one end and side joint and shoved into place on the roof surface previously covered with the hot roofing compound. Cover with the finished roofing as soon as laid.

Under Fireproof Roof, Floor, or Ceiling Slabs—The concrete surfaces to be insulated shall be thoroughly chipped or picked to facilitate bond. Corkboard shall be attached to the masonry surface in a ½-in. backing of portland cement mortar. Shore and brace the corkboard in position for 48 hours until the backing has set up.

Note: Applicable to existing buildings.

Note: Corkboard may be installed as here specified to metal lath suspended ceilings which have first been scratch-coated with portland cement mortar.

Under Reinforced Concrete, Fireproof Roof, Floor or Ceiling Slabs—The forms for the slabs, beams, girders, etc., have been constructed to allow for a lining of corkboard. Clean forms of all loose materials. Before the reinforcing metal and concrete are placed, line the forms with a continuous lining of corkboard. Into the corkboard, drive obliquely galvanized wire nails, 2 to the square foot, which shall protrude 1½ in. to form ties for anchoring the corkboard to the concrete when poured.

Note: Applicable to the new work.

CORK IMPORT CORPORATION

Pure Baked Corkboard and Cork Pipe Covering

345-349 West 40th Street
NEW YORK, N. Y.

BRANCH OFFICES AND DISTRIBUTERS IN PRINCIPAL CITIES

Warehouse stocks at New York, Newark, Houston, New Orleans, San Francisco, Los Angeles, Seattle, St. Louis, Chicago

Products

NOVOID CORKBOARD INSULATION—for all cold storage rooms, refrigerators, and walls and roofs of all kinds of buildings.

STONEWALL PLASTIC FINISH—a finishing surface for Novoid Corkboard.

NOVOID CORK PIPE COVERING—for all cold lines, tanks and refrigerated drinking water systems.

NOVOID CORK MACHINERY ISOLATION—for reducing the noise and vibration of moving machinery.

Novoid Corkboard

Made in the largest cork manufacturing plants in Spain, the home of cork, Novoid Corkboard is a high grade product with maximum insulating value and structural qualities.



Double Width Sheets (24x36) of Novoid Corkboard Are Especially Suitable for Insulating Roofs and Floors

They save labor in laying and reduce the number of joints 50%

In the making of champagne and fine tapered corks, cork discs for crown caps, cork lined helmets, cork paper for cigarette tips, and cork specialties, only the choices grades of cork bark are used.

The cork waste is granulated and sifted to remove dust and fine particles. Then it is screened and sorted according to the size of the granules and the different sizes of granules are mixed in the proper proportion to produce a close structured board—small granules between large ones—which eliminate voids in the finished material and makes for greater moisture-resistance and better all around insulation. The cork waste is compressed in moulds, and then baked by a slow and careful process in specially constructed ovens. In the baking process the natural resin binds the cork granules into strong, solid sheets that have *no voids or air spaces between granules.* No foreign binder is used.

Novoid Corkboard is entirely free from hardback and "green centers." Green or improperly baked centers are disastrous to any insulating job *after* the corkboard has been installed for some time. A surface inspection will not reveal "green centers" so, to guard against them, Novoid Corkboard is baked in special moulds 25x37 ins. in size. After removal from the mould, each sheet is split and then finished full standard 12x36 ins.

As a result, the center of each sheet is open to thorough inspection by the purchaser and is high quality verified *before* it is installed. Corners and edges are cut true and square, insuring tight joints and reducing to a minimum the labor of erection.



Apple Storage of the Winchester Cold Storage Co., Winchester, Va.
Insulated with Novoid Corkboard



Six-story Factory Building of American Tobacco Co., Richmond, Va.
Insulated with 2-in. thick Novoid Corkboard on walls and roof

Novoid Corkboard Roof Insulation

Used on roofs, Novoid Corkboard prevents the transmission of heat, making a building *warmer in winter* and *cooler in summer,* saving fuel and adding to the comfort of the building's occupants. *Novoid Corkboard is unaffected by moisture. It is fire retarding, and will not smolder.*

Double Width Novoid Corkboard

Novoid Corkboard in the 24x36-in. size is as easy to handle as the usual 12x36-in. sheets. Every board covers twice the area and there are only half as many joints between the sheets when laid. In this way the chance of joint leakage is reduced 50%.

Double width Novoid Corkboard provides permanent insulation that never warps, shrinks, or buckles, and makes an ideal base for roofing. Packed in handy cartons, these 24-in. sheets save time, are handled quickly, and go down with an appreciable saving in labor.

NOVOID CORKBOARD

Thickness, in.	Per carton						Gross wgt., lbs. per sq. ft.
	*Number of sheets		Sq. ft.	Bd. ft.	Cu. ft.	Gross wgt., lbs.	
	12x36 in.	24x36 in.					
1	24	12	72	72	6.23	72	1.00
1½	16	8	48	72	6.23	64	1.33
2	12	6	36	72	6.23	64	1.78
3	8	4	24	72	6.23	64	2.66
4	6	3	18	72	6.23	64	3.56

*One size packed to a carton.

Stonewall Plastic Finish

Stonewall Plastic Finish is a uniform easy working asphaltic plaster, thoroughly machine-mixed at the factory. It is applied cold as received, just like surface cement. It forms a smooth, one-piece, airtight and watertight finish that keeps corkboard dry and sound. It fills every crack and crevice and equalizes any unevenness.

Stonewall Plastic Finish is guaranteed to be waterproof, and not to crack, chip, bulge, run, or become brittle. It is odorless and non-inflammable.

Stonewall Plastic Finish can be washed with hot or cold water, or steam, without injury. It will not absorb odors. Therefore, it makes cold storage rooms absolutely sanitary.

If cut or cracked by accident Stonewall Plastic Finish can be skim coated or patched and such injuries completely healed. The new work bonds perfectly with the old.

Novoid Cork Pipe Covering

This companion product to Novoid Corkboard is made in three thicknesses; *Heavy Brine,* for temperatures below 0° F.; *Brine,* for temperatures from 0° F. to 25° F.; *Ice Water,* for temperatures above 25° F.

Novoid Cork Pipe Covering is used for covering all brine and ammonia lines, wherever located, and for insulating the ice water lines of refrigerated drinking water systems in hotels, office buildings, and factories. The accurately moulded, mineral rubber coated sections fit pipes tightly leaving no spaces in which moisture might accumulate, freeze and disrupt the insulation.

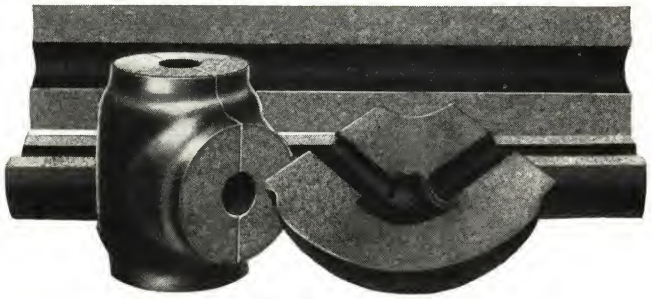
Novoid Cork Covering is made of pure cork. Its insulating efficiency is permanent as it will not absorb moisture.

For covering all fittings Novoid Cork Fitting Jackets



Novoid Cork Covering on the Refrigerated Lines in the Plant of Foremost Dairy Products, Inc., Charlotte, N. C.

are used. These cork jackets are moulded to fit closely so that no air spaces will exist between the fittings and the insulation.



Novoid Cork Covering and Fitting Jackets
Made in three thicknesses for all sizes of pipes and fittings in general use

For covering tanks we recommend the use of Novoid Cork Lagging.

Novoid Cork Machinery Isolation

Novoid Cork Machinery Isolation provides an economical and effective means of reducing the noise and vibration produced by fans, motors, pumps, engines, presses, and practically all other kinds of moving machinery.

Being made by baking under pressure a selected grade of granulated cork, properly applied, it will not absorb moisture and does not rot. Furthermore it will not harden or take a permanent set, but retains its resilience indefinitely.

Novoid Cork Machinery Isolation is made in three densities—Light, Medium and Heavy—which provide a proper material for use under practically all conditions of service. 12 ins. wide 36 ins. long, thicknesses 1, 1½, 2, 3, 4, 5 and 6 ins.

Literature and Samples

Bulletin 293—Novoid Corkboard Insulation. Sample on request.

Bulletin 292—Novoid Cork Covering. Sample on request.

Bulletin 289—Stonewall Plastic Finish. Sample on request.

CORK INSULATION CO., INC.

Manufacturers of, Engineers and Contractors for Corkboard Insulation for All Types of Building

GENERAL OFFICES
154 Nassau Street, NEW YORK, N. Y.

BRANCH OFFICES

BOSTON, MASS. *CHICAGO, ILL. LOS ANGELES, CAL. PHILADELPHIA, PA. SAN FRANCISCO, CAL. SEATTLE, WASH. BALTIMORE, MD. ST. LOUIS, MO. ST. PAUL, MINN.

IN CANADA: Cork Insulation Co. (Canada) Ltd., MONTREAL, QUE., VANCOUVER, B. C.

*Represented by Corinco Insulation Co., Inc.

Products

CORINCO CORKBOARD for the insulation of walls and roofs of practically every type of building; prevents condensation of moisture, retains inside temperature of building in winter and reduces heat in summer.

For Corinco Cork Pipe Covering for the insulation of all cold lines; refrigerated lines, drinking water systems, etc.; Corinco Cork Lagging for the insulation of extremely large pipe lines, brine coolers and cylindrical surfaces in general; Corinco Acoustical Corkboard for acoustical correction, noise prevention, or both, in all classes of buildings; Corinco Machinery Isolation for prevention of noise and vibration of machines; and Panel System of Marine Insulation for the insulation of holds and cold storage rooms of ships—see Manufacturers' Index.

The Company

The CORK INSULATION CO., INC. was organized in 1924 to provide a complete insulation service for architects, owners and builders. The Company manufactures its own cork products in modern factories located at Wilmington, Delaware and Algeciras, Spain. The management of the Company is composed of men of extensive experience with the uses, advantages and applications of cork, gained through the operation of large cold storage, shipping and packing enterprises.

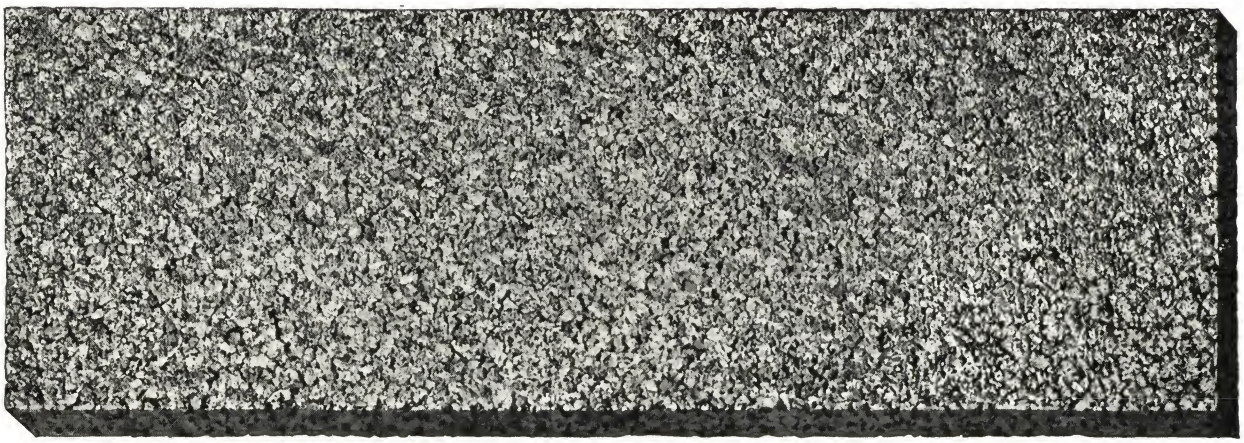
Staff engineers of CORK INSULATION CO., INC. are specialists in insulation and are ready to assist architects with plans and data without fee or obligation. The Company's service is complete, embracing manufacturing, engineering and construction—enabling you to place a job in one pair of hands representing years of experience and large financial responsibility.

Advantages of Corkboard as an Insulator

A microscope reveals that cork is made up of millions upon millions of tiny cells, each containing a minute quantity of dead air, which scientists have found to be the best insulation against the passage of heat. Around each cell is a coating of natural resin which imprisons the air within the cell, binds the various cells together and serves to make cork waterproof, a highly important feature in an insulator.

Corinco Corkboard consists of granulated cork, which is placed in a mould, compressed and baked until the natural resin in the cork melts and binds the mass together into a single sheet. No artificial binder is used.

Briefly, the advantages of Corinco Corkboard are: First, it is an excellent non-conductor of heat; second, it resists moisture and, properly erected, will give service



Corinco Corkboard, Size 12 In. x 36 In. (Furnished in 1 In., 1½ In., 2 In., 3 In. and 4 In. Thicknesses)

indefinitely; third, it is sanitary and odorless, and will not harbor vermin or germs; fourth, it is compact and takes up a minimum of space; fifth, it is structurally strong, and can be cut, sawed or nailed like lumber; sixth, it is slow-burning and takes a low insurance rate; seventh, it is extremely light, so that it can be used in old construction without materially increasing floor loads; eighth, it is reasonable in cost and properly applied will prove highly profitable as an investment.



A Typical Corinco Corkboard Roof Insulation

Roofs Insulated with Corinco Corkboard Save Heat and Prevent Condensation

A roof insulated with Corinco Corkboard is a sound investment and pays ample dividends both in money and protection.

The important consideration in connection with roof construction is the matter of heat transmission. An uninsulated roof deck allows a great loss of heat.

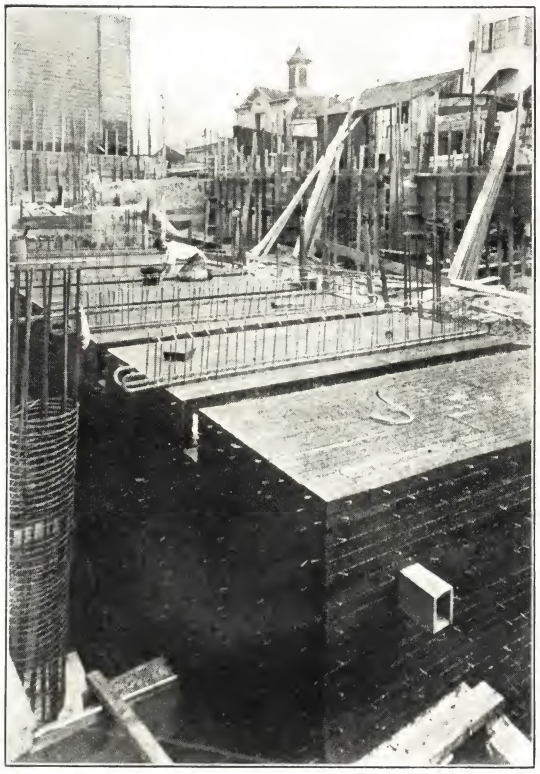
It has been estimated that in the normal heating season of about two hundred days, with an average difference of 25 to 30 degrees in temperature, a 15,000-ft. roof will waste in heat the equivalent of 50 tons of coal.

The addition of a course of 2-in. Corinco Corkboard would cut this loss in half, at a conservative estimate, saving 25 to 30 tons of coal in a season.

In erecting a new building, this means that a smaller heating plant can be used if Corinco Corkboard is placed on the roof.

Naturally, if a roof will retain inside heat, it will repel outside heat, which means that a building insulated with Corinco Corkboard will be more comfortable and livable during the summer months. This is an important factor in maintaining peak efficiency throughout the year.

One of the most difficult problems with which certain factory owners have to contend is the matter of moisture condensing on the ceiling and dripping down. This is because the ceiling is cold. Corinco Corkboard, applied on the roof, will keep the ceiling above the dew-point, and hence prevent condensation. In view of the fact that moisture not only drops and damages goods or equipment below, but damages plaster and hastens depreciation, a layer of Corinco Corkboard is well worth its small cost.



Laying Corinco Corkboard on the Walls and Ceilings of a Storage Vault of the Cereal Products Co., San Francisco, Calif.

Engineering and Erection Service

Cork Insulation Co., Inc. maintains a complete engineering and erection service in connection with each of its branches and we will gladly contract to handle a job complete when desired.

Also bear in mind that our engineers are ready to supply complete data, plans and estimates without obligation.

Catalogue and Samples

In our catalogue, fully illustrated, complete information on this Company's products and their uses and applications is given. It will be sent upon request together with samples of Corinco Corkboard.

Address the nearest branch office.

UNITED CORK COMPANIES

Insulation Against Heat and Cold—Isolation Against Noise and Vibration

Grant Avenue, LYNDHURST, N. J.

SALES OFFICES

ATLANTA, GA., 1323 Healey Building
BALTIMORE, MD., 801 Whitaker Building
BOSTON, MASS., 45 Commercial Wharf
BUFFALO, N. Y., 254 Court Street
CHICAGO, ILL., 1151 Eddy Street
CINCINNATI, OHIO, Cincinnati Terminal Warehouse Building
CLEVELAND, OHIO, 1200 W. Ninth Street
HARTFORD, CONN., 528 Capitol Building
NEW YORK, N. Y., 50 Church Street
PHILADELPHIA, PA., 600 So. Delaware Avenue

Products and Service

UNITED'S 100% PURE CORKBOARD, GRANULATED and RE-GRANULATED CORK: for the insulation of cold storage and freezing rooms, tanks, roofs, residences, etc., also for sound-proofing.

UNITED'S MACHINERY ISOLATION CORKBOARD, for eliminating vibrations and reducing noise of machinery.

UNITED'S CORK COVERING, for brine or ammonia pipe lines, ice or cold water lines, and special cold lines.

UNITED'S CORK LAGGING for cylindrical tanks.

UNITED'S CORK BRICK FLOORS, for machine shops, factories, etc.

UNITED'S CORK TILE FLOORS.

UNITED'S CORK BULLETIN BOARD.

Designing, furnishing and installing cork insulation and isolation is our specialty. We have a staff of expert engineers and field erectors at every one of our sales offices.

TRADE-MARK

Catalogues, Samples and Service

Catalogues and samples of any of our materials will gladly be sent on request to any one interested.

Branch offices in principal cities assure satisfactory service in the installation of any of our products.

United's 100% Pure Corkboard Insulation



United's Corkboard is 100% pure, screened, granulated cork compressed into moulds to the thickness desired and then baked for several hours at a moderate temperature. This process liquefies the natural waterproof gum of the cork, which acts as a binder and protects the cork from moisture. No other binder is used.

The heat conductivity of United's 100% Pure Corkboard averages 0.3 B.t.u. per sq. ft. per degree difference in temperature per hour per inch thickness.

United's 100% Pure Corkboard is adaptable to all kinds of construction. It has great structural strength and makes a permanent insulator. It is impervious to moisture, will not warp, rot, mold or deteriorate in any way. Tested and officially approved by the National Board of Fire Underwriters.

Size of boards 12x36 ins. from 1 to 4 ins. thick. Weight .75 lb. per ft. board measure.

Send for our General Catalogue "Facts and Figures on Insulation."

Roof Insulation—The elimination of heat loss through roofs as well as the prevention of condensation on the underside of roof slabs is of utmost importance in practically every building erected. The roof of every office, commercial or industrial building should be insulated. The use of United's 100% Pure Corkboard for this purpose conserves fuel by eliminating heat loss; keeps the upper floors cooler in summer by preventing the penetration of the sun's intense heat; eliminates condensation of moisture on the underside of ceilings in plants where there is excessive humidity.

The Engineering Department of the Company will gladly co-operate with architects and engineers in designing roof insulation to meet specific requirements. Inquiries will receive prompt attention.

Natural Granulated Cork

Natural granulated cork is furnished in two sizes, known as 8/20 C. S. and 12/20 C. S., meaning that they are sifted through screens of 8 or 12 meshes and over screens of 20 meshes to the inch.

Natural granulated cork is a superior filling because the cork is odorless, non-absorbent, does not support combustion, is not subject to decay and has a very low heat conductivity.

Re-granulated Cork

This is a by-product obtained in the manufacture of corkboard. It is more waterproof and its insulation value is higher than that of granulated natural cork.

The grades generally used are known as "Fine," from dust up to $\frac{3}{32}$-in. granules; "Coarse," from $\frac{1}{8}$ to $\frac{5}{8}$-in. granules; and "Mixed," a combination of both.

For general use the Fine or Mixed is recommended, but where dust would prove objectionable the Coarse is preferable.

It is mostly used for filling around tanks or where cork in board form would be unsuitable.

APPROXIMATE WEIGHT PER CUBIC FOOT OF GRANULATED AND RE-GRANULATED CORK

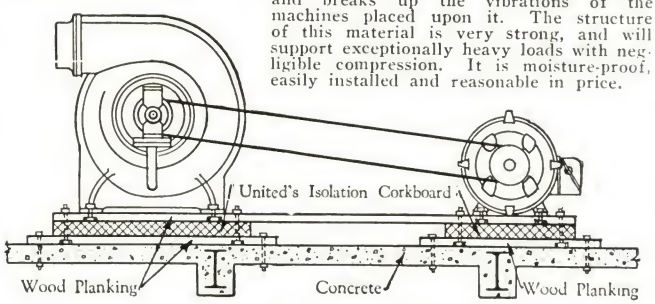
Granulated Cork		Re-granulated Cork	
8/20 C.S.	12/20 C.S.	Fine and Mixed	Coarse
13 lb.	15 lb.	7 lb.	6½ lb.

United's Machinery Isolation Corkboard

Every moving piece of machinery sets up vibrations. In the average manufacturing plant it is also the principal source of noise. Vibrations and noise have proved to be a direct cause of fatigue, accidents, and carelessness. They diminish the efficiency and output of employees. Vibrations and noise should be eliminated whenever possible.

Pumps, fans, compressors, generators, motors, steam hammers, lathes, presses, etc., produce vibration noises that are transmitted to and frequently amplified by the foundations or floors upon which machines stand. They should be isolated from foundation or floor with a material capable of absorbing their vibrations.

United's Machinery Isolation Corkboard, because of its natural elasticity and vibration absorption qualities, is a logical material for this purpose. It consists of thousands of granules of cork. Each granule is a mass of small, sealed cells containing trapped air that absorbs and breaks up the vibrations of the machines placed upon it. The structure of this material is very strong, and will support exceptionally heavy loads with negligible compression. It is moisture-proof, easily installed and reasonable in price.



United's Cork Covering

United's Cork Covering is a most efficient and economical insulation for brine lines, ammonia lines, ice or cold water lines, and special cold lines of every kind. It is manufactured of pure, clean, granulated cork, compressed and moulded in sectional forms to fit the various sizes of pipe. The fitting covers are moulded to conform to the shape and size of the various fittings in ordinary use. It is finished with a coating of mineral rubber that provides a waterproof covering for all lines and fittings. The insulation is applied with waterproof cement on all joints, which further assures covering that is impervious to moisture.

United's Cork Covering Provides—(1) Maximum insulating efficiency. (2) Permanent and durable insulation. (3) Neat, clean and sanitary covering. (4) A saving of at least 80% of the refrigeration lost from bare pipes. (5) An easily applied covering at a moderate cost.

Thicknesses—Standard Brine thickness: Designed for brine and ammonia gas lines.

Ice Water thickness: For drinking water lines, cold water lines, etc.

Special Heavy Brine thickness: For lines where the temperature runs below 0° F.

United's Cork Lagging for Cylindrical Tanks—United's Cork Lagging and Discs beveled to any desired radius without finish, coated one side, or coated both sides with mineral rubber finish, are furnished for covering cylindrical brine tanks, ammonia accumulators, ice water tanks, filters, etc.

United's Cork Brick Floors, Cork Tile and Bulletin Boards

United's Cork Bricks—Consist of a mixture of finely ground cork and specially prepared asphalt binder. They make a floor which is warm and comfortable. They do not rot, chip or splinter, and will sustain exceptionally heavy loads. They resist wear indefinitely and are especially adaptable for floors of machineshops, industrial plants, factories, etc.—in fact, wherever heavy duty floors are required. They are never slippery, wet or dry. Size 1¾x4x9 in. Laid flat, four will cover a square foot. Weight, approximately, 2½ lb. each.

United's Cork Tile—Manufactured in three shades of brown and in many sizes. It is either $\frac{1}{8}$ or ½ in. thick as may be desired, and it is a quiet, dignified, and wearproof floor.

United's Cork Bulletin Boards—¼ in. thick unmounted; ½ in. thick mounted, and in various sizes up to 4x6 ft.



JOINTITE

CORK PRODUCTS

MUNDET CORK CORP.

NEW YORK, N. Y.

Jointite TRADE MARK

Index of Products

MUNDET "JOINTITE" CORKBOARD

For the Prevention of Heat Transmission in cold storage plants, rooms, offices and miscellaneous buildings generally

PAGES 2 *to* 7

For the Prevention of Moisture Condensation on roofs and walls

PAGES 10 *to* 15

MUNDET "JOINTITE" MOULDED CORK PIPE COVERING

For the Insulation of all Cold Lines

PAGES 7 *to* 9

MUNDET NATURAL CORK ISOLATION MATS AND MACHINERY ISOLATION CORK

For Eliminating Sound and Vibration under moving machinery

PAGES 16 *and* 17

The following Mundet Products are shown in other sections of SWEET'S CATALOGUE. See Manufacturers' Index

MUNDET "JOINTITE" CORK TILE

For Flooring, in a variety of forms

MUNDET "JOINTITE" BULLETIN BOARD

Information on the Following Miscellaneous Specialties Furnished on Request

Corks, Gaskets, Washers, Textile Roll Covering, Bungs, Taps, Handles, Floats, Life Preservers, Insoles, Crowns, Buoys, Yacht Fenders, Cork Paper, Pen Holder Handles, Fishing Rod Handles and other Sundry Cork Materials

■

B 2271

Jointite TRADE MARK

CORK PRODUCTS

A COMPENDIUM OF INFORMATION ON THE USES OF CORK FOR INSULATION PURPOSES

including useful data, specifications, tables and charts for

REFRIGERATION
SOUNDPROOFING
HEAT PREVENTION
HEAT CONSERVATION
VIBRATION DEADENING
CONDENSATION PREVENTION

■

MUNDET CORK CORP.

450 Seventh Avenue, NEW YORK, N. Y.

Domestic Factories

HILLSIDE, N. J.
BROOKLYN, N. Y.

Foreign Factories

PORTUGAL—ALDEGALEGA, AMORA, MORA, PUERTE DE SOR, SEIXAL
TORONTO, CANADA; LONDON, ENGLAND; DJIDJELLI, ALGERIA

Branches

ATLANTA, GA.
BOSTON, MASS.
BUFFALO, N. Y.
CHICAGO, ILL.
CINCINNATI, OHIO
DETROIT, MICH.
HOUSTON, TEX.
KANSAS CITY, MO,
LOS ANGELES, CAL.
MEMPHIS, TENN.
NEW ORLEANS, LA.
PHILADELPHIA, PA.
ST. LOUIS, MO.
SAN FRANCISCO, CAL.
TULSA, OKLA.

Canada

MONTREAL, QUEBEC, MUNDET CORK AND INSULATION, LTD.
TORONTO, ONTARIO, MUNDET CORK AND INSULATION, LTD.
WINNIPEG, MANITOBA, MUNDET CORK AND INSULATION, LTD.

Great Britain

LONDON, ENGLAND, MUNDET CORK PRODUCTS, LTD.

Agents

CLEVELAND, OHIO, C. S. ROSS
DES MOINES, IOWA, JOHN KENNEDY
MINNEAPOLIS, MINN., INSULATION SALES CO.
PORTLAND, ORE., F. J. LEONARD
PORTLAND, ORE., PACIFIC ASBESTOS & SUPPLY CO.
SALT LAKE CITY, UTAH, L. A. ROSER
SEATTLE, WASH., PACIFIC ASBESTOS & SUPPLY CO.
UTICA, N. Y., GEORGE WEISENBERGER
VANCOUVER, B. C., CANADA, T. M. GRINDLEY COMPANY, LTD.

REFERENCES

Bakeries

Gordon Baking Co.*	
Ward Baking Co.*	
Hill Baking Co.	Jersey City, N. J.
Kroger Grocery & Baking Co.*	

Candy Factories

F. G. Shattuck Co. (Schrafft's)	New York, N. Y.
Reichardt Cocoa Corp.	New Brunswick, N. J.
Park & Tilford	New York, N. Y.
National Candy Co.*	
Planters Nut & Chocolate Co.	Suffolk, Va.

Cheese Factories

Kraft Phoenix Cheese Co.*

Clubs

Chicago Womans Club	Chicago, Ill.
Engineers Club	Boston, Mass.
Detroit Hockey Club	Detroit, Mich.
Union League Club	New York, N. Y.

Cold Storage Warehouses

Merchants Refrigerating Co.	Jersey City, N. J.
Great Atlantic & Pacific Tea Co.*	
Charles & Co.	New York, N. Y.
Hullman & Co.	Terre Haute, Ind.
Indiana Refrigerating Co.	Indianapolis, Ind.
Fly & Hobson	Memphis, Tenn.

Colleges

Yale University	New Haven, Conn.
Harvard University	Boston, Mass.
University of Pennsylvania	Philadelphia, Pa.
Temple University	Philadelphia, Pa.

Dairies

Borden Farms Products Co.*	
Sheffield Farms Co.*	
Beatrice Creameries	Detroit, Mich.
National Dairy Products Co.	Long Island City, N. Y.
H. B. Hood & Sons, Inc.	Charlestown, Mass.

Fish Storage Warehouses

N. J. Ice & Cold Storage Co.	Beach Haven Crest, N. J.
Bay State Fishing Co.	Boston, Mass.
General Seafoods Co.*	

Florists

General Florist Supply Co.	New York, N. Y.
Burton & Watson, Inc.	Philadelphia, Pa.
Tupelo Floral Co.	Tupelo, Miss.

Fur Storages

Revillon Freres	New York, N. Y.
L. Bamberger & Co.	Newark, N. J.

Government Work

U. S. Buildings in various cities

Hospitals

Physicians and Surgeons Hospital	Wilmington, Del.
Columbus Hospital	Chicago, Ill.
U. S. Government Hospitals*	
Faulkner Hospital	So. Boston, Mass.
Presbyterian Hospital	Newark, N. J.
New York State Hospitals*	
New York City Hospitals	New York, N. Y.

Hotels

Hotel Park Central	New York, N. Y.
Hotel St. George	Brooklyn, N. Y.
Hotel Majestic	Philadelphia, Pa.
Bryn Mawr Beach Hotel	Chicago, Ill.
Kenmore Hotel	Boston, Mass.
Jung Hotel	New Orleans, La.

Ice Cream Plants

Breyers Ice Cream Co.*	
F. G. Shattuck Co. (Schrafft's)	New York, N. Y.
Eskimo Pie Corp.	Brooklyn, N. Y.
Annheuser Busch Co.*	
Wieland Ice Cream Co.	Chicago, Ill.
Good Humor Ice Cream Co.	Detroit, Mich.

Ice Plants

Knickerbocker Ice Co.	New York, N. Y.
Rubel Ice Corp.	New York, N. Y.
Kansas Power Co.	Dodge City, Kan.
Tri City Ice Co.	Rock Island, Ill.
Boston Ice Co.	Boston, Mass.
Crescent City Ice Mfg. Co.	New Orleans, La.
City Ice & Fuel Co.	St. Louis, Mo.

Industrial Plants

Public Service Gas & Electric Co.	Jersey City, N. J.
Procter & Gamble Co.*	
DuPont Viscoid Co.	Arlington, N. J.
Michelin Tire Co.	Middletown, N. Y.
Bethlehem Steel Co.	Bethlehem, Pa.
Buick Motor Co.	Flint, Mich.
American Enka Corp.	Asheville, N. C.

Office Buildings

New York Life Building	New York, N. Y.
Provident Mutual Life Ins. Building	Philadelphia, Pa.
Russ Building	San Francisco, Cal.
Bell Telephone Co.*	

Oil Refineries and Plants

Crew Levick Co.	Philadelphia, Pa.
C. F. Simons Son, Inc.	Philadelphia, Pa.
Champlin Refinery Co.*	
Sinclair Oil Co.	Tulsa, Okla.
Mid Continental Oil Co.	Tulsa, Okla.
Indiana Refining Co.	Indianapolis, Ind.
Standard Oil Co. of California	Los Angeles, Cal.

Packing Companies

C. A. Durr Packing Co.	Utica, N. Y.
Swift & Co.	New York, N. Y.
Wilson & Co.*	
Major Bros. Packing Co.	Mishawaka, Ind.
Emge & Sons	Fort Branch, Ind.
Batchelor & Snyder Co.	Boston, Mass.
Golden State Meat Co.	San Francisco, Cal.
Armour & Co.*	

Provision Plants

Federal Packing Co.	New Haven, Conn.
Archer Daniels Midland Corp.	Edgewater, N. J.
Wm. A. Donnelly	Philadelphia, Pa.
Western Produce Co.	Abiline, Tex.
Hildebrandt Provision Co.	Cleveland, Ohio
International Produce Co.	Chicago, Ill.
Providence Produce Terminal	Providence, R. I.

Restaurants

Childs Restaurants*	
F. G. Shattuck Co. (Schrafft's)*	
Longchamps Restaurants	New York, N. Y.
Bickford Restaurants	New York, N. Y.
De Mets	Chicago, Ill.
Caruso Restaurants*	

Skating Rinks

Playland	Rye, N. Y.
The Arena	Tulsa, Okla.
West Point Military Academy	West Point, N. Y.

Theatres

Loews Theatres*
Warner Bros. Theatres*
Radio Keith Orpheum Theatres*

*Plants in various cities insulated with "Jointite" Corkboard and Pipe Covering.

History of the Company

The name of Mundet was first identified with cork products in the year 1865. Today the Company ranks among the leaders of the industry.

Cork and Its History

Cork has been used for many centuries. We find that it was fabricated by the ancients into shoe soles, floats, and bottle stoppers. In recent years, the uses of cork have multiplied many times, and today it is a necessary concomitant of civilization.

In Spain, Portugal, Africa (Mediterranean) and Italy we find an evergreen known as the Cork Oak. This tree must survive a tremendous amount of heat since it grows in tropical and semi-tropical zones. Nature has provided for this by promoting a growth which covers the trunk and limbs of the tree and effectively insulates it against the intense heat. This growth (or bark) is the cork of commerce. At periodical intervals the trees are stripped of this bark, which is then processed, baled and shipped to various manufacturing centers in Europe and the United States. These plants produce a multitudinous variety of cork products including cork insulation.

Why Cork Is an Insulator

As explained above, Nature provided a covering that would protect the Cork Oak from the attack of tropical heat. This is accomplished by shaping a covering of relatively even thickness containing a multitude of minute air particles each hermetically sealed one from the other. Each particle of entrapped air is so small that it will not permit the setting up of air currents and in this way heat penetration is prevented. Furthermore, due to its granular structure, cork has no capillarity, while practically all other insulating materials are of a fibrous nature and have a high degree of capillarity.

The Manufacture of Corkboard

The cork bark used for insulation is first ground up into particles or granules of from 3/8 to 5/8 in. in size. These are filled into moulds and hydraulically pressed to the required density. The moulds are then placed in an oven maintained at a relatively high temperature for a period of time dependent upon the thickness of insulation involved. The cork is kept under compression in the moulds throughout the baking process. The heat liquifies the gum or rosin that is peculiar to this type of bark. This gum thoroughly binds the granules together and hermetically seals one from the other, producing a solid slab of cork board (still 100% pure cork). The rough slab is then subjected to a finishing process which cuts it to accurate size and sands its surfaces, completing the manufacture of commercial corkboard insulation.

Essentials of Good Insulation

The essentials of good insulation are low thermal conductivity; fire retardance; permanence; nonabsorbence; sanitation; economy. Mundet "Jointite" Corkboard incorporates all these qualities.

Our Facilities

The Company maintains two plants for the exclusive manufacture of insulation products. One is located in Portugal and the other in New Jersey (about ten miles from New York City). These plants are of about the same capacity and can produce a total of 60,000,000 to 70,000,000 ft. board measure of insulation a year. "Jointite" products are stocked in many of the large centers of the world. The Portuguese plant is adjacent to the Port of Lisbon from which regular sailings are to be had to any part of the world. The New Jersey plant at all times carries large stocks of finished products, as do all of the Branch Offices located in the principal cities of the United States and Canada. The Company's shipping facilities are unsurpassed, either by rail or water.

Sales and Service

The Company maintains branches in the principal cities of the United States and Canada, and in London, England, for the convenience of its clients. Our branch offices are in charge of competent engineers who will gladly co-operate and furnish information pertinent to insulation work.

Contracting

The Company maintains a well organized erecting force at each branch office fully capable of handling any erection contract involving its products. No contract is too small or too large.

Guarantee

The Company unqualifiedly guarantees that its material and workmanship are of the best and agrees to make good, without cost to the client, any defect that may be chargeable to inferior material or workmanship.

Standard Sizes

Mundet "Jointite" Corkboard is furnished in the following sizes: 1/2, 3/4, 1, 1 1/2, 2, 3, 4 and 6 in. thick. All sheets are 12 in. wide and 36 in. long.

Weight of Corkboard

Mundet "Jointite" Corkboard weighs approximately .75 lb. per sq. ft. per 1 in. thick (board measure) when shipped in bulk. When packed in cartons it weighs approximately .90 lb. per sq. ft. per 1 in. thick.

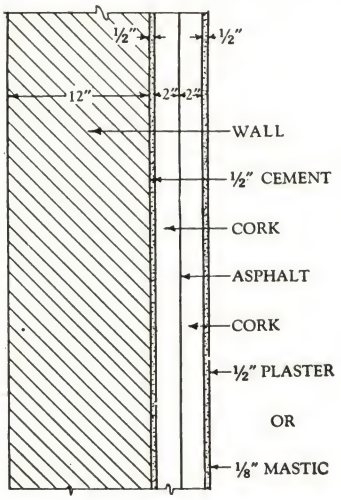
TABLE OF THICKNESSES RECOMMENDED TO BE USED FOR COLD STORAGE WORK AS INSULATION FOR VARIOUS TEMPERATURES

Range of temperature	Walls, in.	Ceilings, in.	Floor on ground, in.	Floor above ground, in.	Roofs, in.
Below 0° F.	8	8	7	8	9
0° to 10° F.	7	7	6	7	8
10° to 20° F.	6	6	5	6	7
20° to 35° F.	5	5	4	5	6
35° to 50° F.	4	4	3	4	5
50° to 60° F.	3	3	2	3	4
Above 60° F.	2	2	0	2	2

GENERAL COLD STORAGE INSULATION

Specification No. 1—Masonry Walls, Brick, Concrete, Hollow Tile

(Where First Course is Erected in Cement Mortar)



The walls shall be insulated with .... in. of "Jointite" Corkboard, applied in two courses of .... in. each. The first course of corkboard shall be erected against the walls in a ½-in. bed of portland cement mortar.

Note (1): If walls are of concrete, specify that they shall be thoroughly hacked in order to provide a good bond.

The second course of corkboard shall then be applied against the first course in a heavy dip coat of hot asphalt and additionally secured to the first course with hard wood skewers of suitable length. All joints shall be broken relative to adjacent layers and to the preceding course. The exposed cork surfaces shall be finished with a ½-in. plaster finish applied in two coats; the first coat to be a rough or scratch coat and the second coat to be brought to a float (or trowel) finish and marked off in squares of approximately 4 ft. in order to minimize and direct shrinkage cracks.

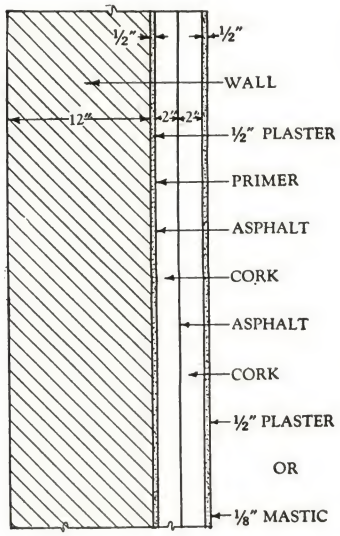
Note (2): If mastic finish is desired in place of plaster finish, omit the last paragraph above and substitute as follows:

The exposed cork surface shall be finished with a ⅛-in. cold mastic finish consisting of a brush or spray application of Mundet Asphalt Emulsion, followed by a trowel application of Mundet Asphalt Emulsion mixed with asbestos and clean screened sand in the following proportions, viz., 50 gal. of emulsion to 100 lb. of asbestos floats to 4 cu. ft. of sand. (This finish is black in color and may be painted if desired.)

Specification No. 2—Masonry Walls, Brick, Concrete, Hollow Tile

(Where First Course is Erected in Hot Asphalt)

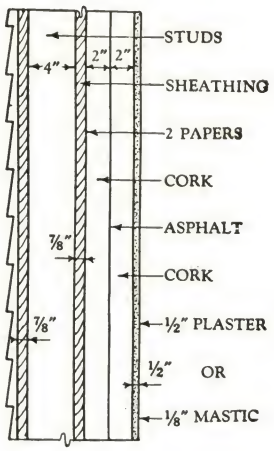
The walls shall first be given a single coat of portland cement plaster left under the float.



Note (1): If walls are of concrete, specify that they shall be thoroughly hacked in order to provide a good bond.

After the plaster coat has set, the walls shall be given two spray, or brush, coats of Mundet Asphalt Primer, following which the walls shall be insulated with .... in. of "Jointite" Corkboard applied in two courses. The first course of corkboard shall be applied against the walls in a dip coat of hot asphalt. The second course and the finish shall be as stipulated in Specification No. 1.

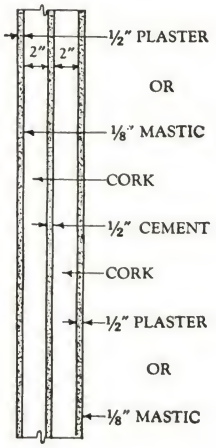
Specification No. 3—Wood Frame Walls



Two courses of waterproof insulation paper shall be securely tacked against the sheathed surfaces, after which the walls shall be insulated with .... in. of "Jointite" Corkboard applied in two courses. The first course of corkboard shall be nailed dry to the wall with the galvanized wire nails made especially for this type of work. The second course of corkboard shall be applied against the first course in a heavy dip coat of hot asphalt, and additionally secured with hard wood skewers of suitable length. All joints shall be broken with respect to adjacent layers and to the preceding course. The finish shall be as provided in Specification No. 1.

Specification No. 4—Cork Partitions

(Cement Mortar)

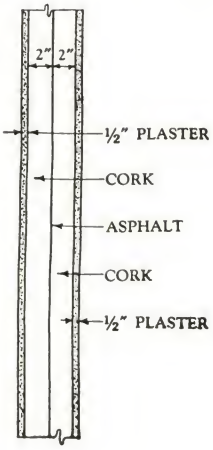


The partitions shall be of the solid cork and cement self-sustaining type, and shall be fabricated of two courses of .... in. "Jointite" Corkboard. The first course of corkboard shall be erected against temporary studding and the second course shall be erected against the first in a ½-in. bed of portland cement mortar, and additionally secured with hardwood skewers of suitable length. All joints shall be broken relative to adjacent layers and to the preceding course. The exposed surfaces shall be finished as provided in Specification No. 1.

Specification No. 5—Cork Partitions

(Hot Asphalt)

The partitions shall be of the solid cork and cement self-sustaining type, and shall be fabricated of two courses of .... in "Jointite" Corkboard. The first course of corkboard shall be erected against temporary studding and the second course shall be erected against the first in a dip coat of hot asphalt, and additionally secured with hard wood skewers of suitable length.

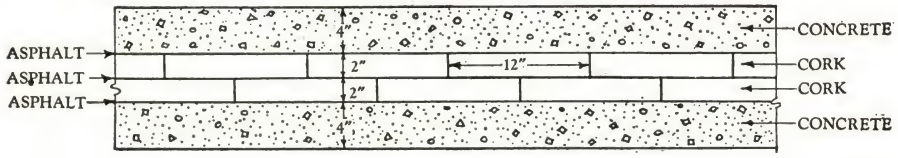


All joints shall be broken relative to adjacent layers and to the preceding course. The exposed cork surfaces shall be finished with ½ in. of portland cement plaster mixed 1:2, applied in two coats; the first coat to be a rough or scratch coat and the second coat to be brought to a float (or trowel) finish and marked off in squares of approximately 4 ft. in order to minimize and direct shrinkage cracks.

Specification No. 6—Concrete Floors, Concrete Base

The floor shall be insulated with .... in. of "Jointite" Corkboard applied in two courses. The first course shall be laid down in a heavy mop coat of hot asphalt and the second course shall be laid upon the first in like manner, with all joints broken relative to the first course. The exposed top of the corkboard shall then receive a heavy mop coat of hot asphalt which shall thoroughly seal all joints.

A concrete wearing floor .... in. thick shall be laid upon the corkboard. The first .... in. shall be gravel or rock concrete mixed . . : . . : . . followed by a 1-in. cement top mixed 1 :2 and floated and troweled to a smooth and even finish. The floor shall be pitched to floor drains.



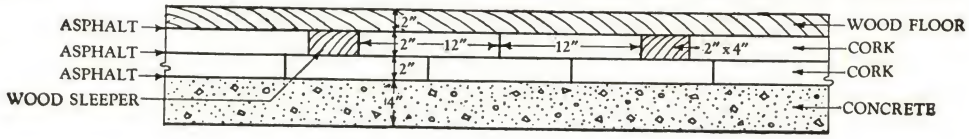
Specification No. 7—Wood Floors, Concrete Base

The floors shall be insulated with .... in. of "Jointite" Corkboard in two layers as provided in Specification No. 6.

Over the first course of corkboard there shall be laid ....x4-in. wood sleepers on 28-in. centers, all securely mopped in.

The exposed cork surface shall then receive a heavy mop coat of hot asphalt which shall thoroughly seal all joints.

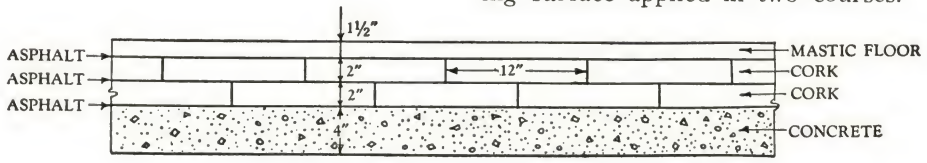
A wearing floor of 2x.... in. long leaf yellow pine shall then be applied, securely nailed to the sleepers provided in the top layer of corkboard.



Specification No. 8—Mastic Floors, Concrete Base

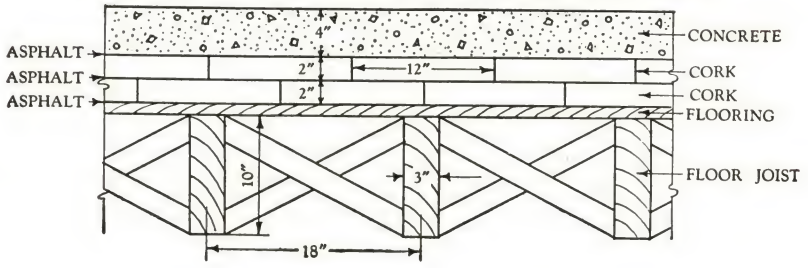
The floor insulation shall be laid as in Specification No. 6.

The finish floor shall consist of a 2-in. mastic wearing surface applied in two courses.



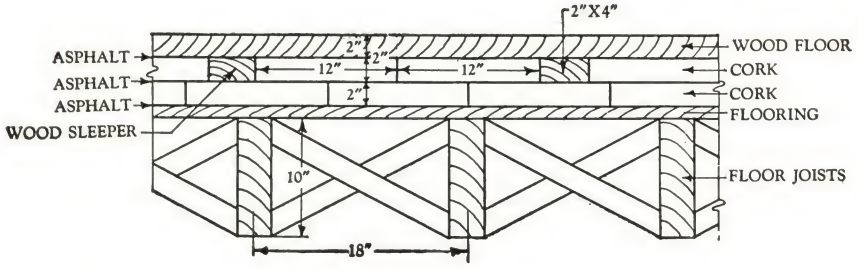
Specification No. 9—Concrete Floors, Wood Base

The floor shall be insulated as in Specification No. 6.



Specification No. 10—Wood Floors, Wood Base

The floors shall be insulated as in Specification No. 7.



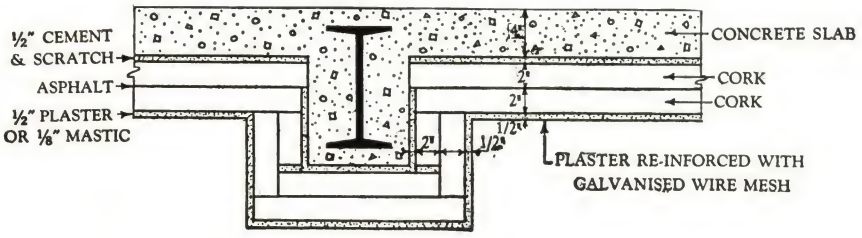
Specification No. 11—Ceilings, Concrete

The ceiling shall be insulated with ... in. of "Jointite" Corkboard applied in two courses. The soffit of ceiling slab shall first be thoroughly hacked and pitted and shall then receive a tight scratch coat of portland cement mortar.

The first course of corkboard shall then be applied in a ½-in. bed of portland cement mortar and securely propped in place until the cement has set. The second course of corkboard shall then be applied against the first course in a heavy dip coat of hot asphalt, and additionally secured with hardwood skewers of suitable length. All joints shall be broken relative to adjacent layers and to the preceding course.

The exposed cork surfaces shall be finished as provided in specification No. 1.

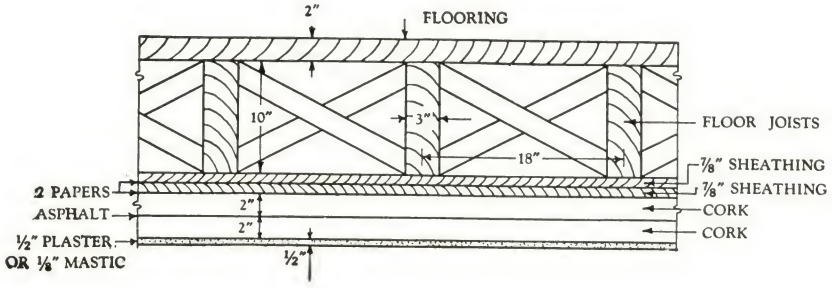
Note: If plaster finish is desired it is recommended that No. 19-gauge galvanized wire mesh having two meshes to the inch be securely stapled to the cork surfaces before plaster finish is applied.



Specification No. 12—Ceilings, Wood

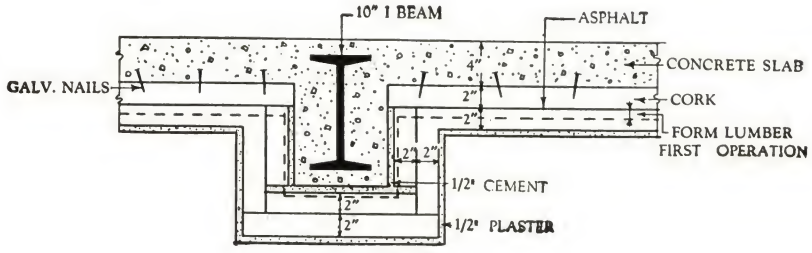
The ceiling shall be insulated with ... in. of "Jointite" Corkboard in two courses over wood sheathing.

Two layers of ⅞-in. tongued and grooved sheathing shall be installed on the underside of ceiling joists with two layers of waterproof insulation paper between the sheathing courses, and two layers of waterproof insulation paper securely tacked to the underside of the sheathing. On the ceiling surface thus prepared shall be erected the first layer of corkboard, nailing each piece securely in place. The second course of corkboard shall then be applied against first course in a dip coat of hot asphalt and finished as provided in Specification No. 1.



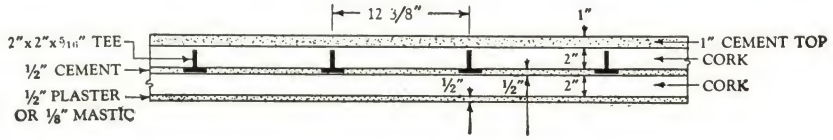
Specification No. 13—Ceilings (New Buildings) Concrete

The ceilings shall be insulated with ... in. of "Jointite" Corkboard applied in two courses. The general contractor will lower the forms of the slab construction a distance sufficient to allow the first course of corkboard to be laid dry in the forms. There shall be at least six special galvanized nails placed in each sheet of corkboard laid in forms with the heads protruding not less than 1½ in., to act as a key in the concrete. After the forms are stripped the second course of corkboard and both courses of corkboard on the beams and girders shall be applied and finished as in Specification No. 11.



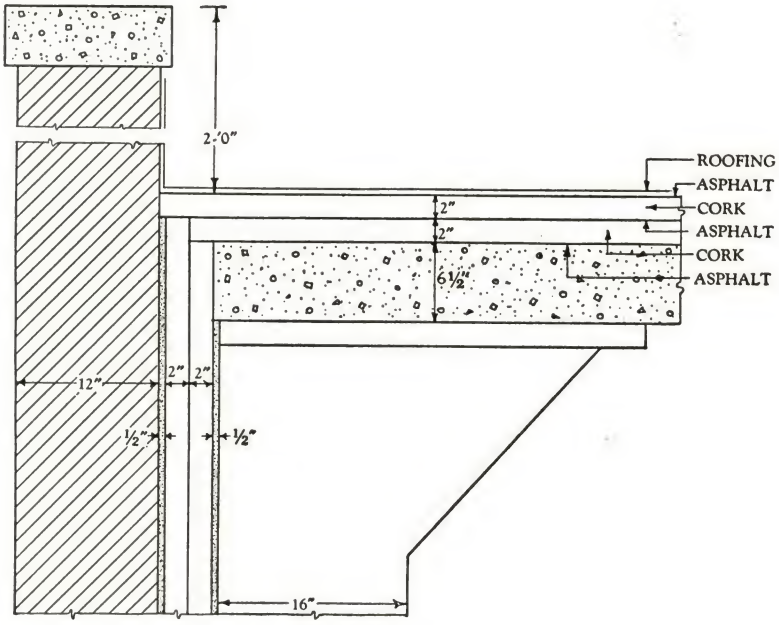
Specification No. 14—Ceilings, False T Iron

The ceilings shall be insulated with . . . in. of "Jointite" Corkboard applied in two courses. A framework consisting of 2x2x.. in. tee irons spaced on 12½-in. centers, shall be erected upon 2x2-in. wood framing concealed in the cork wall insulation. The first course of corkboard shall be placed between the tee irons after all edges have been dipped in hot asphalt. The second course of corkboard shall be applied against the underside of the first course in a ½-in. bed of portland cement mortar, and additionally secured with hardwood skewers of suitable length. All joints in the second course shall be broken relative to adjacent layers and to the first course. The top exposed surface of the corkboard shall be finished with 1 in. of portland cement plaster left under the float. The underside of the insulation shall be finished as provided in Specification No. 1.

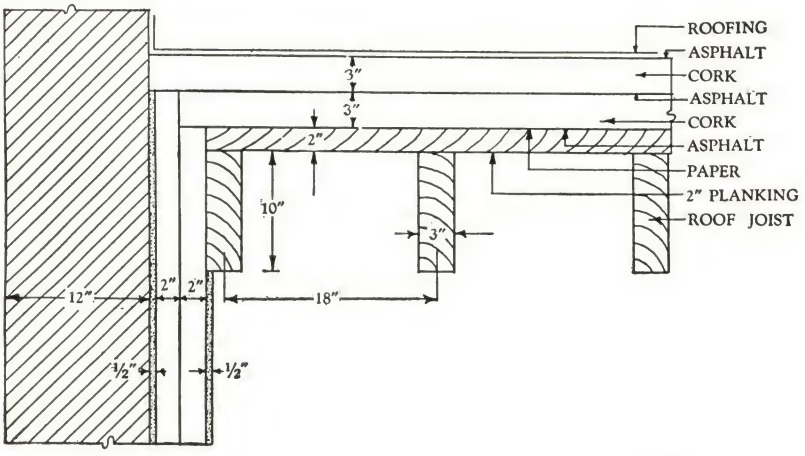


Specification No. 15—Roofs, Concrete

The roof slab shall be insulated with . . . in. of "Jointite" Corkboard applied in two courses. The first course of corkboard shall be laid down on the concrete slab in a heavy mop coat of hot asphalt, and against it a second course of corkboard shall be applied in like manner. All joints shall be broken relative to adjacent layers and to the preceding course. The exposed cork surfaces are to remain uncoated and left ready for the roofing contractor to lay his roofing. The cork contractor and the roofing contractor shall co-operate with each other in order that all insulation laid in any one day will be protected with at least two-ply roofing.



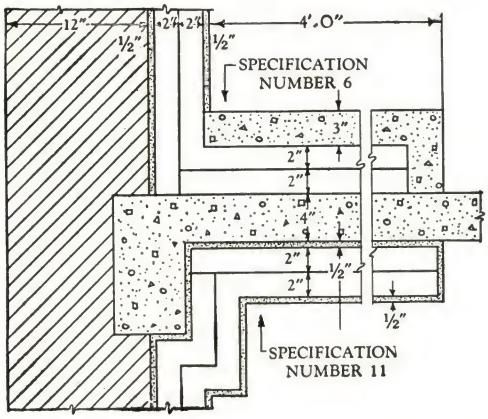
Specification No. 16—Roofs, Wood



The roof shall be insulated with . . . in. of "Jointite" Corkboard applied in two courses. Over the roof planking shall be laid one course of waterproof insulation paper with the seams lapped at least 3 in. and mopped in with hot asphalt. The cork insulation shall then be applied as in Specification No. 15.

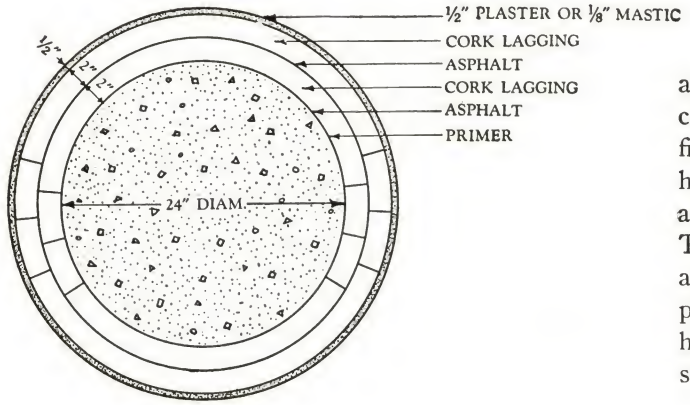
LAP OR RIBBON INSULATION

Used Where Continuous Insulation Is Not Obtainable

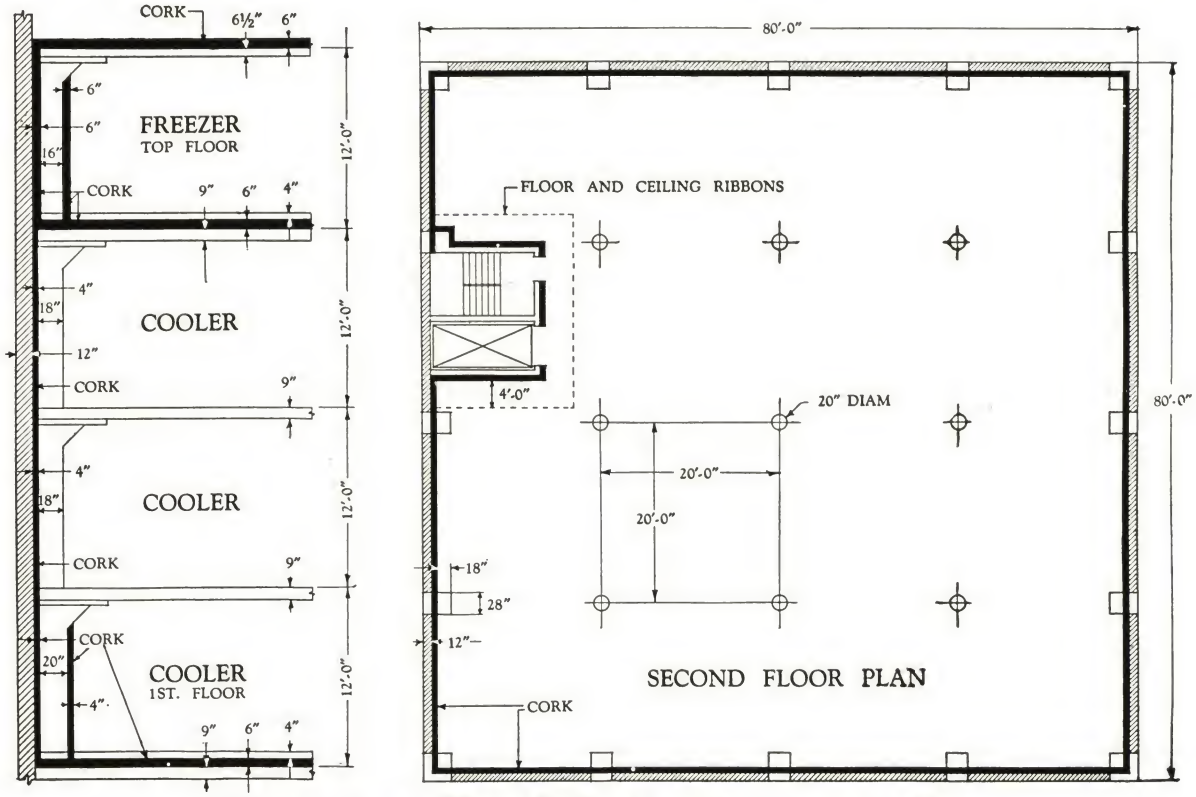


Ribbon insulation is the form shown on the accompanying sketch. It consists of insulation either on floor or ceiling which extends out to a limited distance only from the wall line. It is used where conditions make it impossible to provide continuous insulation. The ribbon insulation must be carried around beams and girders. For specifications, see notes on cut.

Specification No. 17—Circular Columns



The circular columns shall be insulated with .....in. of "Jointite" Corkboard bevelled lagging, applied in two courses. The column surfaces shall receive a single coat of Mundet Primer, after which the first course of lagging shall be applied in a dip coat of hot asphalt. Each lag shall be securely locked to the adjacent lags with hard wood skewers of suitable length. The second course of lagging shall then be applied against the first course in a heavy dip coat of hot asphalt, and additionally secured to the first course with hard wood skewers of suitable length. The exposed cork surfaces shall be finished as in Specification No. 1.



Typical Section and Plan of Building Showing Continuous Installation

Specification No. 18—Coil Bunker Construction

A coil loft or bunker shall be constructed, supported on . . . x . . . in. timbers spaced 20 in. apart (Item 1), which shall be suitably supported in walls.

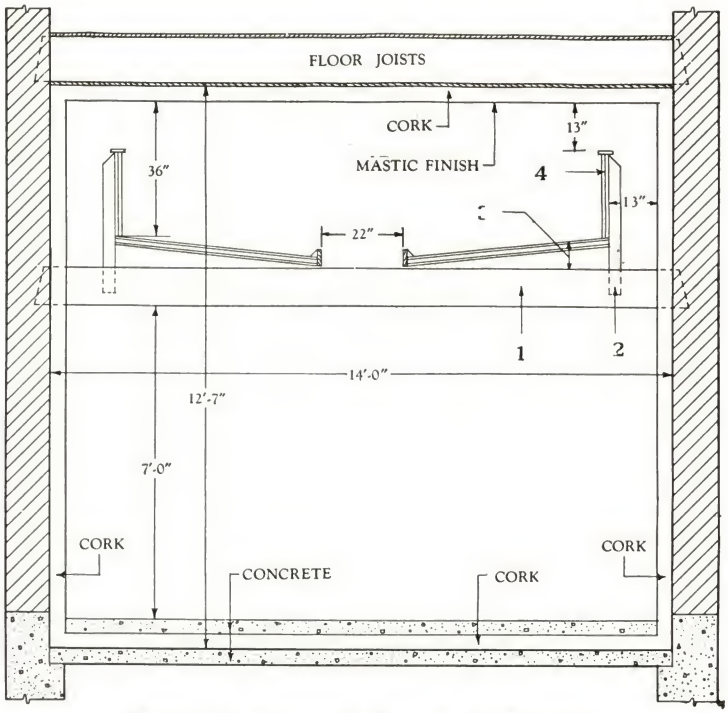
Wood cleats 2x4 in. (Item 2), shall then be securely bolted to the sides of the timbers and will act as supports for the warm air baffles (Item 4).

The top of the timbers shall then be given the correct slope by nailing tapered strips, which shall be the width of the timber and shall vary from 3 in. high at the outside end to 1 in. at the inside. These tapered strips shall then be sheathed with 7/8-in. tongued and grooved sheathing of spruce or cypress, over which shall be laid two courses of waterproof insulation paper, followed by a single course of 2-in. corkboard, laid down in and coated with hot asphalt.

In the corkboard shall be buried 2x2-in. wood sleepers on 26-in. centers, which will act as nailing strips for the 7/8-in. tongued and grooved sheathing which shall be placed over the corkboard together with two layers of waterproof insulation paper, all securely nailed to the sleepers (Item 3). The top surface of bunker floor shall then be covered with No. 24-gauge galvanized iron (or copper) lining flashed up on the warm air baffles a distance of 12 in., and provided at the low point with a scupper for drainage connection. The baffles shall be constructed of two courses of 7/8-in. tongued and grooved sheathing with two layers of waterproof insulation paper between them, all securely nailed to the wooden cleats mentioned above (Item 4).

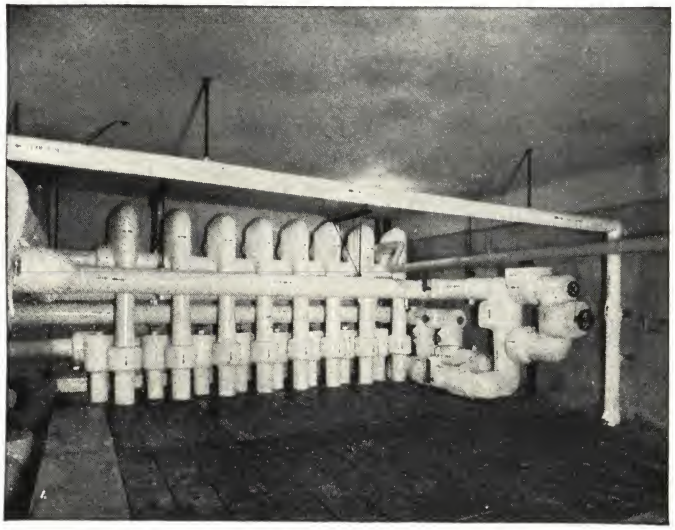
The edges of the cold air duct shall be formed with 2x8-in. timbers securely fastened to the bunker timbers. The metal lining of the bunker shall extend over these timbers and shall be lapped vertically downward at least 2 in.

Note: For rooms having less than 8 ft. inside clear width, it is customary to use a single bunker pan. In rooms of greater than 8-ft. width the double bunker pan illustrated should be used. It is customary to make the total duct widths equal to about 30% of total width of room.



Section Showing Coil Bunker Construction

"JOINTITE" MOULDED CORK PIPE COVERING



New York State Psychiatric Institute and Hospital, New York, N. Y.

All the insulating qualities of cork hereinbefore explained for cold storage, and its resistance to heat transmission generally, apply equally to its value as insulation for cold piping. It affords a most efficient and permanent means for protecting cold water, brine, and ammonia pipe lines and fittings.

"Jointite" Moulded Cork Pipe Covering is made of pure granulated cork compressed and moulded in forms and baked as described for corkboard. Following the baking process each piece of pipe covering is covered all over with a mineral rubber finish which prevents damage from moisture or frost.

Various moulded shapes are made both for pipe and fittings so that all parts of the pipe lines may be neatly and adequately covered.

Suggested Thickness

Note: The numbered items shown below are for coverings of various standard thicknesses and for purposes as indicated. Reference will be made to this list in specification text.

(1) Ice Water Covering for lines where temperatures of 35° F. and higher are carried.

(2) Standard Brine Cork Covering for ammonia and brine lines where temperature ranges from 5° F. to 35° F.

(3) Special Thick Covering for temperatures below 5° F.

Specification A

Note: The following specification is used more than any other, covering probably 75% of all pipe covering installations.

Pipe—After the pipe lines have been tested and approved, they shall be insulated with "Jointite" [(1), (2) or (3)] Cork Pipe Covering. All contact joints shall be sealed with Mundet Waterproof Cement. All contact joints shall be butted closely and firmly together and secured with copper clad steel wire, spaced at intervals of not more than 6 in. All seams shall be horizontal. All mated sections shall be used together. The so-called "broken joint" method must not be used.

Fittings—The fittings shall be insulated with "Jointite" Moulded Cork Fitting Covers of a thickness to match the above pipe covering. All contact joints shall be sealed with Mundet Waterproof Cement. All joints shall be butted closely and firmly together and secured with not less than four copper clad steel wires. On all flanged fittings and on all screwed fittings larger than 6 in., not less than six wires shall be used.

Voids—All spaces between fittings and fitting covers shall be filled with either Mundet Brine Putty or Fine Regranulated Cork.

Seams—All seams and chipped edges in the fitting covers and pipe covering shall be filled with Mundet Seam Filler and the surface made smooth.

Finish—The entire outer surface of the insulation shall receive one coat of Mundet Finish Paint.

Hangers—Pipe Lines shall be supported, in every case, outside of the covering and shall be protected by carefully fitted metal shields extending 4 in. on each side of the hanger. The shield shall embrace the entire lower semicircle.

Spacing—Minimum spacing between pipes and adjacent surfaces shall be as follows:

Thickness		Clear space between pipes, in.	Clear space between pipes and walls, etc., in.
Brine	Screwed fittings under 6 in.	8	6
	Screwed fittings over 6 in. and flanged fittings	14	8
Special thick	Screwed fittings under 6 in.	10	8
	Screwed fittings over 6 in. and flanged fittings	18	12
Ice water thick	Screwed fittings under 6 in.	6	4
	Screwed fittings over 6 in. and flanged fittings	10	5

Specification B

Note: For use in hotel kitchens, damp cellars, creameries, packing houses, etc., and wherever the atmosphere is saturated with moisture or steam. Essential for outdoor pipe lines where the cork covering is exposed to the weather.

Pipe, Fittings, Voids, Seams—*Note:* Specifications under these headings same as Specification A.

Roofing—After the seams have been filled, there shall be applied ... layers of ... ply smooth surfaced roofing. Each joint shall be lapped not less than 2 in. The laps shall be sealed with asphalt paint and secured with staples or copper clad steel wire. All laps shall be laid in such a manner as to form a watershed.

Finish, Hangers, Spacing—*Note:* Specifications under these headings same as Specification A.

Specification C

Note: A canvas and paint finish for neatness and to harmonize with surrounding decorations or equipment.

Pipe, Fittings, Voids, Seams—*Note:* Specifications under these headings same as Specification A.

Canvas—After the seams have been filled, the pipe covering shall be wrapped with No. 8 Rosin Sized Paper, and the fittings shall be given a coat of asbestos cement, troweled on, and of sufficient thickness to give a smooth base for canvas. Over the pipe and fittings, a jacket of 8-oz. canvas shall be neatly sewn, using not less than three stitches to the inch. All seams shall be located along the line of minimum visibility.

Finish—The canvas jacket shall be sized and painted with two coats of lead and oil paint.

Hangers, Spacing—Specification under this heading, same as Specification A.

Specification D

Note: Unsurpassed for low temperature piping, and offering an ideal surface protection to the mineral rubber finish on cork pipe covering.

Pipe, Fittings, Voids, Seams—Specifications under these headings same as Specification A.

Membrane Jacket—Over the fittings there shall be applied a layer of mineral rubber cloth, lapped not less than 2 in. and sealed with asphalt paint. Starting with a 2-in. lap upon the fittings, the straight pipe shall be wrapped spirally with a layer of rubberized adhesive membrane tape lapped not less than 1 in.

Finish—Finish to be either as in Specification A or Specification C.

Hangers, Spacing—Specifications under this heading same as Specification A.

"JOINTITE" CORK LAGGING

We make moulded cork lagging and discs for the insulation of cylindrical tanks and coolers. The lagging is cut to order to any desired radius. If desired, the lagging can be furnished with a ⅛-in. mastic coating, ironed in at the factory.

Suggested Thickness

Note: The numbered items shown below are for covering of various standard thicknesses and for purposes as indicated. Reference will be made to this list in specification text.

(1) Above 40° F. — 2 in. of lagging
(2) Above 25° F. and below 40° F. — 3 in. of lagging
(3) Above 10° F. and below 25° F. — 4 in. of lagging } Applied in
(4) Below 10° F. — 6 in. of lagging } two courses

Specification E

Note: This specification is usually used in conjunction with Specification A.

Lagging—*(1) Tank Surfaces*—After the cooler or tank has been tested and approved, the body of the tank shall be insulated with [see items (1), (2), (3) and (4)] ..... in. of "Jointite" Beveled Cork Lagging, applied in ..... courses. The first course shall be applied against the tank (with or without mineral rubber finish on the inside), with all contact joints firmly and securely butted together and sealed with Mundet Waterproof Cement. The lagging shall be further secured with copperclad steel wire spaced at intervals of not more than 6 in. The second course of lagging shall then be applied against the first course in the same manner as above with all joints in the lagging broken with respect to the first.

(2) Flanges—The flanges shall be insulated in the same manner as the tank surfaces. The flange lagging shall lap upon the body lagging, and shall project beyond the outermost portion of the head, coming a distance equal to the thickness of the tank insulation.

Discs—The heads shall be insulated with "Jointite" Corkboard Discs of the same total thickness as the tank insulation (with or without mineral rubber finish on the inside ironed on at the factory). The discs shall be applied directly against the head of the tank and supported by the flange lagging.

Voids—Any spaces between the lagging and the tank body shall be filled with Mundet Brine Putty. The spaces between the bolts and flanges shall be filled with Mundet Brine Putty. The spaces between the heads and the flanges shall be filled with fine regranulated cork.

Finish—The entire outer surface of the insulation shall have a mineral rubber finish ironed on at the factory. After the insulation is completed all seams and chipped edges shall be filled with Mundet Seam Filler.

Painting—The entire outer surface shall receive one coat of Mundet Finish Paint.

Specification F

Note: This specification is often used in conjunction with Specification C.

Lagging, Discs, Voids, Finish—*Note:* Specifications under these headings same as Specification E.

Canvas—After the seams have been filled, the outer surface of the tank shall be covered with a layer of No. 8 Rosin Sized Paper. Over the paper shall be sewn a jacket of 8-oz. canvas. All seams shall be of the invisible type and shall have not less than three stitches to the inch.

Painting—The canvas shall be sized and painted with two coats of lead and oil paint.

Specification G

Note: This specification is very commonly used where a neat appearance, plus the ability to withstand a certain amount of rough usage is desired.

Lagging—*(1) Tank Surfaces*—After the cooler or tank has been tested and approved, the body shall be insulated with ..... in. of "Jointite" Beveled Cork Lagging applied in ..... courses. The first course shall be applied against the tank (with or without mineral rubber finish on the inside), with all contact joints firmly and securely butted together. The lagging shall be secured with copper clad steel wire spaced at intervals of not more than 6 in. The second course of lagging shall then be applied against the first course in the same manner as above with all joints in the lagging broken with respect to the first course.

(2) Flanges—The flanges shall be insulated in the same manner as the tank surfaces. The flange lagging shall lap upon the body lagging for 12 in. and shall project beyond the outermost portion of the head a distance equal to the thickness of the tank insulation.

Discs, Voids, Finish—Specifications under these headings same as Specification E.

Plaster—After the seams have been filled, the outer surface of the insulation shall be covered with a layer of 1-in. hexagonal mesh galvanized wire, securely stapled to the insulation. Over the wire shall be applied two coats of portland and asbestos cement plaster. The first coat shall be a rough or scratch coat; the second coat shall be troweled to a smooth and even finish.

Painting—Optional.



New York Life Insurance Co. Building, New York, N. Y.

Erected on site of the old Madison Square Garden. All cold lines are insulated with Mundet "Jointite" Moulded Cork Covering

ROOF INSULATION

Insulation of Roofs to Prevent Condensation

It is our purpose to show under this heading the great value of proper insulation applied to roofs, in order that the annoying and frequently expensive problem of ceiling "sweat," or condensation, may be overcome.

It is generally recognized today that correct building design must include insulation. The heat transmitted from uninsulated roofs in the winter results in a needless loss, the cost of which comes to a staggering total.

In the summer, these same roofs absorb a tremendous amount of heat and deliver it to the rooms below, thus causing discomfort to, and impairing the efficiency of, people who are working in these areas. In certain commercial plants where the humidity and often the temperature must be governed at a high point, due to the processes of manufacture, an uninsulated roof will inevitably chill the air in its vicinity during the winter months to the point where some of its moisture condenses and forms what is commonly known as ceiling "sweat." The moisture drops to the floor, producing a most annoying condition to people who are working in the room and often causing damage to property, since it will drop upon any materials and machinery that may be underneath. The loss due to condensation must be considered separately from the direct loss due to heat leakage through the roof, the latter being present in all uninsulated construction while the former appears only when the humidity is relatively high or when the difference in temperature between the inside of the roof and the room is of considerable magnitude.

Numerous industries are in the position of, for example, textile mills, which have, as one of the prerequisites for proper manufacturing, a high degree of relative humidity. Many textile mills are located in New England, and in winter are operating with a great variation between the inside and outside temperatures of their buildings. Unless these buildings are insulated, the walls and roofs become very much colder, on the inside, than the surrounding air. This cold is transmitted to the adjacent air, which, upon cooling, reaches the point of total saturation, or dewpoint, and deposits its moisture upon the cold surfaces, from which come the drip. The resultant losses may be grouped as follows:

(1) Direct losses.
  (a) Heat transmitted through roof and walls.
  (b) Damage to goods in process of manufacture.
  (c) Decreased efficiency of labor.

(2) Indirect losses.
  (a) Damage to machinery.
  (b) Deterioration of buildings, particularly of wooden construction.
  (c) Lowered morale of labor due to unpleasant working conditions.

Unfortunately, it is only recently that industry has begun to subject its inherited losses to a careful scrutiny. In the past, ceiling condensation was regarded as a necessary evil, and an inevitable concomitant of high relative humidity. Advanced engineering practice in new buildings, however, has demonstrated its worth to the point where manufacturers have begun to realize that their old equipment cannot compete with new equipment unless it is brought up to date. However, the tendency to maintain a given status quo, plus the inhibition against spending money upon old equipment, has produced a considerable inertia. It is for this reason that all roofs are not insulated, although there have been instances without number where cork insulation has been installed in an existing plant and has paid for itself within two or three years in the single item of coal required for heating.

When bringing to the attention of manufacturers the need for cork insulation in buildings, the greater stress has been laid upon the resultant saving in fuel. Today, however, industrial executives in ever increasing numbers are realizing that a most important factor in their problem of keeping costs at a minimum is the attitude of their labor. A worker is never efficient when he is uncomfortable, and therefore the use of insulation, while it may be considered as an intangible benefit from this angle, is nevertheless of vital import.

The other factors that go to make up the losses in uninsulated construction depend entirely upon individual cases, and it is difficult to evaluate them in general terms, but it is reasonable to conclude that they are present in all cases to a greater or less degree and must eventually appear in the costs of manufacture.

Mention was made, in the foregoing text, of the losses caused by condensation in the textile industry; but it must not be assumed that this industry stands alone. Below are listed a number of types of buildings that are prone to condensation troubles.

Bakeries
Creameries
Laundries
Lumber drying rooms and kilns
Packing houses
Killing rooms
Paper mills
Power houses
Swimming pools
Textile mills—cotton, wool and silk
Tobacco factories
Turkish baths
Twine mills

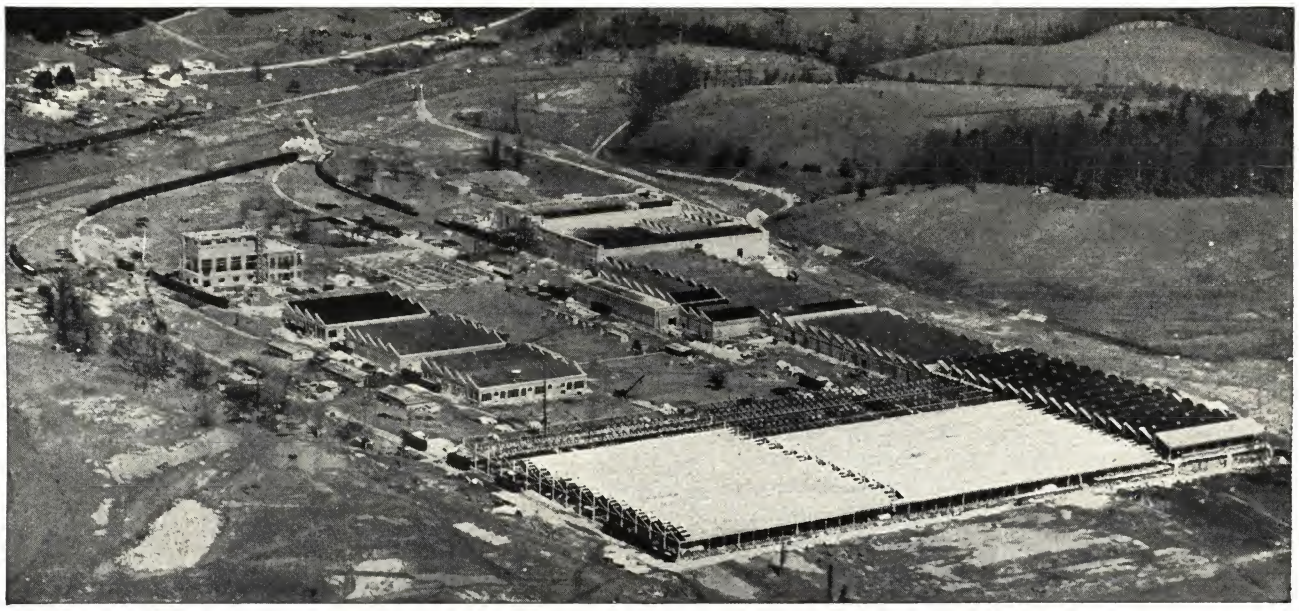
Thickness of Corkboard Needed

It has already been shown that cork is an ideal insulation for this work. The next important thing to determine is the thickness of corkboard that must be used.

There is no rule of thumb by which it is possible to determine what thickness of cork insulation is required for any given roof. The thickness of insulation is an exact function of the humidity present, the nature of the wall or roof construction, its own co-efficient of heat transmission, and the maximum temperature difference on the two sides of the building construction. In order to facilitate the determination of the correct thickness of corkboard insulation for roofs, a special chart has been included in this section (see page 13) upon which it is possible to read directly the permissible heat loss for any given set of conditions. Upon page 12 will be found a table showing the heat loss of all common types of roof construction. Under each type is shown the heat loss of that construction with various thicknesses of "Jointite" Corkboard Insulation. Typical cases are also shown graphically in illustrations on page 15.

The easiest way of demonstrating the use of the chart, table and illustrations will be to show the working of an actual case. Following is a typical problem: A manufacturing plant is equipped with a 3-in. yellow pine roof and standard 5/8-in. built-up roofing. The inside temperature (dry bulb) at the ceiling is 70° F., the relative humidity is 80%, and the lowest temperature during the winter is minus 10° F.

Locate the line of 70° upon the room temperature scale at the top of the chart and follow down to the 80% relative humidity diagonal. Follow horizontally



Airplane View of the American Enka Corporation's Plant at Asheville, N. C.
Showing clearly the 75 acres occupied by the plant and the great area of sawtooth and flat roofing, all of which was insulated by Mundet "Jointite" Corkboard

across the chart to the line of 80° maximum temperature difference on the lower scale. Interpolation between the bounding heat loss diagonal lines will show the heat loss to be .124. Referring to the heat transmission table, we find that in connection with a 3-in. yellow pine roof and ⅝-in. built-up roofing, 1½ in. of Mundet "Jointite" Corkboard will give sufficient insulation to preclude the possibility of condensation for the above set of conditions.

Specifications

Note: The following specifications will be found to cover the usual typical cases of roof insulation:

(1) On Wood Deck Construction—On top of wood deck, first apply a single layer of ..... roofing felt laid in hot asphalt with joints lapped 3 in. Following this lay one course of .... in. Mundet "Jointite" Corkboard, laid in a heavy mop coat of hot asphalt, the exposed cork surfaces to be left dry, ready for the application of the roofing.

(2) Over Concrete Construction—On top of the concrete roof slab first apply two coats of asphalt primer, following which .... in. Mundet "Jointite" Corkboard is to be laid in a heavy mop coat of hot asphalt, the exposed cork surfaces to be left dry, ready for the application of the roofing.

(3) Over Steel Roof Decks—On top of steel deck lay one course of .... in. Mundet "Jointite" Corkboard, laid in a heavy mop coat of hot asphalt, the exposed cork surfaces to be left dry, ready for the application of the roofing.

Note: Should roof insulation consist of two-layer work, the second course shall be applied on top of the first course in a dip coat of hot asphalt, with all transverse joints broken.



Laying Cork Insulation on Roof

HEAT TRANSMISSION

TABLE SHOWING HEAT LOSSES THROUGH ROOFS

Construction	Transmission in B.t.u. per sq. ft. per degree difference in temperature per hour
2-in. concrete slab and roofing, no insulation	.658
2-in. concrete slab and roofing, 1 -in. Jointite Corkboard	.206
2-in. concrete slab and roofing, 1½-in. Jointite Corkboard	.153
2-in. concrete slab and roofing 2 -in. Jointite Corkboard	.122
2-in. concrete slab and roofing, 3 -in. Jointite Corkboard	.087
2-in. concrete slab and roofing, 4 -in. Jointite Corkboard	.067
3-in. concrete slab and roofing, no insulation	.610
3-in. concrete slab and roofing, 1 -in. Jointite Corkboard	.201
3-in. concrete slab and roofing, 1½-in. Jointite Corkboard	.151
3-in. concrete slab and roofing, 2 -in. Jointite Corkboard	.120
3-in. concrete slab and roofing, 3 -in. Jointite Corkboard	.086
3-in. concrete slab and roofing, 4 -in. Jointite Corkboard	.067
4-in. concrete slab and roofing, no insulation	.568
4-in. concrete slab and roofing, 1 -in. Jointite Corkboard	.197
4-in. concrete slab and roofing, 1½-in. Jointite Corkboard	.148
4-in. concrete slab and roofing, 2 -in. Jointite Corkboard	.118
4-in. concrete slab and roofing, 3 -in. Jointite Corkboard	.085
4-in. concrete slab and roofing, 4 -in. Jointite Corkboard	.066
6-in. concrete slab and roofing, no insulation	.500
6-in. concrete slab and roofing, 1 -in. Jointite Corkboard	.187
6-in. concrete slab and roofing, 1½-in. Jointite Corkboard	.143
6-in. concrete slab and roofing, 2 -in. Jointite Corkboard	.115
6-in. concrete slab and roofing, 3 -in. Jointite Corkboard	.083
6-in. concrete slab and roofing, 4 -in. Jointite Corkboard	.065
2-in. Yellow Pine and roofing, no insulation	.345*
2-in. Yellow Pine and roofing, 1 -in. Jointite Corkboard	.160
2-in. Yellow Pine and roofing, 1½-in. Jointite Corkboard	.127
2-in. Yellow Pine and roofing, 2 -in. Jointite Corkboard	.105
2-in. Yellow Pine and roofing, 3 -in. Jointite Corkboard	.078
2-in. Yellow Pine and roofing, 4 -in. Jointite Corkboard	.062
3-in. Yellow Pine and roofing, no insulation	.256*
3-in. Yellow Pine and roofing, 1 -in. Jointite Corkboard	.138
3-in. Yellow Pine and roofing, 1½-in. Jointite Corkboard	.112
3-in. Yellow Pine and roofing, 2 -in. Jointite Corkboard	.095
3-in. Yellow Pine and roofing, 3 -in. Jointite Corkboard	.072
3-in. Yellow Pine and roofing, 4 -in. Jointite Corkboard	.058
Sheet steel deck and roofing, no insulation	1.000†
Sheet steel deck and roofing, 1 -in. Jointite Corkboard	.231
Sheet steel deck and roofing, 1½-in. Jointite Corkboard	.167
Sheet steel deck and roofing, 2 -in. Jointite Corkboard	.130
Sheet steel deck and roofing, 3 -in. Jointite Corkboard	.091
Sheet steel deck and roofing, 4 -in. Jointite Corkboard	.067
4-in. hollow tile, ⅝-in. roofing, no insulation	.485‡
4-in. hollow tile, ⅝-in. roofing, 1 -in. Jointite Corkboard	.187
4-in. hollow tile, ⅝-in. roofing, 1½-in. Jointite Corkboard	.142
4-in. hollow tile, ⅝-in. roofing, 2 -in. Jointite Corkboard	.114
4-in. hollow tile, ⅝-in. roofing, 3 -in. Jointite Corkboard	.083
4-in. hollow tile, ⅝-in. roofing, 4 -in. Jointite Corkboard	.065
6-in. hollow tile, ⅝-in. roofing, no insulation	.398‡
6-in. hollow tile, ⅝-in. roofing, 1 -in. Jointite Corkboard	.171
6-in. hollow tile, ⅝-in. roofing, 1½-in. Jointite Corkboard	.133
6-in. hollow tile, ⅝-in. roofing, 2 -in. Jointite Corkboard	.109
6-in. hollow tile, ⅝-in. roofing, 3 -in. Jointite Corkboard	.080
6-in. hollow tile, ⅝-in. roofing, 4 -in. Jointite Corkboard	.063

*On yellow pine, nominal thickness specified, actual thickness used in tests.
†Factor as furnished by the Truscon Steel Co.
‡½-in. plaster on underside and 2-in. concrete roof slab over tile is assumed.

Use of Chart

Locate the room temperature on Room Temperature Scale at top of chart and follow down on the corresponding line to its intersection with the line which represents the required humidity percentage, finding this point by interpolating, if necessary, on that segment of the vertical line between the diagonal lines, to obtain any required intermediate percentage between those shown in the left-hand column. For the sake of explanation the horizontal line so found will be referred to as the "humidity horizontal" for any particular case in point.

Next, determine the point of maximum difference in temperature on the scale at the bottom of the chart and follow up on the corresponding vertical line until it intersects the "humidity horizontal" and consider the point of intersection as point "A." Note where point "A" lies between two of the diagonal lines which represent amount of heat loss, and by interpolation between these light lines determine its value as compared to the figures in the right-hand column. The value so found will be the maximum allowable heat loss.

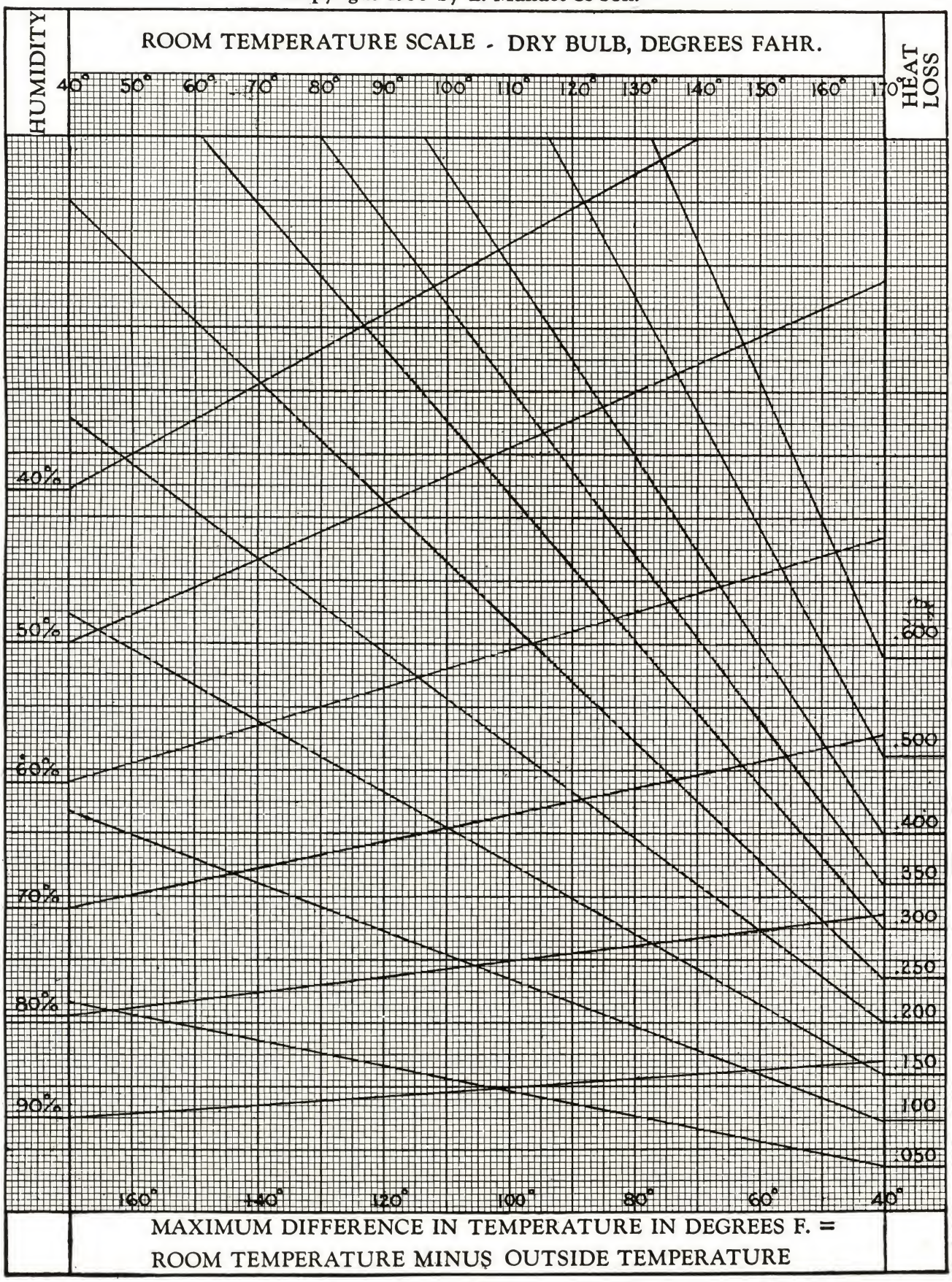
Determine from the Table of Heat Loss the thickness of insulation which will show a heat loss less than the value of "A" using the section of the table which shows the proposed type of construction combined with the insulation.

See also typical construction details showing heat loss tabulation.

HEAT LOSS CHART

FOR DETERMINING THE MAXIMUM ALLOWABLE HEAT LOSS

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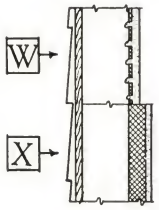
TYPICAL CONSTRUCTION DETAILS

Showing Heat Transmission for Insulated and Uninsulated Construction

Below are illustrated certain commonly used building sections, with and without insulation, together with tables showing the heat transmission through them expressed in B.t.u. per hour, per square foot, per degree difference in temperature. The figures given have been taken or computed from information contained in the 1930 Guide of the American Society of Heating and Ventilating Engineers.

The cuts are representative of methods of construction in common use and the data given will apply regardless of size or class of work. Should there be a type not illustrated upon which information is desired, a communication addressed to any of our offices will receive immediate attention and the specific information will be gladly furnished.

It is apparent from an inspection of these tables that the use of Mundet "Jointite" Corkboard will effect a considerable monetary saving. In commercial practice, the intangible factor of increased comfort for people working in insulated rooms, while difficult to estimate in dollars and cents is, nevertheless, an important consideration that is receiving greater attention from the careful executive. In the home, where comfort is of paramount importance, fuel economy due to use of Mundet "Jointite" Corkboard Insulation is overshadowed by factors of increased health and comfort.

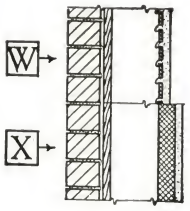


Specification

"W" beveled siding, waterproof paper, sheathing, studding, lath and plaster.

"X" beveled siding, waterproof paper, sheathing, studding, corkboard, plaster.

Not insulated, W	X, insulated with corkboard, in.	
	1½	2
.275	.117	.098

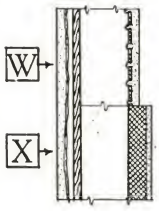


Specification

"W" brick veneer, waterproof paper, sheathing, studding, lath and plaster.

"X" brick veneer, waterproof insulation paper, sheathing, studding, corkboard, plaster.

Not insulated, W	X, insulated with corkboard, in.	
	1½	2
.258	.114	.087

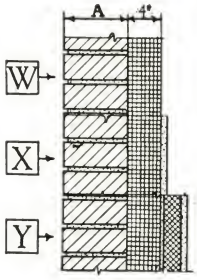


Specification

"W" stucco on metal lath, furring, waterproof paper, sheathing, studding, lath and plaster.

"X" stucco on metal lath, furring, waterproof paper, sheathing, studding, corkboard, plaster.

Not insulated, W	X, insulated with corkboard, in.	
	1½	2
.319	.125	.103



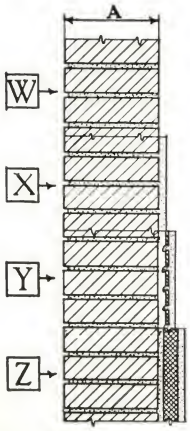
Specification

"W" brick, tile.

"X" brick, tile, plaster.

"Y" brick, tile, portland cement backing, corkboard, plaster.

Thickness, A, in.	Not insulated		Y, insulated with corkboard, in.	
	W	X	1½	2
8	.257	.243	.110	.092
12	.205	.197	.101	.087
16	.196	.185	.098	.085



Specification

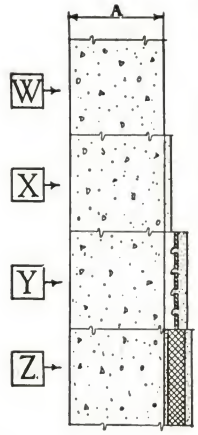
"W" 4-in. face brick and common brick.

"X" brick, plaster.

"Y" brick, furring, lath and plaster.

"Z" brick, portland cement mortar backing, corkboard, plaster.

Thickness, A, in.	Not insulated			Z, insulated with corkboard, in.	
	W	X	Y	1½	2
8	.385	.356	.261	.127	.105
12	.295	.277	.216	.115	.097
16	.238	.227	.184	.104	.090
20	.190	.176	.153	.097	.083
24	.162	.148	.126	.089	.078



Specification

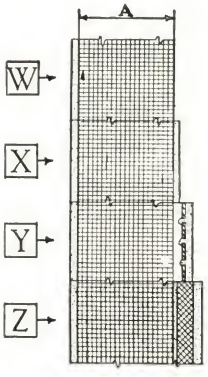
"W" concrete—1 : 3 : 5 mix.

"X" concrete, plaster.

"Y" concrete, furring, lath and plaster.

"Z" concrete, portland cement mortar backing, corkboard, plaster.

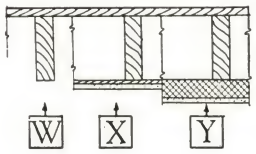
Thickness, A, in.	Not insulated			Z, insulated with corkboard, in.	
	W	X	Y	1½	2
4	.641	.573	.367	.150	.121
6	.583	.518	.339	.142	.116
8	.512	.461	.314	.138	.113
10	.455	.416	.292	.134	.109
12	.411	.378	.273	.131	.106
16	.343	.320	.241	.122	.101
18	.319	.299	.228	.120	.099
20	.294	.277	.216	.116	.097



Specification

"W" stucco, hollow tile.
"X" stucco, hollow tile, plaster.
"Y" stucco, hollow tile, furring, lath and plaster.
"Z" stucco, hollow tile, portland cement backing, corkboard, plaster.

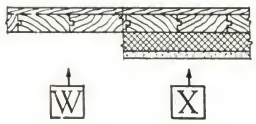
Thickness, A, in.	Not insulated			Z, insulated with corkboard, in.	
	W	X	Y	1½	2
4	.515	.463	.411	.142	.115
6	.419	.384	.346	.134	.110
8	.317	.296	.228	.119	.099
10	.304	285	.221	.117	.093
12	.241	.229	.186	.106	.090



Specification

"W" single wood floor joists.
"X" single wood floor joists, lath and plaster.
"Y" single wood floor, corkboard, plaster.

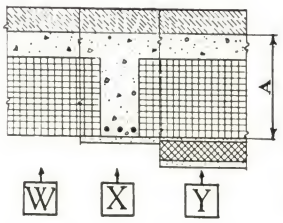
Not insulated		Y, insulated with corkboard, in.	
W	X	1½	2
.440	.272	.119	.100



Specification

"W" finished wood floor (1 in.), mill constructed plank floor.
"X" finished wood floor, mill constructed plank floor, corkboard, plaster.

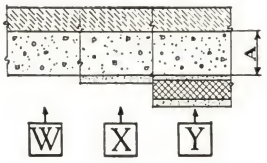
Not insulated, W	X, insulated with corkboard, in.	
	1½	2
.233	.108	.092



Specification

"W" finished (2-in.) concrete floor, reinforced concrete joist and tile slab.
"X" finished floor, reinforced concrete joist and tile slab, plaster.
"Y" finished floor, reinforced concrete joist and tile slab, portland cement mortar backing, corkboard, plaster.

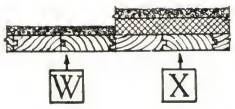
Thickness, A, in.	Not insulated		Y, insulated with corkboard, in.	
	W	X	1½	2
5½	.621	.550	.150	120
8	.430	.359	.135	.112
10½	.392	.321	.132	.108
13	.370	.299	.129	.106
15½	.271	.200	.114	.096



Specification

"W" finished (2-in.) concrete floor, reinforced concrete slab.
"X" finished floor, reinforced concrete slab, plaster finish.
"Y" finished concrete floor, reinforced concrete slab, portland cement mortar backing, corkboard, plaster.

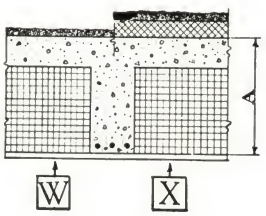
Thickness, A, in.	Not insulated		Y, insulated with corkboard, in.	
	W	X	1½	2
4	.461	.419	.135	.110
5	.438	.400	.133	.109
6	.417	.380	.131	.107
7	.392	.363	.129	.106
8	.378	.348	.127	.105
10	.345	.322	.123	.103



Specification

"W" standard built-up roofing, mill construction plank roof.
"X" standard built-up roofing, corkboard, mill construction plank roof.

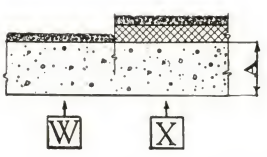
Not insulated, W	X, insulated with corkboard, in.	
	1½	2
.345	.126	.104



Specification

"W" standard built-up roofing, reinforced concrete joists and tile slab, plaster.
"X" standard built-up roofing, corkboard, reinforced concrete joists and tile slab, plaster.

Thickness, A, in.	Not insulated, W	X, insulated with corkboard, in.	
		1½	2
5½	.515	.143	.116
8	.456	.138	.112
10½	.410	.133	.109
13	.381	.130	.107



Specification

"W" standard built-up roofing, reinforced concrete slab.
"X" standard built-up roofing, corkboard, reinforced concrete slab.

Thickness, A, in.	Not insulated, W	X, insulated with corkboard, in.	
		1½	2
2	.658	.153	.122
3	.610	.151	.120
4	.568	.148	.119
5	.532	.145	.117
6	.500	.143	.115
7	.472	.140	.113
8	.447	.138	.112

VIBRATION ISOLATION

Among the multitudinous uses to which cork has been applied, the one which is expanding most rapidly at the present time is the utilization of its peculiar physical characteristics in the elimination of machine vibration. It is a matter of common knowledge that vibration is a cause of noise, but up to recently there has been a decided lack of purposeful effort directed towards its elimination.

The reasons for this widespread neglect are many, but it is not important that they be enumerated. The general attitude toward vibration has undergone a complete change in the last few years and whereas in the past vibration elimination was considered important only in such buildings as hospitals and libraries it is today regarded as essential in all classes of buildings. There are three chief factors in the existing attitude toward vibration:

First, the almost universal use of steel and concrete as structural members in all buildings, except small residences. Steel and concrete are both capable of transmitting vibration with little damping and the former can carry it long distances, while concrete arches are apt to resolve themselves into sounding boards and amplify minute vibrations into a pronounced drum effect in the air adjacent to them.

Second, the tremendous increase in numbers of machines in all classes of buildings, particularly those not housing manufacturing.

Third, and most important, the recent discoveries showing the harmful effects of noise in promoting accidents, lowering efficiency of workers, increasing fatigue, and causing annoyance and discomfort to those subjected to it.

The ideal way to eliminate vibration would be at the source, i.e., to have all moving parts of machinery in such complete dynamic balance that no forces could emanate from the machine in operation. This optimum condition is manifestly impossible of achievement in commercial machines as they now exist, and it becomes necessary to seek some medium which, when interpolated between the machinery and the supporting structure, will absorb the vibration present. Considerable responsibility rests upon this isolation medium, since in some cases no amount of acoustical treatment will eliminate noises due to vibration transmitted by it, and in all cases it is much easier and cheaper to eliminate the vibration as close to the source as structural conditions permit. Furthermore, vibration has a highly deleterious effect upon buildings and equipment, making it imperative to stop it as soon as possible.

The principal characteristics of a medium for machinery isolation in the order of their importance, are:

(1) Ability to support the loads imposed upon it without too great, *or too variable,* a deflection.

(2) Ability to absorb vibration in the machine without transmitting it to the surrounding structure.

(3) Permanence, including ability to withstand repeated loading without fatigue or permanent set, ability to withstand the action of water, oil, acids or alkalis without deterioration, ability to maintain its resilience with age.

Of the many materials that have been used for isolation purposes at one time or another, cork has proved itself to be pre-eminently fitted for this work. It contains over 50% air by volume, and is made up of a myriad of tiny cells, hermetically sealed from each other by the structure of the wood. Its compression curves, therefore, resemble more nearly those of a gas than of an elastic solid, as is evident on page 17. This feature is important, because the resistance to loads, instead of being proportional to the amount of deflection, is proportional to the compression in the air cells; hence, under vibratory variations in loading, the active deflection is much smaller than for an elastic substance, while the cushioning effect is higher. Any one who has seen the cork pulled from a bottle of champagne, after being in there for many years, and has watched it double in size, can form a rough idea of the permanence of its resiliency.

Finally, cork isolation has proven itself under the pragmatic test of use, and many thousands of installations, some of them over a quarter of a century old, are giving complete satisfaction; often making possible the use of machines which without it could not be used in their present locations because of the vibration accompanying their operation.

Type of Cork Isolation to Use

Mundet Cork Isolation is made in three general types, to conform with the class of loadings imposed upon it. They are as follows:

(1) Mundet Light Load Isolation Cork—This material, as the name implies, is designed primarily for light loads. It starts to pick up vibration at as low a loading as 200 lb. per sq. ft., and is ordinarily used for light machinery loads or as a side isolation. It is composed of small granules of natural cork, mixed with a special elastic binder, and is moulded in sheets. The thickness customarily employed is 1 in., although it can be furnished in any thickness from ½ to 2 in. Due to its fairly high compressive strength, it is occasionally used in conjunction with a layer of Mundet Natural Cork Isolation Mat, in order to have two materials, of different base frequencies, to make up the isolation.

(2) Mundet Natural Cork Isolation Mat—This form of cork isolation is suited to loads of about 800 to 2000 lb. per sq. ft., normally encountered in machinery foundations. Blocks of natural cork of the required thickness are held within a rigid steel frame. The plates when laid together form a continuous mat isolation of the exact size necessary. In the case of average machine vibrations 1½ in. of natural cork is adequate, but for intense vibrations or shock loads, the thickness should be increased to 2 or 3 in.

(3) Mundet Machinery Isolation Cork—This is the material first used as isolation cork and, while it has been superseded by the above materials for light and medium loads, for loads above 2000 lb. per sq. ft., Mundet Machinery Isolation Cork has not been surpassed. This cork is made in sheets, of various thicknesses, and in three densities, namely, light, medium and heavy.

For loadings of 2000 to 3000 lb. per sq. ft., it is customary to use either light or medium density, according to the character of the vibration. Light density is used for light vibrations and medium density for heavy vibrations. From 3000 to 3500 lb. per sq. ft., either medium density or heavy density is used, according to the character of the vibratory load, and from 3500 to 6000 lb. per sq. ft., it is customary to use heavy density. The thicknesses of machinery isolation cork used depend upon the frequency and amplitude of the vibration present, but the most common thicknesses employed are 1½, 2, 3 and 4 in.

Machinery Isolation Cork is composed of granules, cemented together in the process of manufacture which is the same as that of corkboard. It contains more cork per cubic foot than the natural cork isolation mats. It is structurally strong, but must have a higher initial loading than natural cork isolation mat before it equals the latter in efficiency as an isolation medium. The densities in pounds per cubic foot are:

Light, 1.00-1.30; Medium, 1.30-1.50; Heavy, 1.50-1.70. A special 1.80-1.90 density is available for severe vibrations combined with exceptionally heavy loads, but this should be used sparingly.

The Manufacture of Mundet Isolation Cork

Mundet Light Load Isolation Cork—Made from granules of pure cork ranging from ⅛ to ¼ in. in size. These are mixed with a special elastic binder and formed in a mould producing a sheet measuring 24x36 in. The material is sold in ½, 1, 1½ and 2-in. thicknesses.

Mundet Natural Cork Isolation Mats—These are fabricated of blocks of pure cork. The blocks of cork are forced into a rigid steel frame made up according to size of mat required with reinforcing struts running longitudinally and laterally about every 12 in. In the fundamental foot square units in which the mat is divided, the strips of cork are placed with the grain parallel to the plane of the frame, and these spaces are filled in the hollow square method. After the cork mat is fabricated, it is subjected to a finishing process which planes and sands the surfaces which will come in contact with machinery and foundations. The mat is then dipped in a special non-volatile oil, which preserves the cork and insures it against attack by water, oils, acids or alkalis. Mundet Natural Cork Isolation Mats are available in all rectangular sizes from 4x4 in. up to 72x72 in. Large foundation areas are built up of several mats. The mats are sold in 1, 1½, 2, 3-in. and occasionally 4, 5 and 6-in. thicknesses.

Mundet Machinery Isolation Cork—In all three densities, this is manufactured in the same manner as described on page 1 for Mundet Jointite Corkboard, the only difference being in the amount of cork placed in the moulds and the pressure to which it is subjected during the baking process. It is available in 1, 1½, 2, 3, 4 and 6-in. thicknesses in all three densities. The standard size sheet is 12x36 in.

Shipment — All of the isolation listed is carried

in stock with the exception of special sizes of Mundet Natural Cork Isolation Mat, and any type of isolation, whether granulated or natural mat, can be shipped within 48 hours after the receipt of an order by our factory. Mundet Machinery Isolation Cork is stocked in our various branch warehouses for immediate shipment.

Specification for the Installation of Mundet Cork Isolation

(In a pit where monolithic concrete base is to be cast upon the cork.)

The sides and bottom of all machinery pits which are to receive isolation shall be true and even, as well as clean, smooth and dry, before cork isolation is applied.

The sides and bottom of all machinery foundation pits shall be lined with a layer of Mundet *(specify type of cork)*. Bottom isolation shall be ..... in. thick and side isolation shall be ..... in. thick. The side and bottom cork shall be laid in a heavy mop coat of hot asphalt and the exposed surfaces protected with two layers of waterproofing felt, mopped in, with all edges lapped at least 6 in.

Where the cork is to be laid on top of a finish floor or between the machinery and the building structure in a wall or ceiling suspension, no specification is needed. A suggested form is illustrated in Fig. 1, while Fig. 2 covers the type of isolation described in the above specification.

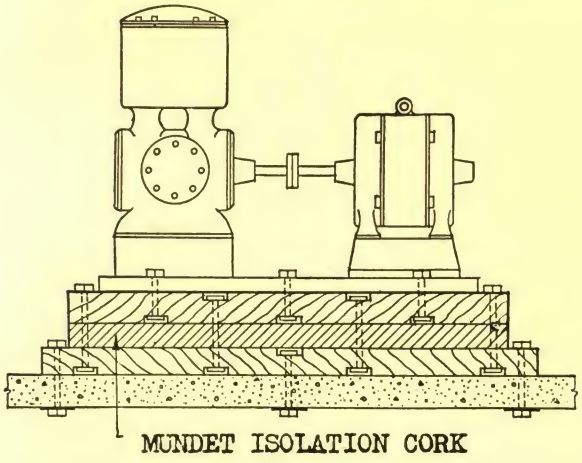


Fig. 1

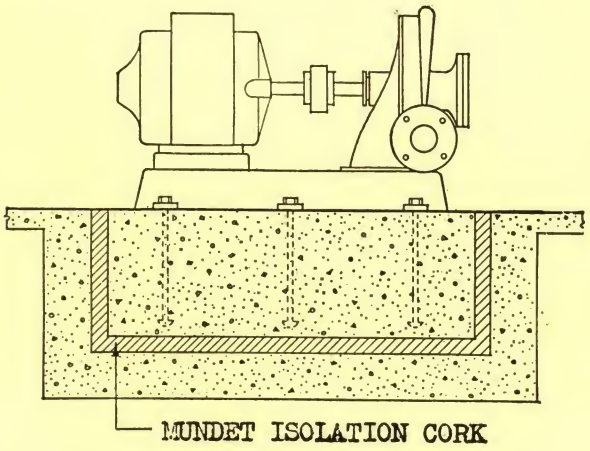
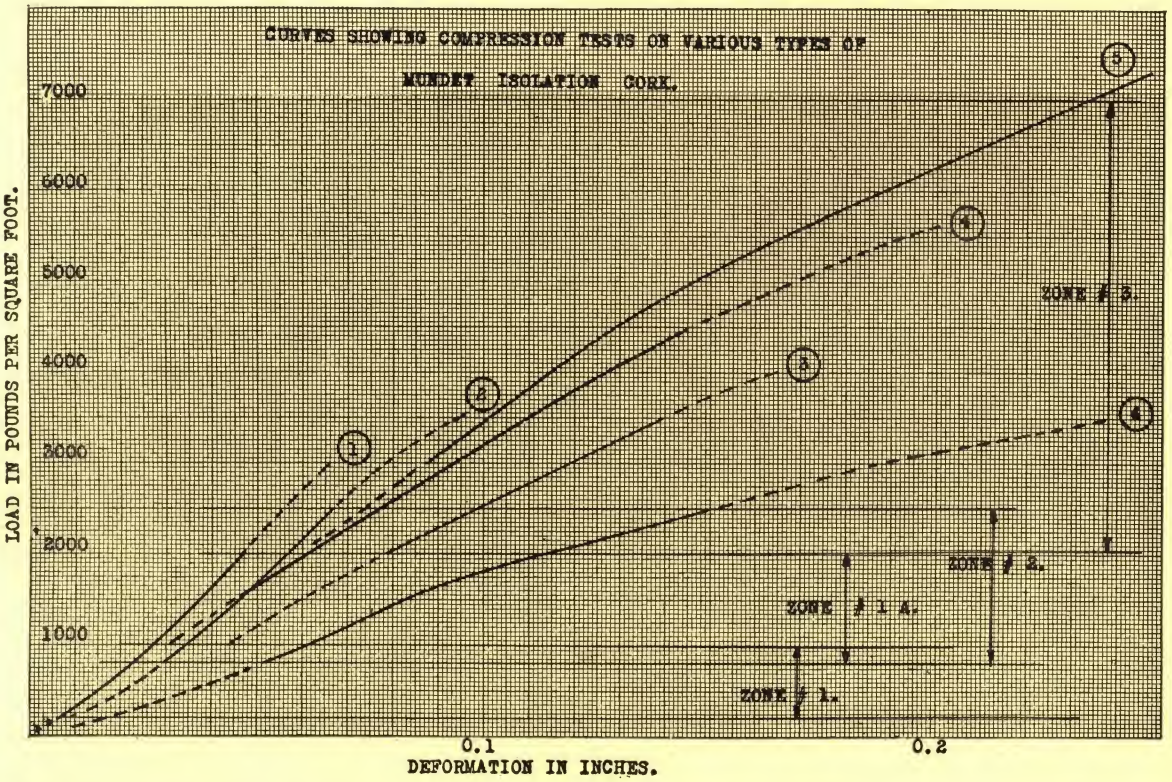


Fig. 2



The above chart is included to assist the designer in selecting isolation cork. The curves are numbered and correspond to test pieces as follows:

(1) Mundet Light Load Isolation Cork—1 in. thick
(2) Mundet Natural Cork Isolation Mat—1½ in. thick
(3) Mundet Machinery Isolation Cork—light density—2 in. thick.
(4) Mundet Machinery Isolation Cork—medium density—2 in. thick.
(5) Mundet Machinery Isolation Cork—heavy density—2 in. thick.
(6) Mundet Natural Cork Isolation Mat—3 in. thick.

The thicknesses selected are those most commonly used in general practice. Curve No. 6 is included primarily to show that the amount of compression varies directly with the thickness of isolation used. This is true of all forms of cork isolation. Vibration absorption also varies approximately with thickness of isolation used.

The chart is divided into zones which show the recommended load limits. The curves are shown as solid lines within the zone limits, and their behavior outside of these limits is shown by the dotted extensions.

Zone No. 1 is for Mundet Light Load Isolation Cork alone.
Zone No. 1A is for Mundet Light Load Isolation Cork in Conjunction with Mundet Natural Cork Isolation Mat.
Zone No. 2 is for Mundet Natural Cork Isolation Mat.
Zone No. 3 is for Mundet Machinery Isolation Cork.

Mundet cork has been tested for static loads up to 15,000 lb. per sq. ft. Further information upon this subject will be gladly furnished. Our Engineering Department will be glad to co-operate in the design of any machinery vibration isolation. A request directed to the Company or our nearest branch office will receive prompt and competent attention.



ARMSTRONG'S TEMLOK INSULATION

DISTRIBUTED BY

ARMSTRONG CORK & INSULATION COMPANY

935 Concord Street, LANCASTER, PA.

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For Armstrong's Corkboard, Cork Covering, Corkoustic, and Vibracork, see Manufacturers' Index

Description

Temlok, Armstrong's new low-cost and efficient fibreboard insulation, is fabricated from the golden heartwood fibres of the long leaf southern yellow pine. Because of the basic properties of the resin-charged pine fibres, Temlok provides at low cost all the essential qualities needed to insure permanent comfort and fuel saving. It is presented by the ARMSTRONG CORK & INSULATION COMPANY, known to architects and engineers as the manufacturer of superior corkboard insulation. Armstrong has realized the need for a permanent, highly efficient insulating board low enough in cost to make it practical for the less severe conditions encountered in homes, apartments, office buildings, farm structures, and other general applications where insulation is desirable. Temlok has been specially developed by Armstrong to meet this need.

Temlok Insulating Board and Insulating Lath are distributed through retail lumber dealers. Temlok Roof Insulation is sold by Armstrong branch offices and agents (for list of agents, see any of our other catalogues as listed in Manufacturers' Index).

Physical Characteristics of Temlok

(a) **Thermal Conductivity**—Temlok's coefficient of thermal conductivity is .33 B.t.u. per square foot, per inch thickness, per degree Fahrenheit temperature difference, per hour.

(b) **Structural Strength**—Since Temlok is made in a rigid board, it possesses ample structural strength for every requirement.

(c) **Light Weight**—Temlok combines light weight and structural strength in one material.

(d) **Moisture Resistance**—Based on the 30-minute absorption test as specified by the U. S. Bureau of Standards, Temlok's moisture absorption is exceptionally low. Moisture resistance is an outstanding characteristic of the resin-impregnated fibres of the southern yellow pine. Thus Armstrong's Temlok, fabricated from these fibres, resists moisture permanently and retains its insulating efficiency in actual service.

(e) **Easy to Apply**—Temlok is easily sawed and nailed in place and is furnished in boards of convenient size for handling on the job. Temlok is shipped in securely wrapped bundles.

(f) **Good Key for Plaster**—Temlok grips the plaster, forming a permanent bond.

(g) **Pleasing Appearance**—Golden tan in color, Temlok presents an attractive appearance when walls are left unfinished.

(h) **Uniform Quality**—Constant checks and tests during the manufacturing process insure maintenance of uniform quality.

(i) **Permanently Efficient**—Because of its high resistance to moisture, Temlok maintains its insulating efficiency.

Sizes

(a) **Temlok Insulating Board**—When used to replace sheathing, or for insulating board for interior finish and general applications, Temlok is furnished in boards 4 ft. wide, 6, 7, 8, 8½, 9, 9½, 10, and 12 ft. long in both full half-inch and full inch thicknesses.

(b) **Temlok Insulating Lath**—Furnished in boards 18 in. wide, 48 in. long, in both full half-inch and full inch thicknesses with shiplapped longitudinal edges.

(c) **Temlok Roof Insulation**—Furnished in boards 22 in. wide, 47 in. long.

Armstrong Service

Armstrong's Engineering and Research facilities are available to you, without obligation. The branch offices listed above are located in all principal cities. Call the branch nearest you for further information, or, if you prefer, write for literature and samples to the ARMSTRONG CORK & INSULATION COMPANY, Lancaster, Pa.

GENERAL SPECIFICATIONS

SPECIFICATION NO. 1

TEMLOK INSULATING BOARD AS SHEATHING IN FRAME CONSTRUCTION

Scope of Work

(Specify definitely the areas of wall and roof to be insulated. If both the ½-in. and 1-in. thicknesses are specified, list separately, defining carefully locations of such areas.)

Note: Adequate insulation is recommended.

Material

Sheathing [insulation] of all exterior walls shall be Temlok Insulating Board [½-in.] or [1-in.] thick as distributed by the ARMSTRONG CORK & INSULATION COMPANY, through retail lumber dealers. Boards shall be 4 ft. wide by (6, 7, 8, 8½, 9, 9½, 10, or 12 ft. long as best adapted).

Application

The Temlok Insulating Boards shall be continuously applied with the long dimensions parallel with and directly over the framework members, allowing ample bearing surface for nailing on all edges. Horizontal joints shall be made only over framed headers. Where end joints are necessary these shall be made centered over 2 x 4-in. headers cut in between framing members. Boards shall be placed approximately ⅛-in. apart at all edges.

Around window and door openings, and where tight joints are desirable, bring Temlok to a moderate contact, but do not force boards into place. Cut Temlok to fit snugly around rafters that project beyond the face of studs.

Nailing

Beginning at the top, nail Temlok first to intermediate studs, then entirely around all edges of boards to the studs, sills, plates, and headers. Use 6d common nails for ½-in. thick Temlok and 8d common nails for 1-in. thick Temlok. All nails shall be 4 in. apart on edges and 6 in. apart along intermediate framing members and ½-in. away from all edges. Drive nails flush with surface of Temlok.

Wood Siding Walls (See Fig. 1)

Wood siding shall be applied directly over Temlok, nailing through into the studs. The nails shall be of sufficient length to penetrate through the siding and the Temlok and into the studs approximately 1 in. Joint in siding shall butt on center of studs.

Shingle Walls (See Fig. 2)

Furring strips, 1x2 in., spaced to the proper shingle weathering, shall be applied horizontally over Temlok and nailed through into studs. Shingles shall be secured to furring strips in accordance with the manufacturer's specifications.

Stucco Finish (See Fig. 3)

Apply waterproof building paper over the Temlok. Wood furring strips, 1x2 in., for metal or wood lath shall be applied vertically, nailed through Temlok into each stud. Apply all metal lath in accordance with the standard specifications of the Associated Metal Lath Manufacturers. Wood lath to be applied in the customary manner. Stucco shall be applied in accordance with the stucco manufacturer's specifications. *No stucco shall be applied direct to Temlok on exterior walls.*

Brick or Stone Veneer (See Fig. 4)

Apply waterproof building paper over the Temlok. Provide masonry ties at each stud spaced 16 in. apart vertically. Nails shall be long enough to pass through the Temlok and penetrate the stud at least 1 in. Shelf angles for the support of lintels, etc., shall be secured through Temlok into studs only. Do not nail into Temlok between studs.

Note: It is recommended that the brick or stone shall be at least ½-in. away from the exterior face of the Temlok.

SPECIFICATION NO. 2

TEMLOK AS ROOF INSULATION ON TOP OF WOOD RAFTERS

Preliminary Work

Rafters shall be 16 in. on centers and 2x4-in. headers are to be put in place where there is a horizontal joint in the Temlok. Provide suitable pieces for a nailing base at the end of all rafters, ridges, hips, valleys, etc.

Scope of Work

(Specify definitely the area of roof to be insulated. If both the ½-in. and 1-in. thicknesses are specified, list separately, defining carefully locations of such areas.)

Note: It is recommended that the architect and contractor specify that the entire roof be insulated and that the 1-in. material be definitely specified.

Material

The insulation shall be Temlok Insulating Boards [½-in.] [1-in.] thick as distributed by the ARMSTRONG CORK & INSULATION COMPANY, through retail lumber dealers. Boards shall be 4 ft. wide by (6, 7, 8, 8½, 9, 9½, 10, or 12 ft. long as best adapted).

Application (See Figs. 1 and 4)

Apply Temlok direct to the rafters with the long dimensions parallel to the rafters and with a bearing for nailing along all edges. Boards shall be placed approximately ⅛-in. apart at all edges. Around corners, gables, openings, and at the meeting of roof insulation and wall sheathing, and at all points where a tight joint is required, the Temlok shall be fitted carefully and brought to a moderate contact, but the boards shall not be forced into place.

Nailing

Temlok shall be nailed first to intermediate rafters and headers, then nailed around all edges of each board using 6d common nails for ½-in. Temlok and 8d common nails for 1-in. thick Temlok, spaced 4 in. apart on all edges and 6 in. apart along intermediate framing members. Nails should be not less than ½-in. from all edges of the board. Drive nails flush with the surface of the Temlok.

Roof Finish

Wood sheathing or 1x2-in. furring strips (roof lath) shall be applied over the Temlok to receive the wood shingles, asbestos shingles, tile, or roof as specified. Nails used to secure furring strips or sheathing, must penetrate through the Temlok and into the rafters, extending into the rafters a distance of 1 in.

SPECIFICATION NO. 3
TEMLOK AS ROOF INSULATION UNDER WOOD RAFTERS

Scope of Work

(Specify definitely the area of roof to be insulated. If both the ½-in. and 1-in. thicknesses are specified, list separately, defining carefully locations of such areas.)

Note: Specify the application of Temlok under wood rafters for the insulation of existing buildings. Also specify for wood roofs covered with wood shingles, slate, zinc, copper, and other types of roof covering materials requiring a solid wood deck for nailing. It is recommended that at least 1-in. of insulation be used for best results.

Material

Insulation shall be Temlok Insulating Board [½-in.] [1-in.] thick as distributed by the ARMSTRONG CORK & INSULATION COMPANY, through retail lumber dealers. Boards shall be 4 ft. wide by (6, 7, 8, 8½, 9, 9½, 10, or 12 ft. long as best adapted).

Note: Use Temlok Insulating Lath for attics where the openings will not permit the use of the larger size boards.

Application (See Fig. 2)

Temlok Insulating Boards shall be continuously applied with the long dimensions parallel with and directly over the framework members allowing ample bearing surface for nailing on all edges. Horizontal joints shall be made only over framed headers. Where end joints are necessary these shall be made centered over 2x4-in. headers cut in between framing members. Boards shall be placed approximately ⅛-in. apart at all edges. Wherever a tight joint is desired around openings at corners, etc., fit Temlok to a moderate contact, but do not force Temlok boards into place.

Nailing

Use 6d common nails for ½-in. Temlok and 8d common nails for 1-in. thick Temlok. All nails shall be spaced 4 in. apart on all edges and 6 in. apart along intermediate framing members, and at least ½-in. away from the edges of the boards.

Temlok as Interior Finish

(Temlok shall be applied in accordance with Standard Specification No. 4, for the use of Temlok Insulating Board as an interior finish.)

Plaster Base

(When plaster is to be applied, Temlok Insulating Lath should be used and applied in accordance with Standard Specification No. 6, for the application of Temlok Insulating Lath as a plaster base.)

SPECIFICATION NO. 4
TEMLOK INSULATING BOARD AS AN INTERIOR FINISH

Preliminary Work

Studs, joists, sills, and plates shall be framed as in ordinary frame construction. All studs shall be placed accurately on 16-in. centers. Where horizontal joints in the Temlok are necessary, use 2x4-in. headers cut in between the studs. Extra studs or headers shall be provided at the top and bottom for top and bottom nailing and extra studs shall be installed to fit in with the design of the paneling, if these be found necessary. For best construction, headers shall be installed back of chair rails and all similar moulded trims.

Scope of Work

(Specify definitely the areas in which the Temlok is to be left exposed. If both the ½-in. and 1-in. thicknesses are specified list separately, defining locations of such areas.)

Material

Interior walls and ceilings shall be covered with Temlok Insulating Board [½-in.] [1-in.] thick as distributed by the ARMSTRONG CORK & INSULATION COMPANY, through retail lumber dealers. Boards shall be 4 ft. wide by (6, 7, 8, 8½, 9, 9½, 10, or 12 ft. long as best adapted).

Application (See Fig. 2)

Temlok Insulating Boards shall be applied direct to the framework members, allowing ample bearing surface for nailing on all edges. Horizontal joints shall be made over framed headers only. Place boards ⅛-in. apart at all edges.

Around windows and door frames, and where tight joints are required, bring Temlok to a moderate contact, but do not force boards into place. Cut to fit snugly around rafters that project beyond face of studs.

Note: Since the Temlok surface is the finish it is necessary that the framing members present a true and level surface suitable for the application of the Temlok.

Nailing

Beginning at the top, nail Temlok to intermediate studs with finishing or casing nails approximately 1 in. longer than the thickness of Temlok used. Drive these nails at an angle of 30 degrees and space 6 in. apart. Heads shall be countersunk with nail set. All edges shall be nailed with 8d common nails on 1-in. material and 6d common nails on ½-in. material, spaced 4 in. apart on all edges and 6 in. apart along intermediate framing members, and at least ½ in. away from all the edges of the boards.

Trim

Joints shall be covered with battens. The battens shall be secured to the framing, headers, etc., with finishing nails set at a 30-degree angle. Baseboard and other trim shall be as commonly used.

Note: If desired, batten strips may be eliminated and the edges of the board butted or beveled by sanding.

Painting and Decorating

Temlok may be left in its natural color and finish. If it is to be painted or enameled, size with glue or prepared sizing.* Follow paint specifications as laid down by the paint manufacturer.

**Note:* To paint without sizing uses more paint than necessary. Temlok will take paste-water stain without first sizing. Commercial oil stains as used for dyeing wood, also can be used over Temlok.

Plastic Paints

Sand the Temlok for a width of about 3 in. each way from the joints using a block of wood and No. 1 sandpaper. Over each joint apply a strip of wire screen cloth 4 in. wide, embedding it in the plastic paint that has been applied to the joint to receive it. The plastic paint must be spread along each side of the strip for an inch or more to prevent the edge of the screen from showing through the finished wall.

A strip of wire screen cloth 8 in. wide bent to a right angle shall be inserted in all re-entrant angles and placed on all convex corners and bonded in place with the plastic paint as specified above.

After the plastic paint on the joints and angles has become thoroughly dry, sand to a smooth even surface, using a fine sandpaper, to prepare the surface ready for the application of the plastic paint. The plastic paint shall be applied in accordance with the manufacturer's specifications.

Wall Paper

First apply over the Temlok Insulating Boards 1½ lbs. unsaturated building felt neatly applied with wall paper paste in the same manner as wall paper. The joints shall be accurately trimmed to butt. Over the felt apply the wall paper in the customary manner.

SPECIFICATION NO. 5

TEMLOK INSULATING BOARD AS CEILING AND FLOOR INSULATION

Scope of Work

(Specify definitely the areas to be covered. If both ½-in. and 1-in. thicknesses are specified, list separately, defining carefully locations of such areas.)

Note: It is recommended that Temlok Insulating Boards be used in connection with floors of sun parlors exposed underneath, floors of rooms over basement garages, and floors of rooms over heating equipment, etc.

Material

The insulation shall be Temlok Insulating Boards [½-in.] [1-in.] thick as distributed by the ARMSTRONG CORK & INSULATION COMPANY, through retail lumber dealers. Boards shall be 4 ft. wide by (6, 7, 8, 8½, 9, 9½, 10, or 12 ft. long as best adapted).

Note: Ceilings may be insulated with Temlok Insulating Boards, but Temlok Insulating Lath is recommended for this portion of the work.

Application (See Fig. 4)

Floor Insulation—Apply Temlok Insulating Boards directly over the rough flooring, nailing it to the rough flooring with sufficient nails to hold the Temlok while the finished floor is being put in place. Leave ⅛-in. space around the edges of all boards.

Ceiling Insulation—Apply Temlok Insulating Boards* direct to the ceiling joists. Leave ⅛-in. space around the edges of all boards.

**Note:* Temlok Insulating Lath as specified in Standard Specification No. 6 is recommended for ceiling insulation.

Nailing

Floor Insulation—Use 8d common nails for 1-in. material and 6d common nails for ½-in. material. Finish floor as specified.

Ceiling Insulation—Nail direct to ceiling joists. Nail first to intermediate joists and then entirely around all edges. Nails shall be placed 4 in. on centers, keeping nails ½-in. from all edges of the board. Use 8d common nails for 1-in. material and 6d common nails for ½-in. material.

Temlok as Interior Finish

(Temlok shall be applied in accordance with Standard Specification No. 4, for the use of Temlok Insulating Board as an interior finish.)

Plaster Base

(When plaster is to be applied, Temlok Insulating Lath should be used and applied in accordance with Standard Specification No. 6 for the application of Temlok Insulating Lath as a plaster base.)

SPECIFICATION NO. 6

TEMLOK INSULATING LATH AS PLASTER BASE FOR OUTSIDE AND PARTITION WALLS AND CEILINGS

Scope of Work

(Specify definitely areas of outside walls and top floor ceilings to be insulated. If both the ½-in. and 1-in. thicknesses are specified, list separately, defining carefully locations of such areas. Include partition walls where desired.)

Note: Where a building is offset it is suggested that the wall which is partially exposed be run through for its entire length, although a portion of such wall may be an interior dividing wall.

Material

Plaster base shall be Temlok Insulating Lath as distributed by the Armstrong Cork & Insulation Company, through retail lumber dealers. Temlok Insulating Lath shall be [½-in.] [1-in.] thick, 18x48 in., the 48-in. edges shiplapped.

Application (See Figs 1, 2, 3, and 4)

The long edges of the Temlok Insulating Lath shall be attached at right angles to the framing. All end joints shall be centered on the framing and the joints of each course of lath shall be staggered with the joints of the preceding course.

All exterior angles shall be reinforced with standard type corner bead, and to all angles at wall and ceiling intersections there shall be applied strips of expanded metal lath or wire mesh bent to an angle.

Nailing

The lath shall be securely nailed at every support with five blued special plaster board nails 1⅛ in. long with $\frac{5}{16}$-in. head for ½-in. lath and 1¾ in. long with $\frac{5}{16}$-in. head for 1-in. lath.

Plastering

(The plaster finish shall be applied in accordance with the manufacturer's specifications, keeping in mind the suggestions for plastering outlined below.)

Note: It is not necessary to wet the surface of the Temlok Lath before application of plaster.

SUGGESTIONS ON PLASTER APPLICATION

For Three-coat Work

First apply a scratch coat over surface of wall, working plaster well into joints to form perfect keys. As soon as the scratch coat has set, and before it is dry, follow with base coat, filling out to grounds. The total thickness of plaster over face of entire wall to be not less than ⅜-in. Darby lightly to a straight and even surface ready to receive the finish coat.

Finish Coat

Any type of finish coat may be used provided its thickness is not more than ⅛-in.

For the proper application of the finish coat, the base coat should be approximately 75% dry, except where sand float is used, in which case the base coat should be 50% dry. If too dry, the wall will absorb moisture too fast from the finish and cause checking. If base is too dry it should be lightly sprinkled with clean water before applying the finish.

For Two-coat Work*

First work plaster well into joints, forming perfect keys, and follow immediately with base coat, filling out to grounds. The total thickness of plaster over face of entire wall to be not less than ⅜-in. Darby to a straight and even surface ready to receive the finish coat.

**Note:* Two-coat plaster work is not recommended.

General Instructions

During the summer months all openings in buildings should be closed to prevent the plaster from drying out before it has set or crystallized. Should white or chalky spots appear, spray them with clear water. In winter, keep plaster from freezing until thoroughly set. After plaster has set and become hard, allow free circulation of air so it will dry quickly. If plastering is done in cold, damp, or rainy seasons, use artificial means for drying walls after plaster has set.

Both scratch and brown coat mortar shall be mixed to a wet consistency allowing for application with light trowel pressure and to facilitate the work of darbying. If the brown coat becomes stiff and sets during the work of darbying, wet down the surface of the brown coat to allow for darbying without the exertion of great pressure against the plastered surface.

DETAILS SHOWING POSSIBLE APPLICATION OF TEMLOK IN BOTH MASONRY AND FRAME CONSTRUCTION

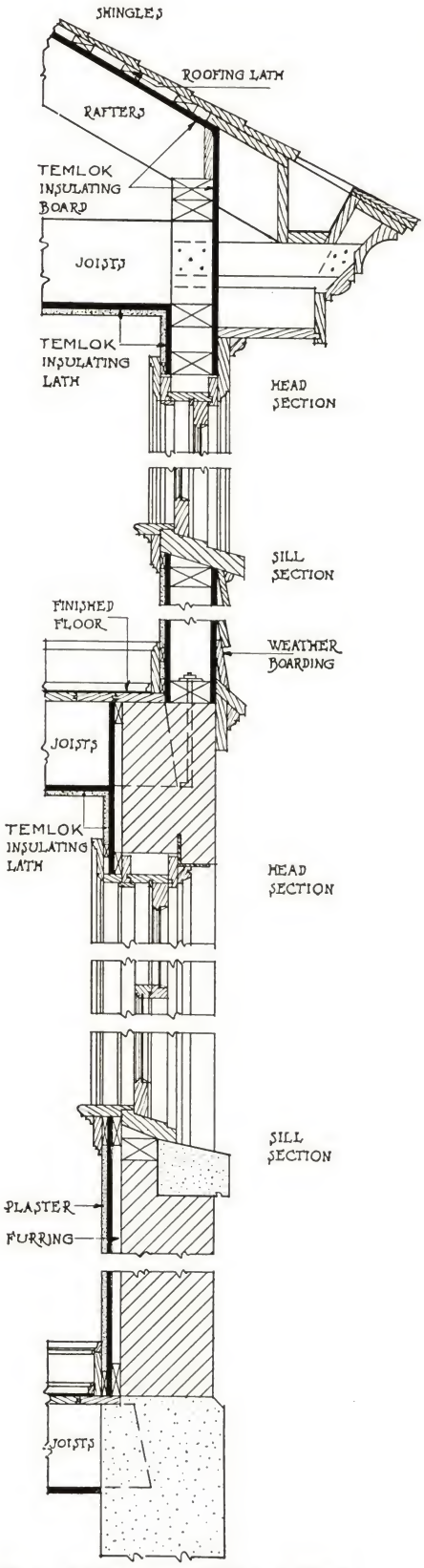


Fig. 1. Brick Masonry Wall and Wood Siding on Wood Framing

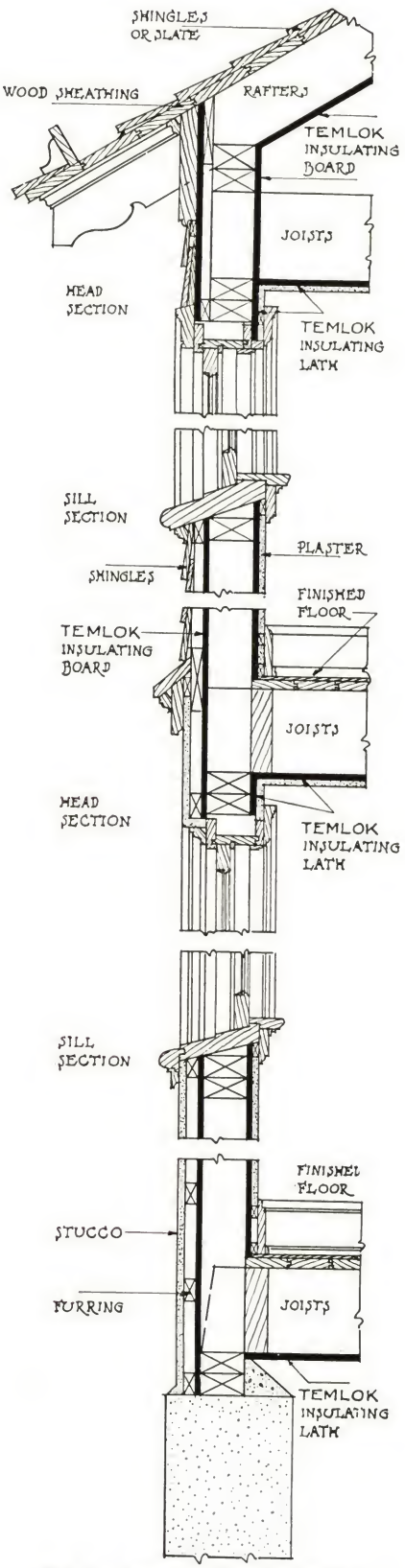


Fig. 2. Stucco on Wood Framing and Shingles on Wood Framing

DETAILS SHOWING POSSIBLE APPLICATION OF TEMLOK IN BOTH MASONRY AND FRAME CONSTRUCTION

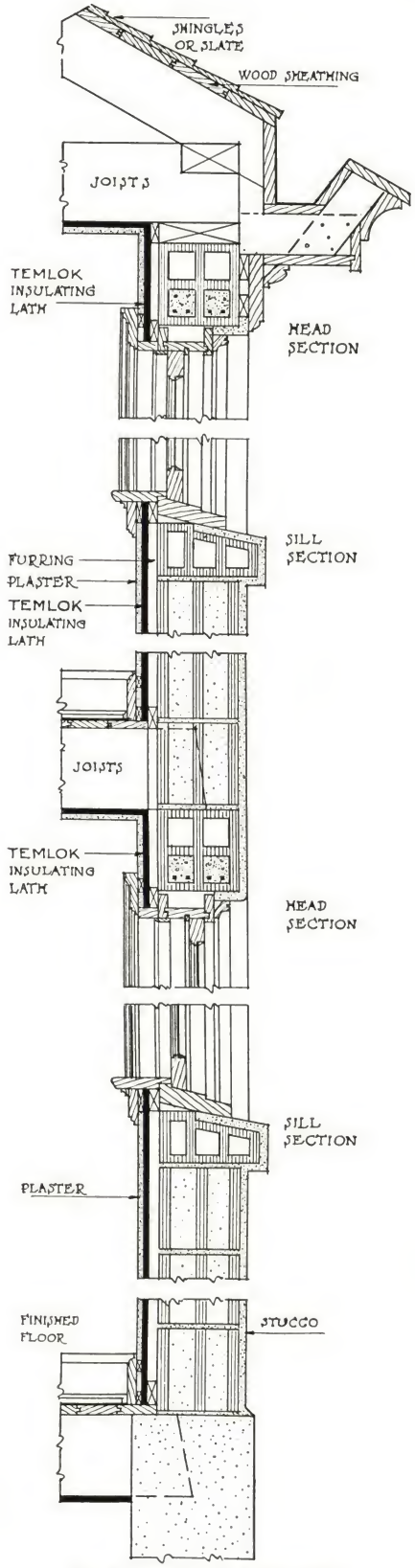


Fig. 3. Stucco on Hollow Tile

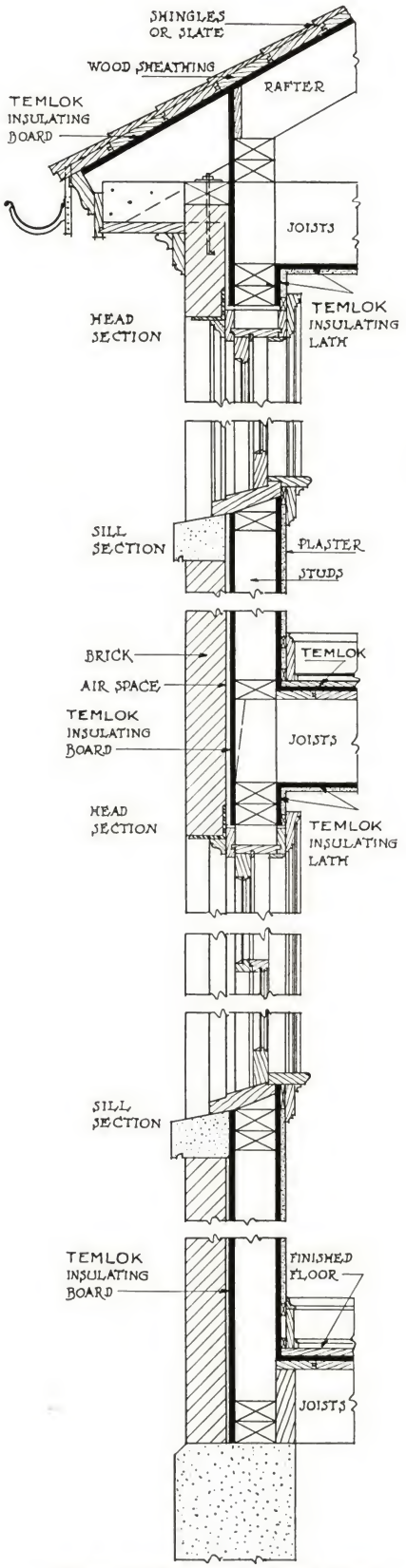


Fig. 4. Brick Veneer on Wood Frame

ROOF RESISTANCE TABLE—TEMLOK

Construction	Resistance factor*	Transmission in B.t.u. per sq. ft., per deg. F., temp. dif. per hour
2 -in. Concrete Slab and Roofing, no insulation	1.52	.66
2 -in. Concrete Slab with ½-in. Armstrong's Temlok and Roofing	3.03	.33
2 -in. Concrete Slab with 1 -in. Armstrong's Temlok and Roofing	4.55	.22
2 -in. Concrete Slab with 1½-in. Armstrong's Temlok and Roofing	6.06	.16
2 -in. Concrete Slab with 2 -in. Armstrong's Temlok and Roofing	7.58	.13
3 -in. Concrete Slab and Roofing, no insulation	1.64	.61
3 -in. Concrete Slab with ½-in. Armstrong's Temlok and Roofing	3.15	.32
3 -in. Concrete Slab with 1 -in. Armstrong's Temlok and Roofing	4.67	.21
3 -in. Concrete Slab with 1½-in. Armstrong's Temlok and Roofing	6.18	.16
3 -in. Concrete Slab with 2 -in. Armstrong's Temlok and Roofing	7.70	.13
4 -in. Concrete Slab and Roofing, no insulation	1.76	.57
4 -in. Concrete Slab with ½-in. Armstrong's Temlok and Roofing	3.27	.31
4 -in. Concrete Slab with 1 -in. Armstrong's Temlok and Roofing	4.79	.21
4 -in. Concrete Slab with 1½-in. Armstrong's Temlok and Roofing	6.30	.16
4 -in. Concrete Slab with 2 -in. Armstrong's Temlok and Roofing	7.82	.13
6 -in. Concrete Slab and Roofing, no insulation	2.00	.50
6 -in. Concrete Slab with ½-in. Armstrong's Temlok and Roofing	3.51	.28
6 -in. Concrete Slab with 1 -in. Armstrong's Temlok and Roofing	5.03	.20
6 -in. Concrete Slab with 1½-in. Armstrong's Temlok and Roofing	6.54	.15
6 -in. Concrete Slab with 2 -in. Armstrong's Temlok and Roofing	8.06	.12
1¾-in. Yellow Pine and Roofing, no insulation	2.90	.34
1¾-in. Yellow Pine with ½-in. Armstrong's Temlok and Roofing	4.41	.23
1¾-in. Yellow Pine with 1 -in. Armstrong's Temlok and Roofing	5.93	.17
1¾-in. Yellow Pine with 1½-in. Armstrong's Temlok and Roofing	7.44	.13
1¾-in. Yellow Pine with 2 -in. Armstrong's Temlok and Roofing	8.96	.11
2¾-in. Yellow Pine and Roofing, no insulation	3.91	.26
2¾-in. Yellow Pine with ½-in. Armstrong's Temlok and Roofing	5.42	.18
2¾-in. Yellow Pine with 1 -in. Armstrong's Temlok and Roofing	6.94	.14
2¾-in. Yellow Pine with 1½-in. Armstrong's Temlok and Roofing	8.45	.12
2¾-in. Yellow Pine with 2 -in. Armstrong's Temlok and Roofing	9.97	.10
Sheet Steel Deck and Roofing, no insulation	1.28	.78
Sheet Steel Deck with ½-in. Armstrong's Temlok and Roofing	2.79	.36
Sheet Steel Deck with 1 -in. Armstrong's Temlok and Roofing	4.31	.23
Sheet Steel Deck with 1½-in. Armstrong's Temlok and Roofing	5.82	.17
Sheet Steel Deck with 2 -in. Armstrong's Temlok and Roofing	7.34	.14
4 -in. Hollow Tile and Roofing, no insulation	3.00	.33
4 -in. Hollow Tile with ½-in. Armstrong's Temlok and Roofing	4.51	.22
4 -in. Hollow Tile with 1 -in. Armstrong's Temlok and Roofing	6.03	.17
4 -in. Hollow Tile with 1½-in. Armstrong's Temlok and Roofing	7.54	.13
4 -in. Hollow Tile with 2 -in. Armstrong's Temlok and Roofing	9.06	.11
6 -in. Hollow Tile and Roofing, no insulation	3.47	.29
6 -in. Hollow Tile with ½-in. Armstrong's Temlok and Roofing	4.98	.20
6 -in. Hollow Tile with 1 -in. Armstrong's Temlok and Roofing	6.50	.15
6 -in. Hollow Tile with 1½-in. Armstrong's Temlok and Roofing	8.01	.12
6 -in. Hollow Tile with 2 -in. Armstrong's Temlok and Roofing	9.53	.10

*Total resistance is the reciprocal of transmission.

INSTRUCTIONS FOR USE OF ROOF RESISTANCE CHART

For determining the thickness of Armstrong's Temlok necessary to prevent condensation

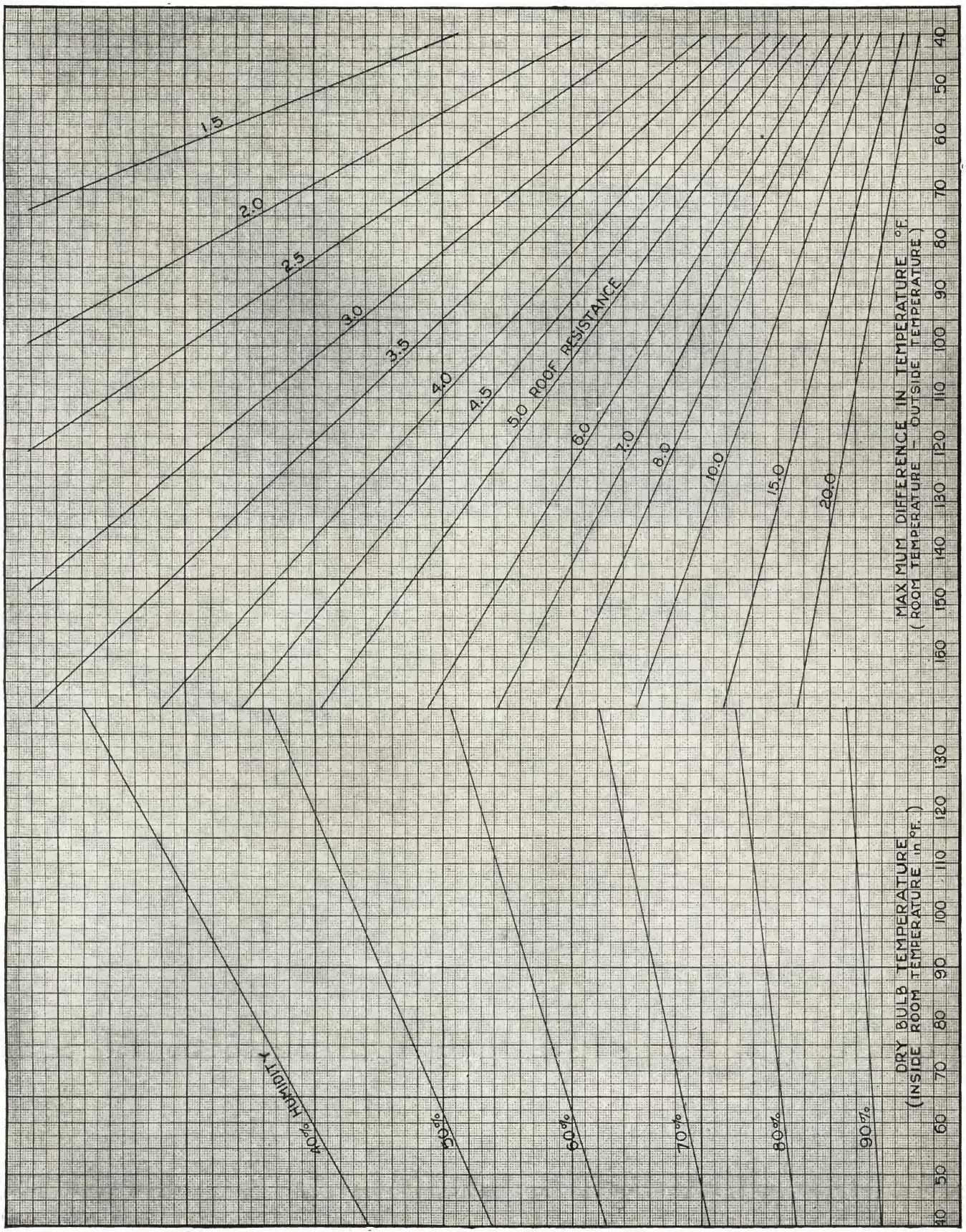
This chart, in conjunction with the roof resistance table, affords a simple means of determining the thickness of Armstrong's Temlok required in addition to the structure of the roof itself to give the roof resistance to the transmission of heat that will prevent condensation. It provides for all requisite factors. When these have been established, their relations can be quickly determined on the chart and the final point is the factor sought.

Method

First, locate at the bottom, left, of the chart the inside room temperature in degrees Fahrenheit. Follow upward until this line intersects the line of humidity percentage. From the point of intersection follow the horizontal line to the right to its intersection with the line of maximum temperature difference. The point of intersection is then read as the roof resistance required for the total roof structure including insulation. Reference is then made to the Roof Resistance table for the construction and insulation.

This chart also may be used in a similar manner for determining the thickness of Armstrong's Temlok required for walls. The Roof Resistance Table does not, however, include wall construction. Similar data for this will be supplied on request.

ROOF RESISTANCE CHART



SPECIFICATIONS FOR ARMSTRONG'S TEMLOK ROOF INSULATION

Furnished in boards 22x47 in.

The following specifications are intended to include only the labor and material required for insulation and do not include roofing, roof boards, steel decks, or concrete work. The specifications for the work of other trades occurring in conjunction with the insulation should be worded to provide for the following:

1. Roofing

Built-up Roofing—Built-up roofing is applied directly to the surface of insulation and the application of both should go forward at the same time. The first layer of roofing should be cemented to the insulation with asphalt or pitch. The edges of the roof insulation should be protected at the wall line by turning the two cap sheets that are applied on the under side up over the edges of the insulation and sealing them to the top surface. This is a desirable practice regardless of the type of deck on which the insulation is placed. No insulated areas should be left exposed overnight. When the insulation cannot be covered by the roofing contractor the same day as laid, the roofing specifications should provide that the roof contractor shall cover the insulation temporarily to protect it from the elements.

2. Concrete Work

Roof Slabs—*Insulation on Top*—The roof slabs should be left reasonably smooth and even for proper installation of insulation.

3. Carpenter Work

The specifications should explicitly require the carpenter contractor to make sure that all roof boards are securely nailed in place. The roof deck should be reasonably smooth and even without high joints between boards.

4. Steel

The outside surfaces of the steel roof deck sheets are painted with asphaltic paint at the factory. After the sheets are erected, any bare spots should be recoated with asphaltic paint by the erecting contractor.

A. General

Before the application of insulation on the top of roof construction, the roof must be free from all moisture, loose material, and dirt. The contractor who builds the roof deck shall remove all rubbish, etc., from the roof and sweep the surface clean.

Armstrong's Temlok Insulation shall be cut to fit in a workmanlike manner around the penthouse, parapet, fire walls, vent pipes, ventilators, skylights, etc. All cant strips used shall be installed over the insulation.

B. Insulating Material

All roof insulation (shown or noted on the drawings) shall be 1-in. Armstrong's Temlok.

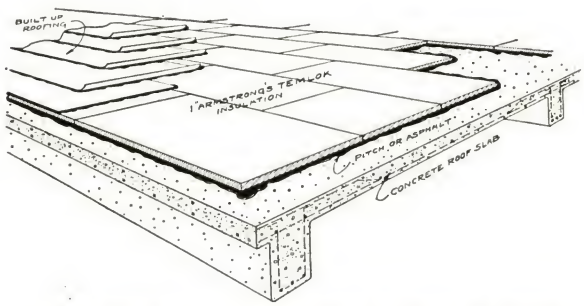


Fig. 5. Drawing Showing Installation of Temlok on Concrete Roof Deck

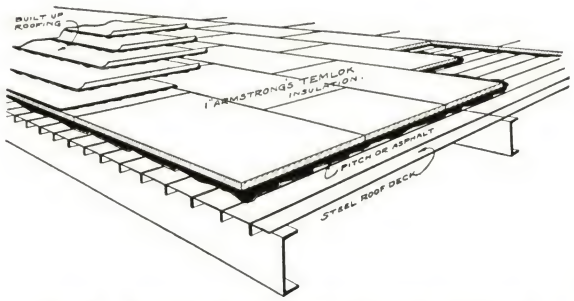
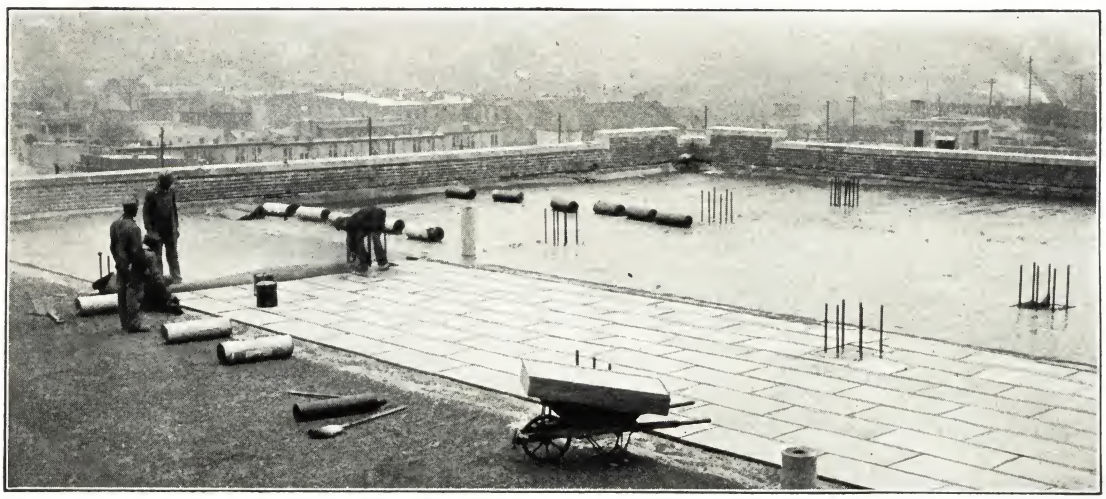


Fig. 6. Drawing Showing Installation of Temlok on Steel Roof Deck



Davenport Hosiery Mills, Chattanooga, Tenn.
A solid inch of Temlok roof insulation being applied to the roof

C. INSULATION SPECIFICATIONS

1. Specifications for Armstrong's Temlok on Concrete and Concrete Tile Roof Decks

On the deck [ ] thicknesses of 1-in. Armstrong's Temlok shall be applied, set in and mopped on the top with hot asphalt or pitch. If asphalt is used in connection with the installation, an asphalt primer shall be used to insure proper bonding to the roof slab. Not less than 35 lbs. of asphalt or pitch shall be used per square per mopping. Each board shall be placed close to the adjoining board and the edges of the boards shall be sealed with the asphalt or pitch when set in place. Where the work is stopped at the end of the day all edges shall be protected and properly sealed off so that no water can get under the seal. This seal shall be drawn down tightly over the edge of the insulation so that it will not be necessary to break it when the work is resumed.

There are many cases where condensation is a severe problem. If this condition is present, a 30-lb. felt membrane shall be installed upon the concrete deck prior to the placing of the insulation. This felt membrane shall be well lapped and sealed. The amount of waterproofing used depends entirely upon conditions.



Isaly Dairy Company Plant, Pittsburgh, Pa.
Workmen who installed solid inch Temlok roof insulation on this roof are enthusiastic about the easy handling and cutting of Temlok Roof Insulation.

2. Specifications for Armstrong's Temlok on Steel Decks

On the steel deck [ ] thicknesses of 1-in. Armstrong's Temlok shall be applied, set in and mopped on the top with hot asphalt or pitch. Not less than 35 lbs. of asphalt or pitch shall be used per square per mopping. Each board shall be placed close to the adjoining board and the edges of the boards shall be sealed with the asphalt or pitch when set in place. Where the work is stopped at the end of the day, all edges shall be protected and properly sealed off so that no water can get under the seal. This seal shall be drawn down tightly over the edge of the insulation so that it will not be necessary to break it when work is resumed. Care should be used to prevent the hot roofing compound from running through.

There are many cases where condensation is a severe problem. If this condition is present, a 30-lb. felt membrane shall be installed upon the steel deck prior to the placing of the insulation. This membrane shall be well lapped and sealed. The amount of waterproofing used depends entirely upon conditions.

3. Specifications for Armstrong's Temlok on Wood Decks

On the wood deck [ ] thicknesses of 1-in. Armstrong's Temlok shall be nailed in place. The insulating boards shall be placed close together and secured to the roof deck by nailing with 2-in. galvanized nails used approximately 12 in. on centers both through the center and around the edge of each board.

Where there will be danger of the roofing compound dripping through the deck it shall be first covered with a sheet of rosin-sized paper before installing Armstrong's Temlok.

There are many cases where condensation is a severe problem. If this condition is present, a 30-lb. felt membrane shall be installed upon the wood deck prior to the placing of the insulation. This felt membrane shall be well lapped and sealed.

The amount of waterproofing used depends entirely upon conditions.

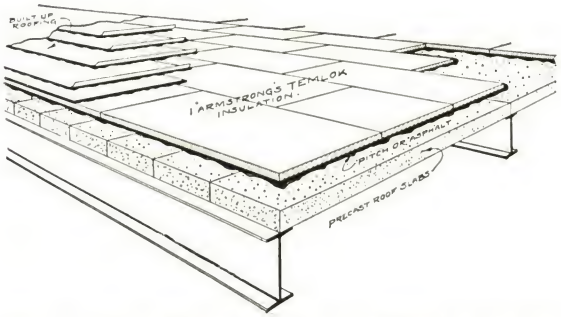


Fig. 7. Drawing Showing Installation of Temlok on Pre-cast Concrete Slabs

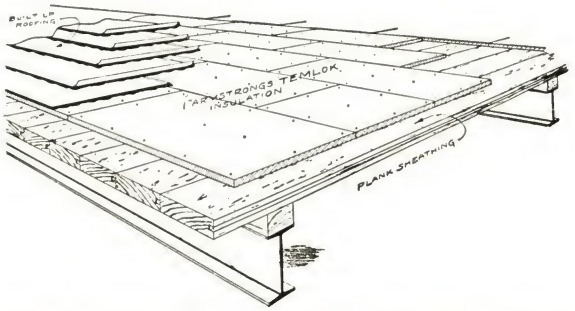


Fig. 8. Drawing Showing Installation of Temlok on Plank Sheathing

BIRD & SON, inc.

Manufacturers of Insulation Boards and Insulation Lath
MILLS AND GENERAL OFFICES
EAST WALPOLE, MASS.

CHICAGO OFFICE AND PLANT: 1472 West 76th Street NEW YORK OFFICE: 295 Fifth Avenue
CANADA: Building Products Ltd., HAMILTON, ONTARIO, MONTREAL, QUE.

For Our Catalogue on Asphalt Shingles, Building Paper and Built-up Roofing, see Manufacturers' Index

THREE STYLES OF INSULATING BOARDS COVER MOST TYPES OF INSULATING REQUIREMENTS

Bird Insulating Board for:

Exterior Sheathing.
Interior Finish.
Floor and Partition Insulation.

Bird Insulating Lath

A Plaster Lath for insulating walls and partitions as well as forming base for plaster. Also for insulating under plaster in attic.

Bird Roof Insulator

Used on Roofs as insulation over steel decks, concrete, under shingles, slate, tile, etc.

All boards are 7/16 in. thick.

BIRD INSULATING BOARD

An Exceptionally Strong, Laminated, Dampproof Construction, Wood Fibre Board with Asphalt between Laminations

General Description of Bird Insulating Board



Illustration at Actual Size

Bird Insulating Board is a 5-ply laminated wood fibre board, each layer separated but firmly bound to the other with a thin layer of asphalt. The asphalt not only acts as a binder but serves as a dampproofing between layers of the laminations. This type of layer-built construction produces a board of great strength.

The wood pulp, treated to produce long strong fibres, gives strength to the board but still preserves its insulating qualities. The board is not chemically treated in any way so that the full strength of the fibres is not impaired.

Texture and Color—The illustration shows the pleasing texture of the surface and the asphalt between the laminations of wood fibre board. The color is a warm light cream in general tone and the texture has the effect of a stippled painted surface. The board is finished smooth on one side and rough on the other.

Differences Between Bird Insulating Board, Bird Insulating Lath and Bird Roof Insulator

In the make up of the three products the process of manufacture is exactly the same. The differences lie in the size and uses to which they are put. The size and uses of each are fully described hereafter.

Bird Insulating Board and Bird Roof Insulator are both square edged boards, the Roof Insulator coming in smaller sheets for easy handling.

Bird Insulating Lath comes in standard size lathing sheets and has a ship lap edge on each side.

Insulating Board, Lath and Roof Insulator are 7/16 in. thick.

Competitive Tests

The following reports of tests were made at the University of Toronto, Building Products, Ltd., and Milton-Hersey Co., Ltd. Complete reports of tests will be sent on request.

TENSILE STRENGTH—AVERAGE OF 4 TESTS

8 x 1-in. test section	Breaking load, lb.	
	Lengthwise	Across
Bird Insulating Board	184	173
Competitor A	101	89
Competitor B	125	113

TRAVERSE STRENGTH—15-LB. LOADING, 5 MINUTES

Test piece 4-in wide susp. on 12-in. centers	Deflection, in.	Perm. set, in.
Bird Insulating Board	0.57	0.05
Competitor A	Breaks	
Competitor B	0.35	None

THERMAL CONDUCTIVITY

Material	Thickness, in.	K.	C.	R.
Bird Insulating Board	.434	.344	.790	1.27
Bird Insulating Lath	.435	.340	.782	1.28
Competitor A	.485	.365	.753	1.33
Competitor B	.457	.413	.905	1.11

Thickness given is the mean of 16 observations taken with the material in place in the apparatus.

K—Thermal conductivity, B.t.u. per sq. ft. per hour per deg. F. temperature diff. per in. of thickness.

C—Conductance, B.t.u. per sq. ft. per hour per deg. F. temperature diff.

R—1/C-thermal resistance of material.

EXPANSION AND CONTRACTING OF INSULATING BOARDS

	Bird Insulating Board	Competitive boards		
		A	B	C
Moisture start	3.7%	6.5%	5.6%	5.5%
Moisture finish	10.2	13.0	15.6	14.9
Time of absorption	4 days	4 days	2 days	1 day
Expansion, length	4/64 in.	8/64 in.	14/64 in.	12/64 in.
Expansion, width	4/64 in.	6/64 in.	5/64 in.	4/64 in.
Time of drying	2½ days	Under 1 day	2 days	1 day
Total Shrinkage				
Length	6/64 in.	14/64 in.	22/64 in.	20/64 in.
Width	5/64 in.	10/64 in.	11/64 in.	8/64 in.
Shrinkage Under Original Size				
Length	2/64 in.	6/64 in.	8/64 in.	8/64 in.
Width	1/64 in.	4/64 in.	6/64 in.	4/64 in.

SOUND TRANSMISSION

Freq.	Sound Transmission, %	
	Bird Insul. Board	Board X
120	27	31
250	26.6	30
500	26	25
1000	35.7	43
2000	23.5	32.6
4000	11.8	20.3

SOUND ABSORPTION

Freq.	Coefficient of absorption, %	
	Bird Insulating Board	Board X
128	31	27.3
256	29	16.6
512	27	15.4
1024	21	23.2
2048	25.5	29.4
4096	45.55	....

WATER ABSORPTION—WATER 1-in. OVER BOARD, 48 HRS., 70° F.

Size, 12 x 12 in.	Wgt. dry, grams	Wgt. after 48 hr., grams
Bird Insulating Board, sample No. 1.	371	459
Bird Insulating Board, sample No. 2	372	460
Competitor A	296	424
Competitor B (7/16 in.)	353	467
Competitor C	339	477

BIRD INSULATING BOARD USED AS SHEATHING UNDER CLAPBOARDS, SIDING, SHINGLES, STUCCO, BRICK VENEER

General Framing Note—All framing shall be done as in regular standard practice, studs shall be (12 in. or 16 in.) on centers and with corners of frame well braced. Care shall be taken to straighten any crooked or misaligned studs before applying Bird Insulating Board. Headers for nailings shall be cut in between studs wherever horizontal joints occur to allow nailing on all edges.

Sheets shall be 7/16 in. thick by 4 ft. wide and in lengths of 6, 7, 8, 9, 10 or 12 ft. as required.

Material—All exterior sheathing shall be Bird Insulating Board as manufactured and supplied by Bird & Son, inc., East Walpole, Mass.

Application—Bird Insulating Board shall be applied vertically and thoroughly nailed to studs, plate, sills, headers and joists. Cut and fit board snugly around all projecting rafters, outlookers, or other projections. Do not force Bird Insulating Board into position. Do not wet the board before or after applying.

Nail first to all intermediate studs beginning at the top, then entirely around all edges of each board. Allow ⅛-in. between all edges and those of adjoining boards.

Nailing—Nails shall be standard 1½-in. galvanized roofing nails with ⅜-in heads. Space nails 3 in. apart around edges and 6 in. apart on intermediate studs, driving heads 1/16 to ⅛-in. below surface of board. Nails shall be placed approximately ½-in. from edge of board.

Snug fit is required around door and window frames, spacing nails 2 in. apart and nail strip 3 in. wide, to back of frames to act as wind stop.

Applying Wood Siding and Clapboards—Wood siding or clapboards shall be nailed directly over Bird Insulating Board making sure that all joints of siding or clapboard fall over studs. All nails shall be ½-in. longer than usual to take up thickness of board and shall be nailed through to studs.

Applying Brick Veneer and Stone Veneer—Back of brick veneer shall be separated from Bird Insulation Board by at least ½-in. Shelf angles for lintels and metal ties or anchors shall be spaced according to brick or stone courses and shall be fastened through the Bird Insulating Board into the studs only.

Applying Stucco

General—A layer of Bird Neponset Black Building Paper shall be applied over Bird Insulating Board prior to the installation of any of the following Stucco Bases:

Furring for Standard Metal Lath or Wood Lath—Apply 1x2-in. furring strips vertically above each stud nailing through Bird Insulating Lath into the stud.

Over Self Furring Metal Lath—Apply lath directly over the building paper, nailing through Bird Insulating Board into the studs.

Metal Lath—Shall be applied in accordance with standard specifications of the Metal Lath Association (or manufacturer for special laths).

Stucco—Shall be applied in accordance with manufacturer's specifications.

Note: Where Bird Insulating Board comes into direct contact with masonry or concrete foundation, it shall be separated with layer of Bird Neponset Black Building Paper or coating of asphalt.

BIRD INSULATING BOARD AS INTERIOR FINISH

Framing Note—All framing of sills, joists and studs shall be framed according to standard construction spacing studs accurately on 16 in. centers. Cut in 2x4-in. headers between studs at all horizontal joints. Studs shall also be laid out to take care of special design in paneling where required. Headers shall also be installed for chair rails, base boards, etc. where nailing grounds are required.

Material—The board for interior finish for (state location) shall be Bird Insulating Board as manufactured by Bird & Son, inc., East Walpole, Mass.

Application—Bird Insulating Board shall be applied vertically nailing first to intermediate studs beginning at the top, and then entirely around all edges of each board. Nail in like manner to joists, rafters, plate, sill and headers. Allow ⅛-in. between all edges and those of adjoining boards. Do not wet the board before applying. Do not force the board into position.

Nailing—Nails shall be 1½-in. galvanized roofing nails with ⅜-in. heads. Space nails 3 in. apart around edges and 6 in. apart or intermediate studs, driving heads 1/16 to ⅛-in. below the surface of board. Nails shall be approximately ½-in. from edges of board.

Nailing for Interior Finish—Where Bird Insulating Board is to be used as interior finish, all exposed surfaces shall be nailed with 1¾-in. finishing nails, spaced 3 in. on centers, driven at angle of 30°, staggering the angles, and set with nail set so that heads lie below surface of board.

Paneling—Where paneling is required, apply wood (or Bird Insulating Board Paneling strips over joints to form paneling as shown on the drawings. Finishing nails shall be used for fastening paneling strips and all strips shall be firmly nailed to studs or joists.

Painting and Decorating—Bird Insulating Board shall be left unpainted as noted. Surfaces to be painted or kalsomined shall be first sized with glue or casein size or any standard sizing.

Note: Glue sizing can be prepared by dissolving 2 lb. of chip glue in 3 gal. of boiling water and apply warm.

After sizing is thoroughly dry, apply paint or kalsomine according to manufacturers directions.

Staining—Any type of commercial stain may be used directly on Bird Insulating Board, applying according to manufacturers directions.

Plastic Finish

Note: If plastic finish is desired we recommend the use of Bird Insulating Lath which has been especially developed for this and plaster finishes.

Papering

Note: Paper should never be applied directly over Bird Insulating Board without first applying reinforcing over the joints.

Preparation of Joints—After applying Bird Insulating Board as per specifications, sand the joints between sheets for a width of 6 ins. with coarse sand paper using block of wood to remove any unevenness in board and form groove. Lay 5-in. strip of fly screening in groove tacking the four corners, and cement in place with plaster of paris, or Swedish putty, making sure of perfect contact between screen and board. Exterior and interior angles shall be similarly treated, with fly screening, tacking and cementing in place. Finish off plaster of paris smooth with the surface of the board.

Size the joints with paper hanger size and hang paper in usual manner.

Note: On account of the texture of the board it is practically impossible to obtain a perfectly smooth surface without texture.

BIRD INSULATING LATH

For Use with Gypsum Plaster Only

Bird Insulating Lath is of exactly the same construction as Bird Insulating Board. The differences between the two products are that the Lath is made in sheets 16 in. by 48 in. over all and 7/16-in. thick, instead of in large sheets. It also has ⅜-in. shiplap edges lengthwise of the lath.



Illustration at Actual size

Answering the Requirements of a Good Insulating Plaster Base

One of the essential requirements of a good plaster lath is that it will not expand and contract during the application and drying of plaster. It must resist the tendency to absorb too much moisture yet must be porous enough in structure to afford high insulating qualities.

Bird & Son inc., have developed an insulating lath in which the coefficient of expansion and contraction, due to the application of plaster, has been reduced to such a small amount that it minimizes the cracking of plaster. The tests shown on the preceding page give the comparison of the coefficients of expansion of Bird Insulating Lath and some competitive laths.

SPECIFICATION FOR BIRD INSULATING LATH

Material—Plaster base for use under all gypsum plaster shall be Bird Insulating Lath as manufactured and supplied by Bird & Son, inc., East Walpole, Mass.

Size of Lath—Bird Insulating Lath shall be supplied in sheets 16 in. x 48 in., 7/16 in. thick. The plaster face shall be rough finish to give additional bond to the scratch coat and a shiplap joint cut on the edge of each sheet to insure a tight fitting edge.

Instructions to Lather—*For Walls*—All studs and furring strips for walls shall be spaced not more than 16 in. on centers. Bird Insulating Lath shall be applied with shiplap sides horizontal, forming one continuous horizontal joint. Ends of all lath shall fall on studs and end joints shall be staggered. Nail lath at all studs of furring strips.

For Masonry or Brick Walls—Furr all masonry or brick walls with wood furring strips, securely anchored to the masonry horizontally, on 16 in. centers; and wood furring strips laid over these vertically on 16 in. centers. Always provide a solid nailing base for lath wherever a nailing ground is necessary.

For Ceilings—Joists or beams may be on any centers desired but if not on 12 in. or 16 in., they shall be furred with 1 x 2 in.-furring strips 12 in. on center. Shiplap edges shall be applied at right angles to furring strips. Ends of lath shall fall on center of furring strips and end joints shall be staggered. Furring shall be shimmed or blocked out so as to make face of board plumb and true before plastering.

Nailing—Special attention shall be paid to thorough nailing of Bird Insulating Lath. Nails shall be 1⅛-in. blued plasterboard nails with 5/16-in. heads, spaced 3 in. apart, using at least 24 nails per sheet.

Preparation of Corners—Galvanized metal corner bead (specify size and type) shall be used on all vertical and horizontal exterior angles from floor to ceiling, securely nailed through lath to studs. All corner bead shall be set straight and plumb.

All interior angles of both wall and ceiling shall be reinforced with strips of metal lath in accordance with standard practice of Metal Lath Mfgs. Association.

Plastering.

Caution—No lime plaster shall be used.

Gypsum plaster shall be (name brands) wood fibred or hard wall plaster, and shall be mixed and applied directly to the lath, as per manufacturer's specifications, not less than ½ in. thick. Scratch and brown coat, applied in one coat, shall be brought to ½-in. grounds and shall be thoroughly dry before applying finishing coat.

Drying out of Plaster—All rooms being plastered shall be well ventilated to allow moisture to escape in both winter and summer but heat should be provided in winter to keep plaster from freezing.

BIRD ROOF INSULATOR

For Use Over Decks Or For Pitched Roofs

Bird Roof Insulator is of the same construction as Bird Insulating Board. The difference is in the size of the sheets, the Bird Roof Insulator being supplied in square edge sheets 32 in. x 4 ft. and 4 ft. x 6 ft. and 7/16 in. thick as against the larger sizes of the Insulating Board. Sizes other than standard are obtainable cut to specified dimensions.

The high insulating qualities of Bird Roof Insulator are clearly given in the tests on preceding page.

Types of Application

There are several methods of insulating roofs. On flat roofs, either one or two plies may be laid over the concrete, steel or wood deck. On wood frame pitched roofs under shingles, slate, etc., one thickness is generally used. The use of Bird Insulating Board or Bird Insulating lath on the underside of the roof acts as an additional insulation.

SPECIFICATION FOR ROOF INSULATION

Material—Insulation for roofs shall be Bird Roof Insulator as manufactured by Bird & Son, inc., East Walpole, Mass.

Size—Bird Roof Insulator shall be supplied in 32 in. x 4 ft. and 4 ft. x 6 ft. square edge sheets 7/16 in. thick.

Application of One Layer of Bird Roof Insulator on Flat Roofs with Wood Decks

Preparation—Sweep the surface of the entire roof deck clean of all dirt and loose material and thoroughly nail all loose planks.

(1) Lay one layer of asphalt roofing felt or Neponset Black Roofing Paper over the entire roof area lapping each width 2 in.

(2) Cover the entire roof area with one thickness of Bird Roof Insulator laid so that all edges are brought to moderate contact. Do not force into place. Each sheet shall be securely nailed along all edges at intermediate points and especially at corners using 1½-in. galvanized roofing nails, spaced 12 in. apart. Cut and fit sheets snugly at parapet walls, skylights and any other projections above the roof deck.

Application of More Than One Layer of Bird Roof Insulator on Flat Roofs With Wood Deck

Note: Follow same specifications as for one layer except nailing of first layer of board is omitted.

Apply the second layer over the first layer, so laying that all joints will be broken between those of the under layer. Nail both layers to wood deck with 2-in. galvanized roofing nails around all edges, at intermediate points and especially corners, spacing nails 12 in. apart.

Caution—No more Bird Roof Insulation should be laid than can be covered by roofing in a day's time. At the end of day's work always protect the edges of Bird Roof Insulator temporarily by overlapping a sheet of the roofing felt over the edge. Cut and remove temporary protection when work is continued.

Application on Built-Up Roofing

Note: Roofing shall be applied as per manufacturer's specifications. The first mopping of pitch or asphalt shall be applied directly to Roof Insulator.

Application of Bird Roof Insulator Over Concrete Roof

Preparation—Sweep the surface of the entire roof clean of all dirt and loose material and see that the surface of the roof is smooth.

(1) Mop roof deck with hot coal tar, pitch or asphalt into which, while hot, lay first layer of Bird Roof Insulator pressing sheets down thoroughly and mop all edges thoroughly.

(2) Mop surface of first layer of Bird Roof Insulator with hot coal tar, pitch or asphalt into which while hot lay second layer of Insulator. All joints shall be staggered in relation to joints of first layer and all edges of board shall be thoroughly mopped.

(3) Mop surface of second layer of Bird Roof Insulator with hot pitch and apply balance of built-up roof as per manufacturer's specification.

Application of Two Plies of Bird Roof Insulator Over Steel Decks

Preparation—Sweep surface of deck, which shall be dry and clean.

(1) Mop steel deck with hot asphalt in which, while hot, lay layer of Bird Roof Insulator bringing edges of board together. All edges shall be thoroughly mopped with asphalt.

(2) Mop the surface of the first layer with hot asphalt and immediately lay second layer. All joints shall be staggered in relation to joints of first layer, and shall be coated with asphalt.

(3) Mop surface of second layer of Bird Roof Insulator with hot asphalt or pitch and proceed with laying of built-up roof in accordance with manufacturers' specifications.

Bird Roof Insulator for Pitched Roofs With Wood Rafters

Material—Roof insulation shall be Bird Roof Insulator 7/16 in. thick as manufactured by Bird & Son, Inc., East Walpole, Mass.

Framing—Rafters shall be accurately spaced 16 in. on center. Cut in 2 x 4-in. header where horizontal joints in insulator occur and provide suitable nailing for edge of board at ends of all rafters, eaves, valleys, hips, ridges, etc.

Application—Bird Roof Insulator shall be applied lengthwise to rafters and applied with a bearing on all edges to allow for nailing. Allow ⅛ in. clearance between sheets on all edges. Fit boards carefully around all projections above the roof line, taking care not to force them into place.

Nailing—Bird Roof Insulator shall be nailed first to intermediate supports then nailed around all edges of each board with 1½-in. galvanized roofing nails with ⅜-in. heads and spaced 4 in. apart. Nails shall not be less than ½ in. from edge and heads shall be driven flush with surface of board.

For Wood Shingles, Asbestos Shingles—Nail 1 x 2-in. wood furring strips through Bird Roof Insulator to rafters.

For Slate, Asphalt Shingles—Apply wood sheathing directly over the Bird Roof Insulator nailing through it to the rafters below.

BIRD INSULATING BOARD FOR SOUND DEADENING

Principle of Correct Sound Control

To correctly control sound between floors, it is necessary to cut off one floor from another with some non-conductor of sound. The transmission of sound through studs, beams and floors must be broken up or a satisfactory job cannot be secured.

Sound is broken up and dissipated in three ways: reflected, transmitted and absorbed. The test of a material for sound control is in its absorbing quality, coupled with essential qualities of strength, durability and ease of application.

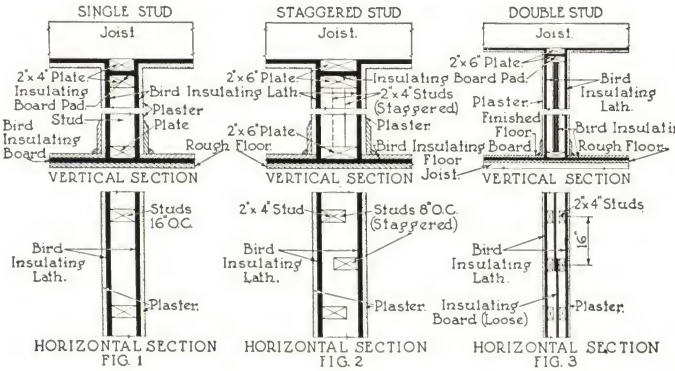
Bird Insulating Board Possesses the Necessary Qualities

Bird Insulating Board has the necessary qualities as outlined above as well as strength, durability and easy working and handling qualities. It can be easily fitted to irregularities of the construction.

Note: When insulating between different floors, care must be taken to see that no duct for ventilation or other use shall run through the building touching the different apartments. This will nullify the advantages of the insulation.

DETAILS OF DEADENING CONSTRUCTION

PARTY WALLS OR PARTITIONS



Insulation of Partitions

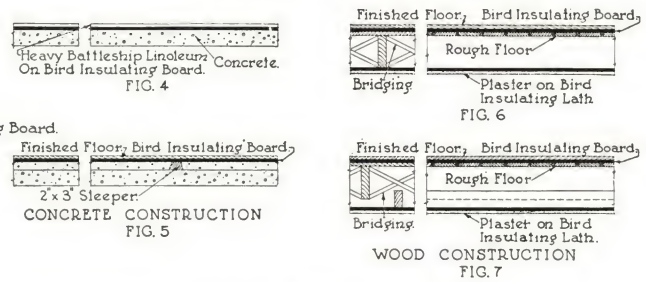
Three different methods of constructing partitions for sound insulation are illustrated. The details explain themselves.

Fig. 1. This shows a single stud partition with method of applying insulation.

Fig. 2. This shows a type of staggered stud partition which is very satisfactory from point of economy of labor as well as from sound insulating values. Even loud speech is scarcely audible through this type of partition.

Fig. 3. This type of double stud partition produces the highest amount of sound deadening quality of the three types.

CONCRETE AND WOOD FLOORS



Insulation of Concrete Floors

Concrete floors may be insulated as illustrated in figures 4 and 5.

Fig. 4. Where linoleum is to be used, first apply Bird Insulating Board 7/16 in. thick in mopping of hot asphalt or asphalt mastic. Linoleum shall then be laid as per manufacturer's directions.

Fig. 5. Where wood floor is to be laid, lay Bird Insulating Board over wood sleepers in the concrete. Lay wood floor over board nailing through to sleepers.

Insulation of Wood Floors

Fig. 6. Good results in sound deadening floors can be obtained in ordinary floor construction by method shown in Fig. 6.

Fig. 7. This illustrates the better method of securing sound insulation in wood floor construction. Here the ceiling and floor construction are carried independently of each other. Pads of Bird Insulating Board should also be used under ends of each joist or beam.

ATLANTIC GYPSUM PRODUCTS COMPANY, INC.

Rockwall All-Wood Insulating Board and Lath

40 Central Street, BOSTON, MASS.

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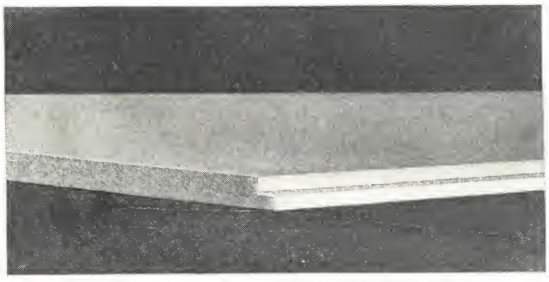
For Other Rockwall Products, see Manufacturers' Index.

ROCKWALL
(Reg. U. S. Pat. Off.)

TRADE-MARKS

Raw Materials

The strength and durability of an insulating material depend on the raw materials from which it is made. Rockwall Insulation is made of the clean, live fibres of spruce and kindred soft woods of many years' growth, felted into a single-ply sheet, a full half-inch thick. The fibres are not cooked or chemically treated in any way. No waste materials are used. For these reasons Rockwall Insulation is strong, rigid and durable. It retains the essential characteristics of wood and adds high insulating value because of the millions of small air cells formed during the manufacturing process.



Rockwall All-Wood Insulating Lath
Shiplapped edges prevent the passage of heat at the joints

Advantages of Rockwall Insulation

High Insulating Value—Repeated tests by foremost authorities show Rockwall Insulating Board and Insulating Lath to have the low conductivity rating of 0.32 B.t.u. The physical characteristics of Rockwall Insulation which make this low conductivity possible give Rockwall, in addition, desirable structural features described below.

Made in One Piece—Rockwall Insulation is made in a homogeneous single-ply sheet. It does not separate into layers, therefore does not lose its structural strength after being erected.

Lighter Weight—Rockwall Insulation, a full half-inch thick, weighs only 600 lbs. per 1000 sq. ft. In addition to the advantage of easy handling on the job, Rockwall's light weight gives it more insulating value, for it is a recognized fact that the lighter the material the better its insulating value, other factors being equal.

Strength—Coupled with Rockwall's light weight is great structural strength. Because Rockwall Insulation is pure wood and made in a single homogeneous sheet, it is one of the strongest insulating boards made, on the basis of equal weight.

Durability—Every fibre of Rockwall Insulation is waterproofed to resist moisture. Rockwall does not attract vermin or rodents. It has the durable qualities of the sound wood fibres of which it is made and will last as long as the building in which it is used.

Attractive Appearance—Rockwall Insulating Board has a light cream-colored, smoothly rippled surface which makes it ideal for use as wall board without further treatment. Or it can be decorated with any desired finish.

Uses

Sheathing—When used as outside sheathing under all types of exterior finish, Rockwall Insulating Board gives greater bracing strength to the building than the usual lumber sheathing. The large sheets cut and nail accurately, are easily handled, and save time and labor in erecting the sheathing.

Plaster Base—Rockwall Insulating Lath grips plaster with a bond of well over 2000 lbs. per sq. ft.—four times the strength of the bond obtained with wood lath. Shiplapped edges prevent the passage of heat at the joints. Rockwall Insulating Lath makes a strong, rigid wall, resists plaster cracks and eliminates lath marks.

Roof Insulation—Rockwall Insulating Board can be nailed directly to roof rafters or to wood decks in residential construction as a base for the roof finish. For industrial roofs Rockwall Insulation is easily applied to wood, concrete, steel or tile roof decks. Rockwall effectively stops heat and prevents condensation of moisture.

Wall Board—Rockwall Insulating Board, used for interior finish or partitions, makes strong, rigid, durable walls and ceilings. It may be left in its natural attractive finish or painted, papered, paneled (with Rockwall batten strips for covering the joints), or may be given any special decorative finish, such as plastic paint or textile wall covering.

Sound Deadening—Rockwall insulates against sound as well as against heat. Laid between subflooring and finished floors, Rockwall Insulating Board reduces the passage of sound. Used as interior wall or ceiling finish, Rockwall is an efficient acoustical material.

Sizes

Rockwall Insulating Board: 4 ft. wide, 6 to 12 ft. long, ½ in. thick.

Rockwall Insulating Lath: 18x48 ins.x½ in. thick, long edges shiplapped.

Rockwall Roof Insulation: 24x47 or 24x60 ins. in thicknesses of from ½ to 3 ins.

Service

Complete stocks of Rockwall Insulation in all types and sizes are carried at ATLANTIC GYPSUM PRODUCTS COMPANY, INC. plants at Portsmouth, N. H., New York, N. Y. and Chester, Pa., assuring prompt shipments by water, rail or truck to any point in the eastern United States.

Architects and their clients are invited to submit their insulation requirements to our service department, 40 Central Street, Boston, for recommendations regarding the types, sizes and methods of application which will best answer their needs. This service is entirely without obligation.



Rockwall All-Wood Insulating Board
It is light and strong, easily handled and erected. Rockwall is a two-purpose product—a structural board as well as a highly efficient insulating material

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For our pages on Celotex Acoustical Products, see Manufacturers' Index

Celotex Products

BUILDING BOARD
LATH
¾-in. SHEATHING
ROOF INSULATION
INDUSTRIAL INSULATION
CEMESTO-BOARD
TILE BOARD
CARPET LINING
LINOLEUM BASE

Other Products

OZITE BUILDING BLANKET
LANITE INSULATING QUILT
COMPO-BOARD
C-X ORANGE LABEL WALLBOARD
C-X BLUE LABEL WALLBOARD
C-X GREEN LABEL WALLBOARD

Description and Manufacture

Celotex, a rigid board form of insulation with a pleasing tan color and an attractive tapestry-like texture, is established throughout the world as a standard building material. Celotex Building Board has two distinctive surfaces. One is smooth, for stenciling and other treatments; the other is textured—that unique Celotex texture. It is manufactured by the felting or weaving of tough cane fibres. The Company produced in 1922 some 18 million square feet, in 1929 about 348 million square feet, and its present capacity is approximately 600 million square feet per year. It is distributed through retail dealers.

Service

An Architectural and Building Service Department is at your disposal for the solution of special architectural and engineering problems in relation to insulation.

Thermal Conductivity

The thermal conductivity of Celotex has been established by many nationally known laboratories (U. S. Bureau of Standards, Armour Institute of Technology, and others). The average conductivity established by test in these laboratories is 0.33 B.t.u. per hour, per square foot, per degree Fahrenheit, per inch thickness.

Structural Strength

Structural strength tests made by Armour Institute of Technology, The University of Minnesota, The R. W. Hunt Company, Columbia University, and other laboratories have shown that Celotex used as sheathing in buildings provides greater bracing against distortion of the building than does horizontal wood sheathing.

Plaster Bond

Tests made to determine the bond of plaster to Celotex indicates that plaster attains a bond or holding power to Celotex of 1000 lbs. per sq. ft. This is a stronger bond than is attained where plaster is applied over wood lath and many other types of plaster lath.

Fire Resistance

Celotex is slow-burning. Due to its high insulating value, light weight, and the absence of open joints it retards the spread of fires.

Vermin Resistance

In the process of manufacturing Celotex, soluble contents of the fibres are completely removed, leaving no food value whatsoever for rodents or other vermin. Celotex is a sterile product.

Standard Sizes

CELOTEX BRAND INSULATING CANE BOARD

CELOTEX BRAND INSULATING CANE BOARD LATH

CELOTEX BRAND INSULATING CANE BOARD ROOF INSULATION

Celotex Building Board—$\frac{7}{16}$ in. thick; 4 ft. wide; 7, 8, 8½, 9, 9½, 10 and 12 ft. long.

Celotex Lath—½ and 1 in. thick; 18 in. wide, by 48 in. long.

Celotex ¾-in. Sheathing Board—4 ft. wide; 7, 8, 8½, 9, 9½, 10 and 12 ft. long.

Celotex Tile Board—$\frac{7}{16}$ and $\frac{13}{16}$ in. thick; widths, from 6 to 24 in.; lengths, from 12 to 32 in.

Celotex Roof Insulation—Approximately ½ in. thick and multiples thereof; 22 in. wide by 47 in. long.

Celotex Industrial Board—Approximately ½ in. thick and multiples thereof; 3 ft. wide by 6 ft. long.

Celotex Cemesto-Board—Available with a one ply (½-in.), two ply (1-in.), or four ply (2-in.), Celotex core, and with ⅛-in. asbestos cement on one or both sides. Standard size is 4x8 in. Smaller sizes will be supplied on special order.

Celotex Cemesto-Board is made by integrally surfacing one or more layers of Celotex with asbestos cement. It offers a combination of the fire protective and weather resisting qualities of asbestos cement with the insulation efficiency of Celotex cane fibre insulation. Provides light reflection, rigidity, waterproofing, fire resistance, permanence and economy, with pleasing appearance.

Suitable for low temperature dryers and air ducts, industrial partitions and roof decks and wherever fire protection and insulation are desired.

Details and specifications covering the various uses of Cemesto-Board will be furnished upon request.

Celotex Carpet Lining—½ in. thick; 3 ft. wide by 6 ft. long.

Celotex Linoleum Base—¼ in. thick; 3 ft. wide by 5 ft. long.

INDEX TO USES OF CELOTEX

Use	Section	Use	Section
Wall and Roof Sheathing	1	Sound Insulation	8
Exterior Finish	1	Industrial Insulation (Form Centering, Air Ducts, Etc.)	9
Attic Lining	2	Roof Deck Insulation:	
Insulation Over Solid Wood	3	Wood	10
Interior Finish	4	Concrete	11
Painting and Decorating	5	Steel	12
Lathing	6	Unit Tile	13
Insulating Quilts, Compo-Board and Special Products	7	Poured Gypsum	14

Note: For Acoustical Correction Sound Quieting, see Manufacturers' Index.

Section 1
CELOTEX AS SHEATHING AND AS EXTERIOR FINISH

Material—Sheathing for all walls and roofs shall be Celotex Building Board or ¾-in. Celotex Sheathing.

Material—Exterior finish shall be Celotex Building Board, which has been weather conditioned by moistening and piling for at least one day.

Framing—Studs and rafters shall be as in ordinary frame construction, 12 or 16 in. on centers and 2x4-in. headers shall be inserted between studs and rafters at ends of all Celotex boards to serve as a nailing base.

Application—The Celotex boards shall be applied lengthwise to the framing, and with $\frac{3}{16}$-in. joints.* Never force Celotex into place. Around door and window frames or where a snug fit is desired Celotex shall be brought to close contact with frames. When $\frac{7}{16}$-in. Celotex is used, an extra strip of Celotex shall be nailed to back of door and window frames to prevent air leakage.

Nailing—Standard 1½-in. galvanized roofing nails (for $\frac{7}{16}$-in. Celotex) or 6d common nails (for ⅞-in. Celotex) shall be used. Nail to intermediate framing members first, spacing nails 6 in. apart and then along edges 3 in. apart and ⅜ in. from edge, driving nail heads just below the surface.

Applying Wood Siding—Apply wood siding directly over Celotex, nailing through to the studs. Siding boards shall butt over studs.

Applying Shingles on Wall—Nail 1x2-in. furring strips horizontally over Celotex to studs, spacing to fit the shingles. Nail shingles to furring strips.

Applying Shingles on Roof—Nail horizontal 1x2-in. furring strips through the Celotex into the rafters, spacing to fit the shingles.

Applying Stucco—All cased openings shall be flashed with strips of metal or prepared roofing. A layer of asphalt coated waterproof paper weighing approximately 10 lb. per 100 sq. ft. shall be applied over all surfaces of Celotex that are to receive stucco. Stucco shall be applied in accordance with the manufacturer's specification to an approved stucco base.

Applying Brick or Stone Veneer—A layer of asphalt coated waterproof paper weighing approximately 10 lb. per 100 sq. ft. shall be applied over all surfaces that are to be veneered. Anchors for brick or stone work shall be nailed through Celotex into the studs. The brick or stone shall be laid in the usual manner. Allow not less than ½-in. space between the Celotex and the brick or stone.

Painting and Finishing—Exterior surfaces shall be painted (see Section 5) before covering joints with moulding or panel strips which shall be at least 3 in. wide and shall be nailed through to the studs.

*Celotex is cut scant in width and length to allow for this space at joints.

Section 2
CELOTEX AS ROOF LINING, ATTIC LINING, FLOOR LINING

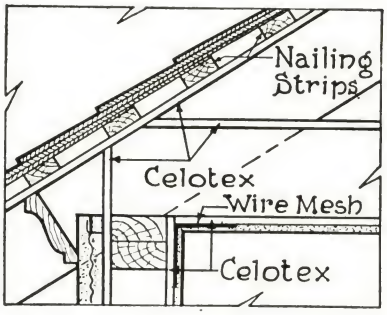
Material—Roof, attic, and floor insulation shall be Celotex Building Board and shall be adjusted to inside humidity and temperature conditions.

Framing—Rafters and joists shall be as in ordinary construction, 12 or 16 in. on centers.* 2x4-in. headers shall be provided between framing members at ends of all Celotex boards to serve as a nailing base.

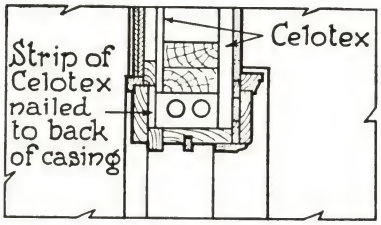
Application—(See Section 1.) Celotex boards shall be extended to a tight fit with the outside insulation or sheathing directly, or indirectly by bringing into contact with the plate.

*If framing is not spaced properly it shall be furred with 1x2-in. furring strips 16 in. on centers.

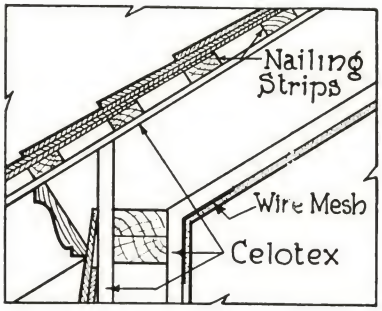
APPLICATION TO FRAME CONSTRUCTION



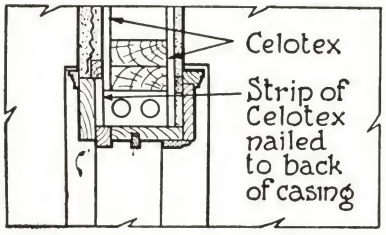
ATTIC



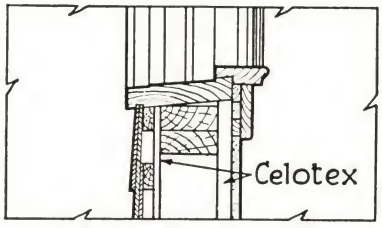
JAMB



ATTIC

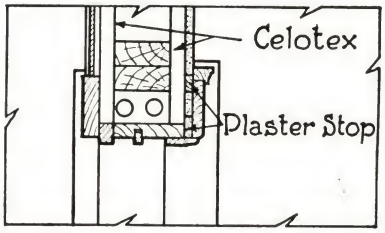


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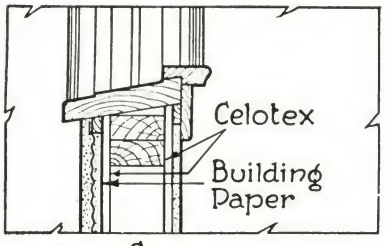


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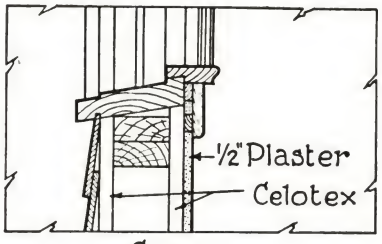
SHINGLES ON WOOD FRAMING.
7/16" Celotex Sheathing
1" Celotex Lath.



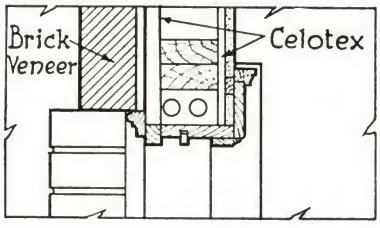
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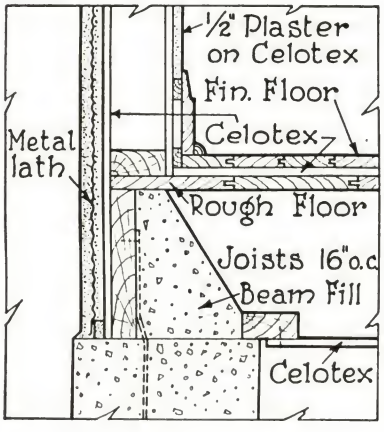
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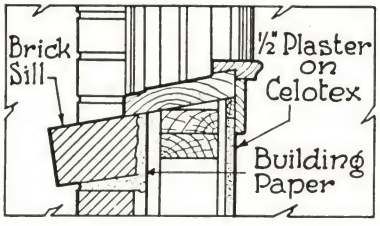
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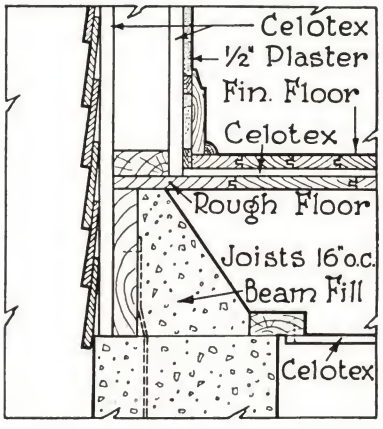


STUCCO ON WOOD FRAMING
7/16" Celotex Sheathing
½" Celotex Lath.



SILL

BRICK VENEER ON WOOD FRAMING
¾" Celotex Sheathing
½" Celotex Lath.



WOOD SIDING ON WOOD FRAMING
¾" Celotex Sheathing
1" Celotex Lath

DETAILS SHOWING APPLICATION OF CELOTEX TO FRAME CONSTRUCTION.

Section 3
CELOTEX AS INSULATION OVER A STRUCTURAL SOLID WOOD BASE SUCH AS A SUB-FLOOR OR SHEATHING (See also Section 7)

Material—Celotex Building Board shall be used.

Application—Laid with edges in moderate contact and shall be nailed sufficiently to hold in place.

Section 4
CELOTEX AS INTERIOR FINISH

Material—Shall be Celotex Building Board, and shall be adjusted to inside humidity and temperature conditions by standing them loosely around room 24 hours before applying.

Framing—Shall conform to the design of the paneling required, spacing studs and joists not more than 16 in. on centers.* 2x4-in. headers shall be inserted between regular framing at the ends of all Celotex boards and wherever heavy mouldings are to occur, to serve as a nailing base. Bent framing members shall be straightened so as to establish a true even framing surface.

Application—The Celotex boards shall be applied lengthwise to the framing with edges in moderate contact.

*To take Celotex boards cut $\frac{3}{16}$ in. less than 4 ft. wide.

Nailing—Where joints of Celotex are to be covered with moulding, standard 1½-in. galvanized roofing nails (for single layer Celotex) or 6d common nails (for double layer Celotex) shall be used. For all exposed nailing, 1½ in. (for single layer) or 2 in. (for double layer) finishing nails shall be used, and shall be driven at an angle just below the surface. Celotex shall first be nailed 6 in. apart to intermediate bearings, and then along all edges 3 in. apart and ⅜ in. from edge.

Treatment of Exposed Joints—Edges of Celotex boards that are to form exposed joints shall be (slightly rounded or beveled) before applying.

Note: Bevel by means of cutting tool, saw or sandpaper. Round off with sandpaper.

Section 5
PAINTING AND DECORATING

Paint (Oil)—All surfaces of Celotex that are to be painted shall be glue sized* or primed.† Joint fillers shall not be used.

Water Stains—Shall be applied direct according to manufacturer's specification.

Kalsomine—Shall have a small amount of glue added to the mixture and shall be applied direct.

Stains—Shall be applied according to the manufacturer's specification.

Stencils—*Note:* May be applied direct and with any medium, but fresco or Japan colors are usually employed, especially over surfaces brushed with sizing or a glue water stain.

Paper—All Celotex joints shall be sanded on the surface and then stripped with a 4-in. galvanized screen cloth.‡ Bonded to the Celotex by means of Swedish putty, a mixture of plaster of paris and glue size, or equal, which should be forced through the wire stripping with a 4-in. scraping knife or pointing trowel and spread somewhat to each side so as to avoid a ridge. All nail holes should be pointed up with the bonding material. After the bonding cement has set, the entire surface shall be glue sized.

Plastic Paint—All Celotex joints shall be prepared and stripped with wire screening. (See preceding paragraph on Paper.) Plastic paint shall be applied over a surface as prescribed by THE CELOTEX COMPANY§ according to manufacturer's specification.

*Glue size shall consist of 1½ lb. shell or chip glue in 1 gallon boiling water. To be applied warm within eight hours.

†Priming coat shall consist of 1 part turpentine, 1 part boiled linseed oil, 1 part paint.

‡12-mesh per inch annealed wire in rolls is preferable.

§Not all plastic paints are satisfactory over Celotex. Some require a glue sized surface.

Section 6
CELOTEX LATH

Material—Lath for all surfaces to be plastered shall be Celotex Lath (½ in., 1 in.) thickness, used from the manufacturer's package, and shall not be wetted or moistened.

Framing—Shall be as in ordinary frame construction with studs, joists, and rafters which are to be lathed spaced 12 or 16 in. on centers.

Application—The Lather shall cover all surfaces to be plastered with Celotex Lath, applied with beveled edges exposed to receive and reinforce the plaster. The long shiplapped edges of the lath shall be attached at right angles to the framing. All end joints shall be centered on the framing and shall be broken or staggered. All exterior angles shall be reinforced with standard type of corner bead, and all interior angles and joints with frame or masonry walls shall be reinforced with strips of expanded metal lath or wire mesh bent into the angle and secured in place by stapling. Where arches and curves are to be lathed, nail the lath through the center and bend to the contour of the framing.

Note: Where 1-in. lath is used, the carpenter shall be required to fit all door and window frames with an inside reveal strip or stop of sufficient size and shall block out the frame with plaster grounds wherein necessary.

Plastering on Celotex Lath—Do not wet or moisten Celotex Lath after nailing. Plastering shall be done with prepared gypsum plaster applied in accordance with manufacturer's specifications. The first or scratch coat and the brown coat, if three-coat work is done, together shall have a thickness of not less than ⅜ in. and the total plaster thickness shall not be less than ½ in. Darby strokes shall be in the direction of framing members with the darby spanning two.

Section 7

INSULATING QUILTS, COMPO-BOARD AND SPECIAL PRODUCTS

Ozite Building Blanket

A modern flexible form of all-hair felt. Permanent. Not subject to decay or deterioration from the elements. Highly resistant to fire. Ozite Building Blanket consists of chemically treated hair stitched between layers of heavy crepe paper, duplex asphalted for waterproofness and repellence to rodents and vermin, durable and puncture resistant. Distinguished by reinforcing hair in the paper surface.

Ozite
Reg. U. S. Pat. Off. by American Hair & Felt Co.
Building Blanket

Heat conductivity value as determined by Armour Institute is .246 B.t.u. per hour, per square foot, per inch thickness, per degree Fahrenheit by flat plate method.

Sizes—½ and 1 in. thick; 17, 25 and 33 in. wide.

Lanite Insulating Quilt

Chemically treated mixture of animal hair and imported fibre between layers of crepe duplex asphalted paper for waterproofness and rodent and vermin repellence. A modern quilt form of insulation-fire resistant.

Lanite INSULATING QUILT C X
Product of The Celotex Company

Tests as determined by Armour Institute show heat conductivity value of .250 B.t.u. per hour, per square foot, per inch thickness, per degree Fahrenheit by flat plate method.

Sizes—½ and 1 in. thick; 17, 25 and 33 in. wide.

Compo-Board

Recognized as a wallboard standard since 1893. Made with a specially patented redwood core with liners of treated paper, for all sorts of decorative treatments. The process of manufacture over many years of experience provides the building industry with a wallboard which *does not warp*. Its use on all types of displays, panels, exhibition booths, partitions and for general construction purposes over a long period of years proves that it may be used with the greatest satisfaction.

Compo-Board
Reg. U. S. Pat. Off.

Sizes—¼ in. thick; 4 ft. wide by 6 to 16 ft. long.

C-X Orange Label Wallboard

Full $\frac{3}{16}$ in. thick. 5 plies of pulp. Dead level surface. Varnish sized to take all decorative treatments, particularly water color paint.

C—X Orange Label WALL BOARD

Sizes—32, 48 and 64 in. wide; 6 to 12 ft. long with 14 and 16-ft. lengths in 48-in. width.

C-X Blue Label Wallboard

$\frac{3}{16}$ in. thick, 4-ply pulp wallboard. Beater size surfaces. Serviceable for general uses.

C—X Blue Label WALL BOARD

Sizes—32, 48 and 64 in. wide; 6 to 12 ft. long.

C-X Green Label Wallboard

A 4-ply utility pulp wallboard adaptable to many uses.

C—X Green Label WALL BOARD

Sizes—32 and 48 in wide; 6 to 12 ft. long.

Section 8

CELOTEX AS SOUND INSULATION IN PARTITIONS AND FLOORS

Complete information on all subjects of Sound Insulation will be furnished by The Celotex Company upon request.

Section 9

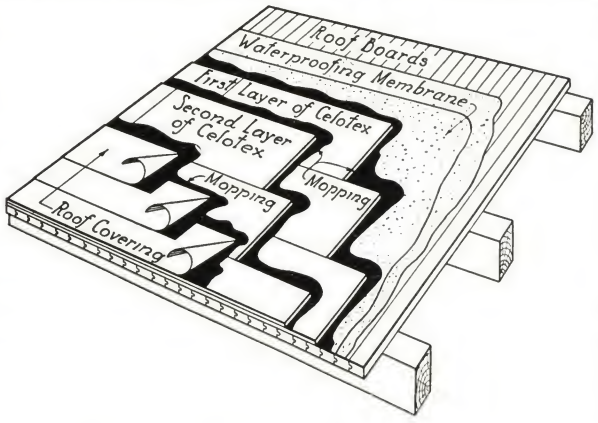
CELOTEX AS INSULATION AROUND AIR DUCTS, AND FORM CENTERING, Etc.

Low Temperature Air Ducts—Shall be insulated with Celotex Industrial Insulation Board fastened to wood furring or wired direct according to architect's specification.

Form Centering—Forms for concrete where Celotex is to act as interior finish or as a base for treatment as specified by the architect shall be lined with Celotex Building Board or Celotex Industrial Insulation Board according to manufacturer's specification.

Note: Complete details furnished upon request by The Celotex Company.

Section 10
CELOTEX ROOF INSULATION OVER WOOD ROOF DECKS



WOOD ROOF DECK

Material—Shall be Celotex Roof Insulation Board in one or two layers. The first layer shall be (½, 1, 1½ or 2 in.) thick and the second layer shall be (½, 1, 1½ or 2 in., etc.) thick.

Note: The layer of lesser thickness shall be applied first.

Roof Deck — Shall be thoroughly dry, broomed clear of all debris and have all loose boarding nailed down.

Note: (1) In some cases such as when there is any possibility of pitch drainage, the entire roof deck should be covered with a layer of rosin sized paper or unsaturated felt, edges lapped 6 in. and turned up and carefully fitted around all walls and projections.

Note: (2) Where high humidities prevail, 2 layers of 14-lb. roofing felt shall be cemented to the above with bitumen, and laid according to the roofing manufacturer's specification. Each sheet shall be lapped one-half the width of preceding sheet and shall be mopped back under the lap at least 12 in.

Under this condition Celotex shall not be nailed to the deck but shall be embedded in moppings.

Application by Nailing—Over the waterproof course thus laid, apply Celotex Roof Insulation Board. Adjoining edges of the boards in each layer shall be brought to moderate contact and shall not be forced into place at any point. Each board shall be secured in place by nailing with 1½-in. galvanized roofing nails with ⅜-in. heads, placed along all edges and a staggered course through the center of the board, with nails placed 12 in. apart.

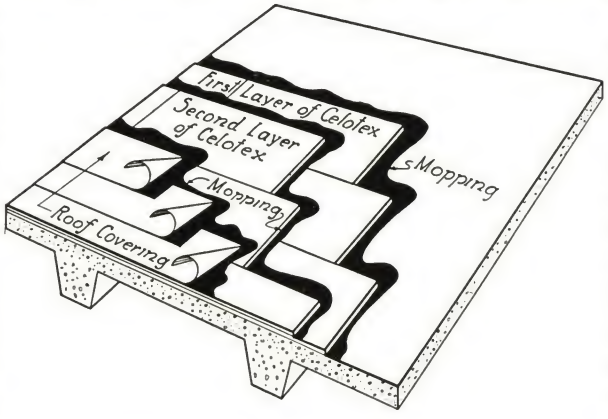
Where two layers of Celotex Roof Insulation Board are applied, the joints of each layer shall be broken or offset with respect to the joints of the preceding layer. In such case all nailing should be done through the surface of the final layer with nails of sufficient length to obtain 1-in. penetration in the underlying board deck.

Where roof deck adjoins parapet walls, fire walls, penthouses and other appurtenances, the Celotex Roof Insulation Board shall be cut in a neat workmanlike manner and fitted with moderate contact.

Application by Mopping—Where conditions make it advisable to increase the amount of waterproofing used in the construction of the insulation layers, each layer of Celotex Roof Insulation Board shall then be embedded in moppings of hot pitch or asphalt. Where this practice is followed nailing will not be required.

Where a waterproof course of asphalt is laid and the layers of Celotex Roof Insulation Board embedded in asphalt and a coal tar pitch roofing used, the finished surface shall be kept free of all asphalt and the roofing applied in accordance with standard specifications for application over concrete decks.

Section 11
CELOTEX ROOF INSULATION OVER CONCRETE ROOF DECKS



CONCRETE ROOF DECK

Material—Shall be Celotex Roof Insulation Board in one or two layers. The first layer shall be (½, 1, 1½ or 2 in.) thick and the second layer shall be (½, 1, 1½, 2 in., etc.) thick.

Note: The layer of lesser thickness shall be applied first.

Roof Deck—The concrete roof deck shall be reasonably smooth, dry and well cured, and the surface of the roof shall be cleared of all dirt and loose materials before the Celotex Roof Insulation Board is applied. If asphalt is used, the concrete deck shall first receive a coat of asphalt primer in accordance with the roofing manufacturer's specifications. If coal tar pitch is used, a priming coat is not usually necessary.

Application—Mop sufficient area with hot asphalt or pitch using not less than 30 lb. per square to provide for complete embedment of each Celotex Board used. Complete adhesion shall be obtained by carefully pressing down all edges into the mopping of hot asphalt or pitch. All edges of the boards shall be completely coated.

Where Celotex Roof Insulation Board is to be applied in more than one layer, the top surface of each layer shall be coated with a uniform mopping of hot asphalt or pitch. All boards shall be thoroughly embedded and shall be laid with joints broken or offset with respect to the joints of the preceding layer. All edges of the boards shall be completely coated.

Alternate layers shall run parallel to each other and at no time shall boards be laid with alternate layers at right angles or crosswise with each other.

Adjoining edges of Celotex shall be brought to moderate contact and shall not be forced into place. Where the roof deck adjoins parapet walls, fire walls, penthouses and other appurtenances, the Celotex Roof

Insulation Board shall be cut in a neat workmanlike manner, to provide the proper joining.

Only as much Celotex Roof Insulation Board shall be laid over the roof area as can be protected and covered by the roof covering in one day.

Where work is stopped at the end of the day, the edges of the Celotex shall be protected temporarily with an overlapping of sheet of roofing, which temporary sheet shall be cut or lifted when continuation of the work proceeds. The application of the Celotex Roof Insulation Board and the roof covering shall be included in the roofer's contract.

Section 12
CELOTEX ROOF INSULATION OVER STEEL ROOF DECKS

Material—Shall be Celotex Roof Insulation Board in one or two layers. The first layer shall be (½, 1, 1½, or 2 in.) thick and the second layer shall be (½, 1, 1½, 2 in., etc.) thick.

Note: The layer of lesser thickness shall be applied first.

Roof Deck—The metal roof deck shall be properly anchored to the steel purlins and all points shall be properly lapped.

Application—Mop with hot asphalt sufficient area of the metal deck to provide complete embedment of each Celotex Board unit. Each board shall be completely embedded in the hot mopping of asphalt. Adjoining edges shall be brought to moderate contact and boards shall not be forced into place at any point.

Where more than one layer of Celotex Roof Board is used, each layer shall break joints with the preceding one, and each layer shall be coated with a uniform mopping of hot asphalt, and all boards shall be thoroughly embedded and all edges completely coated.

The application of the roof covering shall follow the laying of the Celotex, and no more Celotex shall be laid than can be completely covered in any one day by the roof covering. Where it is necessary to stop work the exposed edges of the Celotex shall be temporarily protected by lapping over with roof felt cemented down with hot asphalt or pitch. When the work is continued, this temporary lap may be lifted or cut and the work proceed in the usual manner.

The roofing shall be applied in accordance with the architect's, engineer's or manufacturer's specification.

Section 13
CELOTEX ROOF INSULATION OVER UNIT TILE ROOF DECKS

Material—Shall be Celotex Roof Insulation Board in one or two layers. The first layer shall be (½, 1, 1½, or 2 in.) thick and the second layer shall be (½, 1, 1½, 2 in., etc.) thick.

Note: The layer of lesser thickness shall be applied first.

Roof Deck—The joints of all tiles shall be properly pointed up and the entire surface cleared of all dirt and loose material and prepared in a suitable manner to receive the Celotex Roof Insulation Board.

Application—*Note:* Where asphalt is used, coat the entire surface with a light uniform mopping into which, while hot, embed Celotex Roof Insulation Board.

Where coal tar pitch is used, spot mop tile units keeping all the moppings back 4 in. from the tile joints and embed the Celotex Roof Insulation Board.

Where Celotex Roof Insulation Board is to be applied in two layers, the top surface of the first layer shall be coated with a uniform mopping of hot asphalt or pitch, and all boards shall be thoroughly embedded and shall be laid with joints broken or offset with the joints of the preceding layer, and all edges of the board shall be completely coated. Alternate layers shall be laid parallel to each other and at no time shall boards be laid with alternate layers running at right angles or crosswise of each other.

Only as much Celotex Roof Insulation Board shall be laid over the roof area as can be covered and protected by the roof covering in any one day. Where work is stopped at the end of the day, the edges of the Celotex Roof Insulation Board shall be protected temporarily with an overlapping sheet of roofing, which temporary protection shall be cut or lifted when continuation of the work proceeds. Where the roof deck intersects with walls or other vertical surfaces to be flashed, the installation of the complete watertight flashing shall directly follow the laying of the Celotex Roof Insulation Board and the roof covering in order to preclude any possible damage by leaks at these points.

Where steep roofs are to be covered, provision shall be made for preventing any possible slippage by nailing, tying or anchoring the Celotex Roof Insulation Board in place.

Where conditions do not require waterproofing between the alternate layers of Celotex Roof Insulation Board (as in using multiple layers), the moppings of hot asphalt or pitch may be dispensed with and the various courses anchored in place by nailing.

Section 14
CELOTEX ROOF INSULATION OVER MONOLITHIC OR POURED GYPSUM ROOF DECKS

Material—Shall be Celotex Roof Insulation Board in one or two layers.

The first layer shall be (½, 1, 1½, or 2 in.) thick and the second layer shall be (½, 1, 1½, 2 in., etc.) thick.

Note: The layer of lesser thickness shall be applied first.

Roof Deck—The entire surface of the roof deck shall be cleared of all debris, and as soon as the gypsum has set, the entire roof surface shall be protected with a liberal coat of waterproof primer.

Application—Shall be in accordance with specification for use over concrete—see Section 2.

CORNELL WOOD PRODUCTS COMPANY

307 North Michigan Avenue
CHICAGO, ILL.

PRODUCT

CORNELL IN-CEL-WOOD STRUCTURAL (BOARD) INSULATION

Standard Insulating Board—Standard Insulating Lath—Roof Insulation

THE COMPANY—ITS RESPONSIBILITY

The Company

Cornell In-Cel-Wood is sponsored by one of the largest and most widely known manufacturers in the wood fibre board field—the CORNELL WOOD PRODUCTS COMPANY. Its products—Cornell Wood-Board, card table top fibre board, match board stock, bottle cap stock and solid wood pulp board—have been well and favorably known for their high quality during the past 18 years. For the manufacture of these products, 41,000 acres of virgin timber land in Wisconsin and Minnesota provide an adequate supply of high grade spruce and other soft woods. A modern mill on a 43-acre tract at Brunet Falls on the Chippewa River in Wisconsin. equipped with unsurpassed power facilities, assures for users the price benefits of large-scale production.

Responsibility

The Company's credit rating in Dun's and Bradstreet's is over $1,000,000—First Grade of Credit (the highest rating given).

Distribution

The Company has jobber connections and its own warehouses in practically all the leading distributing centers of the United States.

DESCRIPTION—PHYSICAL CHARACTERISTICS

Tests

All data is backed by authentic tests made by qualified, responsible testing laboratories. Sources and complete logs of all tests will be furnished on request.

Raw Material

In-Cel-Wood is manufactured solely from high grade peeled pulpwood (spruce and kindred species). No waste material of any kind is used.



Manufacturing Process

The new wood, free from bark, rot and all impurities, is mechanically ground. It is not chemically cooked or treated in any way which might affect the life of the fibre or destroy its natural, high insulating value.

Previous to being felted the individual fibres are thoroughly coated with a waterproofing film. The long tough fibres of the ground pulp wood are then carried to the felting machines where they are formed and woven into a homogeneous sheet without laminations.

The sheets are then submitted to a fixed pressure between plates and passed through the dryer under atmospheric conditions most conducive to proper and thorough seasoning and are then cut and formed accurately into the commercial units.

Weight

In-Cel-Wood, due to the high quality of the raw materials from which it is made and to improved methods of manufacture, has the exceptionally low density of 14.4 lbs. per cu. ft. or only 600 lbs. per thousand sq. ft. of full ½-in. thickness.

Thermal Conductivity

In general, the lighter or less dense the material per unit of volume the greater is its insulating value. The low density of In-Cel-Wood is therefore reflected in its low thermal conductivity which authentic tests (flat plate method) show to be 0.32 B.t.u.'s per hour, per sq. ft., per degree F., per inch thickness.

Sizes (Area)

Standard Insulating Board—4 ft. wide by 6, 7, 8, 9, 10 and 12 ft. long.

Standard Insulating Lath—18x48 in. with long edges ship-lapped to reinforce joint and prevent heat leakage.

Roof Insulation—2x5 ft.

Thicknesses

In-Cel-Wood is fabricated to *full* ½-in. thickness, insuring a proportionally higher insulating value than the customary $\frac{7}{16}$-in. thick boards.

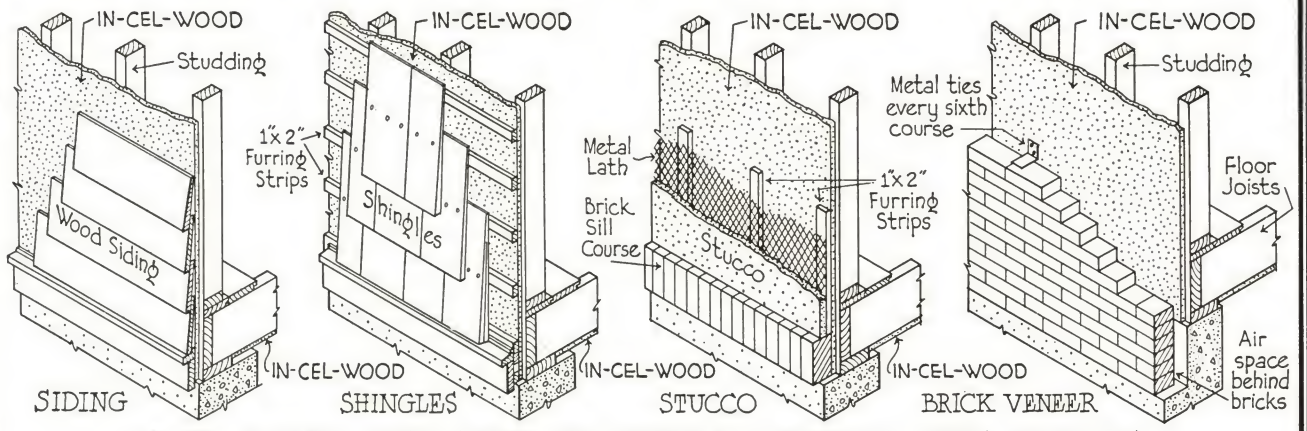
On special order both the Standard Insulating Board and the Standard Insulating Lath may be obtained in ¾-in. thickness (homogeneous construction) as well as in full 1-in. thickness (two ½-in. thicknesses stapled together).

Roof insulation may be obtained in ½-in. thickness, 1-in. thickness (two ½-in. thicknesses stapled) and one ½-in. thickness (three ½-in. thicknesses stapled). The 1-in. thickness is also available with edges offset 1 in. on all sides to seal all joints effectively

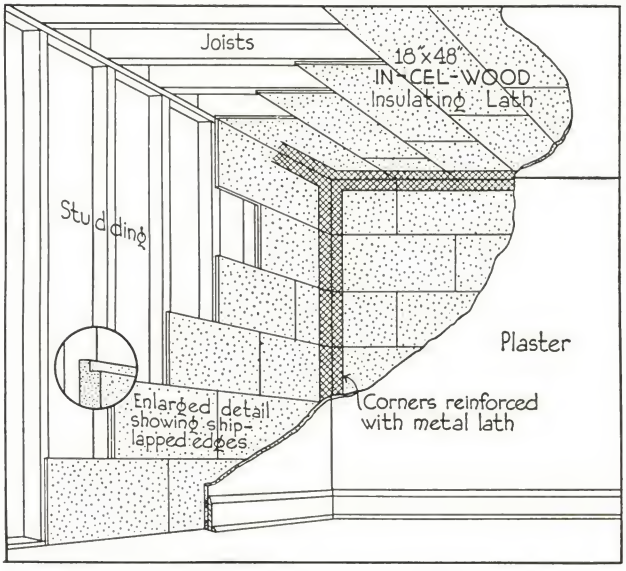
Strength

The tensile strength of In-Cel-Wood is 216 lbs. per sq. in. Other tests show the ratio of strength to weight as 74%. It offers greater resistance to distortion than horizontal wood sheathing.

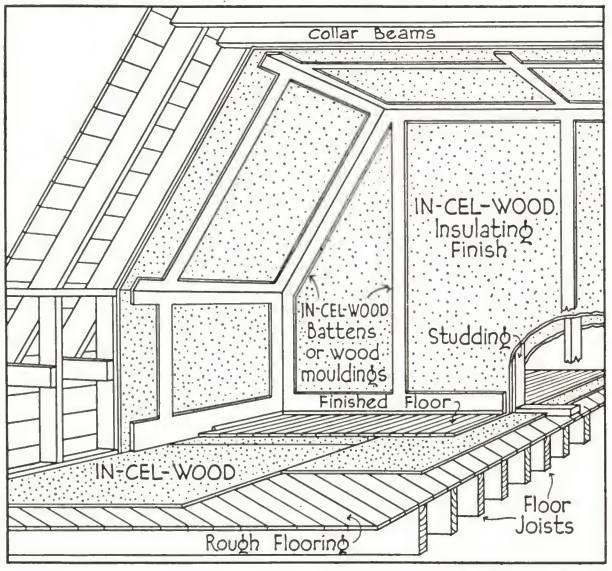
IN-CEL-WOOD INSTALLATION DETAILS



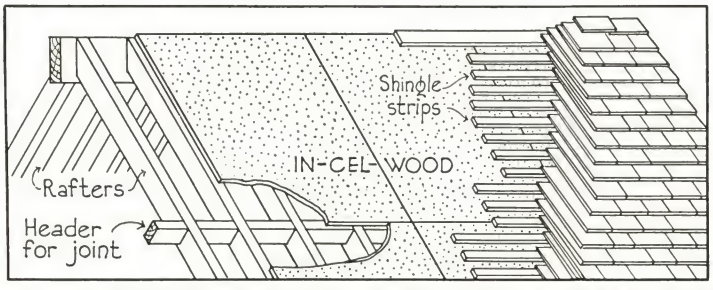
IN-CEL-WOOD INSULATING SHEATHING FOR VARIOUS TYPES OF WALLS



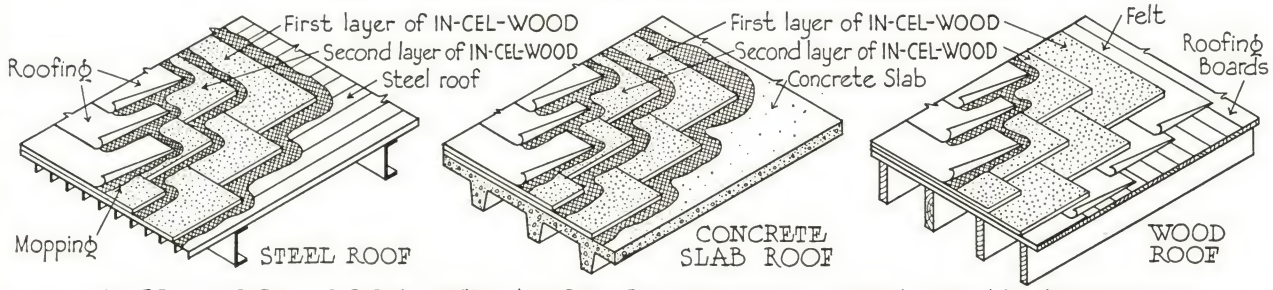
IN-CEL-WOOD INSULATING LATH USED AS PLASTER BASE ON INTERIOR WALLS AND CEILINGS



IN-CEL-WOOD USED FOR ATTIC AND FLOOR INSULATION AND ATTIC FINISH



IN-CEL-WOOD USED FOR INSULATING A FRAME ROOF



IN-CEL-WOOD ROOF INSULATION ON VARIOUS TYPES OF CONSTRUCTION

Moisture Resistance

In-Cel-Wood is specially treated to resist moisture. Moisture absorption tests (made with the edges wax sealed and the two faces exposed) show for 24-hour immersion in water the low gain in weight of an average of 31%.

Plaster Bond

In-Cel-Wood is outstanding as a plaster base. Tests show the strength of the plaster bond to exceed 2,140 lbs. per sq. ft.—the failure then came in the board structure.

High moisture resistance, great rigidity and freedom from expansion and contraction make In-Cel-Wood an ideal base.

Sterility

Made only of new, clean, non-resinous wood fibres, it is odorless and contains no food value that would attract insects or vermin.

Durability

The new wood fibre shows high resistance to deterioration. In a recent test, In-Cel-Wood was buried for six (6) weeks in a pile of fresh manure (temperature approximately 180° F.). At the end of this period the sample showed only slight warpage, reasonable freedom from molds and only slight discoloration. Structurally the board suffered but little.

Fire Resistance

In-Cel-Wood meets Underwriters' specifications for this type of material.

Sound Absorption

In-Cel-Wood readily absorbs sound. Tests show that the sound absorption of regular In-Cel-Wood, ½ in. thick, is 27% at a frequency of 512 cycles.

The sound absorption of special low-density In-Cel-Wood, ½ in. thick, is 34% at a frequency of 512 cycles.

Special acoustical tiles are available, providing substantially higher sound absorption values.

Appearance

In-Cel-Wood is an attractive light cream color. One side is smooth, the opposite side lightly textured.

Uniformity

Uniformity of raw materials, coupled with complete laboratory control and supervision assure an unusual degree of uniformity, both physically and in appearance.

Ease of Application

In-Cel-Wood is cut like wood lumber. No special tools are required. Its uniform, grainless texture assures accuracy in cutting and complete freedom from splitting, chipping, etc. Its lightness assures ease of handling.

IN-CEL-WOOD AS SHEATHING AND ROOF BOARDING
Specifications

Note: *Use on walls under wood siding, shingles, stucco or masonry veneer. Use on sloping roofs under shingles, slate, tile or similar rigid roof units which may be laid over wood furring strips.*

Note: *Notes are explanatory or advisory only and should not be included in the specifications.*

Note: *Select and include only those clauses which apply to the particular work. Words or clauses within brackets in italics are selective.*

(1) Work Included

Note: *Here list and locate definitely the wall and roof areas to be covered. If both ½ in. and 1 in. thicknesses are used, list separately and the respective locations or areas covered.*

(2) Material

(Sheathing) (and) (roof boarding) shall be In-Cel-Wood Standard Insulating Board as furnished by CORNELL WOOD PRODUCTS COMPANY, 307 North Michigan Avenue, Chicago. Boards shall be full *(½ in.) (and) (1 in.)* thick *(as above designated)*, 4 ft. wide by 6, 7, 8, 9, 10 and 12 ft. long, as best adapted.

(3) Application

(3a) General—Continuity of insulation is imperative. Apply In-Cel-Wood boards with the length parallel with the framing members. Where possible boards shall be of sufficient length to completely span between sills and plates or other structural members. Where end joints are necessary these shall only be made centered over 2x4 in. headers cut in between framing members. Side joints shall center over framing members.

(3b) Spacing—In-Cel-Wood boards shall be spaced ¼ in. apart at all edges. Bring the boards to moderate contact with window and door frames and trim (and with vertical walls on roofs). Do not force In-Cel-Wood into place.

(3c) Nails—

(3c1) Use 1½ in. standard galvanized roofing nails with ⅜ in. heads for ½ in. In-Cel-Wood.

(3c2) Use 2 in. standard galvanized roofing nails with ⅜ in. heads for 1 in. In-Cel-Wood.

(3d) Nailing—First nail In-Cel-Wood to intermediate framing members and then nail the edges starting at the top. On intermediate framing members space nails 6 in. apart on centers. On all edges space nails 4 in. apart on centers and at least ⅜ in. from the edge.

(4) Supplementary Provisions

Note: *Provide for the following in other specification divisions.*

Note: *In-Cel-Wood is not a nailing base.*

(4a) Construction—Framing shall be in accordance with the recommendations of the U. S. Department of Commerce and the National Lumber Manufacturers' Association.

(4b) Wood Siding—All joints shall butt over the center of a stud.

(4c) Furring Strips—

(4c1) Provide 1x2 in. furring strips properly spaced over In-Cel-Wood to take *(shingles) (slate) (tile) (specify) (wall) (and) (roof)* covering. Strips shall be laid at right angles to the framing members and nailed to each bearing.

(4c2) Provide 1x2 in. furring strips applied vertically centered over each stud to take expanded metal stucco base.

Note: *Omit if self-furring stucco base is used.*

(4c3) Furring nails shall be sufficiently long to pass through the furring and In-Cel-Wood and penetrate the framing members at least 1 in.

(4d) Self-furring Stucco Base—Self-furring *(galvanized wire) (expanded metal)* exterior stucco lath shall be secured to studs with nails sufficiently long to pass through the In-Cel-Wood and penetrate the stud at least 1 in.

(4e) Masonry Veneer Ties—Provide *(specify type)* masonry ties at each stud spaced approximately 16 in. apart vertically. Nails shall be sufficiently long to pass through the In-Cel-Wood and penetrate the stud at least 1 in.

(4f) Frame Furring, etc.—Provide in accordance with the details, window and door frame furring strips to compensate for the thickness of In-Cel-Wood.

Note: *We advocate wide outside blind stops in frame construction. If, however, these are omitted, provide that the inside of the outside casings be lined with In-Cel-Wood.*

IN-CEL-WOOD LATH AS PLASTER BASE
Specifications

Note: *Use as an insulating plaster base.*

Note: *Notes are explanatory or advisory only and should not be included in the specifications.*

Note: *Select and include only those clauses which apply to the particular work. Words or clauses within brackets in italics are selective.*

(1) Work Included

Note: *Here list and locate definitely the wall and ceiling areas to be covered. If both ½ in. and 1 in. thicknesses are used, list separately and the respective locations or areas covered.*

(2) Material

Plaster base shall be In-Cel-Wood Standard Insulating Lath as furnished by CORNELL WOOD PRODUCTS COMPANY, 307 North Michigan Avenue, Chicago. Units shall be full *(½ in.) (and) (1 in.)* thick *(as above designated),* 18 in. wide by 48 in. long with long edges ship-lapped.

(3) Application

(3a) General—It is not necessary to moisten lath before application. Apply In-Cel-Wood lath, textured side exposed with length at right angles to the framing *(or furring)* members. End joints shall center over framing members. Stagger end joints in successive courses on all walls and ceilings; likewise stagger end joints at juncture of walls and ceilings.

(3b) Spacing—In-Cel-Wood lath units shall be spaced ¼ in. apart at all end joints over framing members. Bring the ship-lapped long edges together in moderate contact. Bring the lath units to moderate contact with window and door frames. Do not force In-Cel-Wood into place.

(3c) Nails—

(3c1) Use 4d box nails for ½ in. thick units.

(3c2) Use 8d box nails for 1 in. thick units.

(3d) Nailing—Space nails 5½ in. apart on centers set ½ in. from the edges. First nail to intermediate framing *(or furring)* members and then at ends. Secure long edges at angles of walls and ceiling, spacing nails approximately 5½ in. on centers. Drive nail heads flush with surface of lath. Do not embed nail heads in boards since this will counteract the effectiveness of the expansion joint.

(4) Supplementary Provisions

Note: *Provide for the following in other specification division.*

(4a) Construction—Framing shall be in accordance with the recommendations of the U. S. Department of Commerce and the National Lumber Manufacturers' Association.

(4b) Furring—Fur all exterior masonry walls to receive In-Cel-Wood lath with *(1x2 in.) (specify)* furring strips, accurately shimmed to a true, level plane, set 16 in. on centers and substantially secured to masonry.

(4c) Grounds—Furnish and erect, substantially secured to framing members through the In-Cel-Wood lath, full ⅜ in. grounds to receive all woodwork trim.

(4d) Plastering—

(4d1) Caution—Do not wet In-Cel-Wood lath before applying plaster.

(4d2) Cornerite—Apply metal lath "cornerite" strips over In-Cel-Wood lath at all re-entrant angles and all corners not protected with corner beads.

(4d3) Plaster—Use gypsum cement or gypsum wood fiber plasters for scratch and brown coat.

(4d4) Thickness—Full ⅜ in. thick.

(4d5) Application—Apply plaster in three (3) coats in accordance with the plaster manufacturer's specifications. Surfaces shall be rodded to a true plane. All corners and angles shall be plumb and true. Wherever necessary and particularly on ceilings, provide plaster screeds to insure a uniform full plaster thickness.

(4d6) Ventilation—Provide adequate ventilation for the proper drying of the plaster work.

IN-CEL-WOOD AS INTERIOR FINISH
Specifications

Note: *Use as an unplastered interior wall and ceiling finish, in its natural state (unfinished), stained or painted. Unfinished or finished with stains it has a decided value as an interior lining for sound absorption in halls, gymnasiums, churches, schools, etc. When used for acoustical correction, it should not be painted.*

Note: *Notes are explanatory or advisory only and should not be included in the specifications.*

Note: *Select and include only those clauses which apply to the particular work. Words or clauses within brackets in italics are selective*

(1) Work Included

Note: *Here list and locate definitely the wall and ceiling areas to be covered. If both ½ in. and 1 in. thicknesses are used, list separately and the respective locations or areas covered.*

(2) Material

(Wall) (and) (ceiling) finish shall be In-Cel-Wood Standard Insulating Board as furnished by CORNELL WOOD PRODUCTS COMPANY, 307 North Michigan Avenue, Chicago. Boards shall be full *(½ in.) (and) (1 in.)* thick *(as above designated),* 4 ft. wide by 6, 8, 9, 10 and 12 ft. long as best adapted.

(3) Application

(3a) General—Apply In-Cel-Wood boards with the length parallel with the framing members. Where possible boards shall be of sufficient length to completely span between floor and ceiling. Where end joints are necessary, these shall only be made centered over 2x4-in. headers cut in between framing members. Side joints shall center over framing members.

(3b) Spacing—In-Cel-Wood boards shall be spaced ¼ in. apart at all edges unless joints are to be left exposed when they shall be brought to moderate contact. Bring the boards to moderate contact with window and door frames. Do not force In-Cel-Wood into place.

(3c) Nails—

(3c1) Use 1½ in.-finishing nails for ½-in. In-Cel-Wood.

(3c2) Use 2-in. finishing nails for 1-in. In-Cel-Wood.

(3d) Nailing—Nails shall be driven at an angle with heads neatly set below the surface. Obliterate nail holes on exposed surfaces by rubbing surface lightly with a piece of In-Cel-Wood.

First nail In-Cel-Wood to intermediate framing members and then nail the edges starting at the top. On intermediate framing members, space nails 6 in. apart on centers. On all edges space nails 4 in. apart on centers and at least ⅜ in. from the edge.

(3e) Finishing Joints of In-Cel-Wood Boards—

(3e1) Exposed Joints—Neatly finish exposed joint edges with sandpaper *(square) (rounded) (beveled)* as detailed.

(3e2) In-Cel-Wood Battens—Use In-Cel-Wood battens 2½ in. wide as furnished by CORNELL WOOD PRODUCTS COMPANY, 307 North Michigan Avenue, Chicago, Ill., or form In-Cel-Wood battens of widths detailed with edges neatly sandpapered *(square) (round) (beveled).* Fit battens neatly at all intersections and at points in contact with other trim. Secure battens with finishing nails as specified in (3d).

(4) Supplementary Provisions

Note: *Provide for the following in other specification divisions.*

Note: *In-Cel-Wood is not a nailing base.*

(4a) Construction—Framing shall be in accordance with the recommendations of the U. S. Department of Commerce and the National Lumber Manufacturers' Association.

(4b) Furring—Fur all exterior masonry walls to receive In-Cel-Wood lath with *(1x2 in.) (specify)* furring strips, accurately shimmed to a true, level plane, set 16 in. on centers and substantially secured to masonry.

(4c) Finish—

(4c1) Natural—When a harder surface is desired, colorless sizing, such as water size, may be used.

(4c2) Stain—In-Cel-Wood takes water, alcohol or other types of stain, either in single tone or stencil designs.

Note: *Where used as acoustical correction, use stain only.*

(4c3) Paint—Size thoroughly with water, glue or oil size. Apply paint in accordance with the manufacturer's direction.

IN-CEL-WOOD AS FLOOR INSULATION

In attics, particularly unheated areas, if the roof is not completely insulated, the attic floor or top story ceiling should be insulated. It is always advisable to insulate first story floors over basements. Use In-Cel-Wood Standard Insulating Boards laid over the rough flooring with the lengths at right angles to the floor joists and the boards brought to moderate contact. Nail the boards to the rough flooring to hold them in place while laying the finished floor. In nailing the finished flooring use nails sufficiently long to pass through the In-Cel-Wood and penetrate the rough floor.

Ceilings below insulated floors may be lathed with In-Cel-Wood Insulating Lath and plastered to give added insulation, since through the top story ceiling is the greatest heat loss in winter and the greatest entrance of heat discomfort in summer.

Since it is quite customary to sleep in cold bedrooms, thus creating unheated areas over the first story with the resulting heat loss during this eight-hour period, insulation of the second story floor or first story ceiling is fundamentally sound insulation practice—also the sound insulating benefits are, in addition, obvious.

In-Cel-Wood board laid as carpet lining under carpeting adds insulation and proves an excellent carpet lining material. Carpet nailing strips at walls the thickness of the In-Cel-Wood should be secured to the floors to take the carpet tacking.

IN-CEL-WOOD INSULATION OVER ROOF DECKS

Specifications

Note: *Use over wood, concrete, steel and similar roof decks.*

Note: *Notes are explanatory or advisory only and should not be included in the specifications.*

Note: *Select and include only those clauses which apply to the particular work. Words or clauses within brackets in italics are selective.*

(1) Work Included

Note: *Here list and locate definitely the roof areas to be covered and the total insulation thickness. If more than one thickness is used, list separately and the respective locations or areas covered. In-Cel-Wood 1 in. thick is available with edges offset 1 in. on all sides to seal all joints effectively.*

(2) Material

Roof insulation shall be In-Cel-Wood as furnished by CORNELL WOOD PRODUCTS COMPANY, 307 North Michigan Avenue, Chicago. Insulation shall be *(specify)* thick, boards, 2x5 ft. in area *(with offset edges)*.

(3) Application

(3a) Condition of Deck—Deck shall be smooth, dry and swept clean.

(3b) General—In-Cel-Wood shall be dry when applied. Lay only as much insulation as can be covered and protected by the finished roof covering in a single day. Where work is stopped, protect the edges of insulation with overlapping mopped strips of roofing felt, leaving the felt strips as a permanent seal. Apply In-Cel-Wood units with edges in moderate contact. Cut units to fit snugly against all parapets or similar vertical surfaces. Do not force In-Cel-Wood into place. Break joints between alternate rows *(and between alternate superimposed courses or thicknesses)*.

(3c) Application Over Wood Decks—

(3c1) Felt—Apply *(one) (two)* layer *(s)* of dry, saturated roofing felt over the roof boards. Lap the felt at least 1½ in. at joints. *(Felt shall extend 6 in. up on walls and all vertical surfaces and shall finally be turned over and mopped to top of insulation.)*

Note: *Felt protects against dripping of pitch or asphalt through deck. Include last bracketed italicized clause only where there is excessive humidity inside the structure. Depending on humidity conditions use one or two layers.*

(3c2) Laying—Apply the In-Cel-Wood units over the felt. *(Where more than one thickness of insulation is used on a single area, nail the first layer in place only sufficiently to maintain its alignment and lay the second layer directly over the first, breaking all joints.)*

Note: *Include or omit last bracketed italicized clause above as required.*

(3c3) Nailing—Insulation shall be secured to deck with roofing nails sufficiently long to penetrate through the insulation and provide firm hold in deck. Space nails approximately 12 in. apart on centers and not more than 2 in. from edges of the unit. Carry one row of nails longitudinally through the center of each unit.

(3d) Application Over Concrete Decks—

(3d1) Felt—Apply *(one) (two)* layer *(s)* of saturated roofing felt over the roof deck, thoroughly stuck in hot *(pitch) (asphalt)*. Felt shall extend 6 in. up on walls and all vertical surfaces and shall finally be turned over and mopped to top of insulation.

Note: *Include this clause where interior of structure is subject to high humidity conditions as in paper, textile mills, etc., or on applications made during winter months where decks do not have opportunity to thoroughly cure and dry out before insulation is applied.*

(3d2) Laying—Mop deck thoroughly with *(hot pitch) (hot asphalt)* using not less than 35 lbs. per square. Apply the In-Cel-Wood units while the mopping is still hot. Firmly bed the In-Cel-Wood in the binder over the entire surface. *(Where more than one thickness of insulation is used on a single area. Mop the surface of the first layer and apply the second layer while the binder is still hot. Press second layer firmly into position.)*

Note: *Include or omit last bracketed italicized clause above as required.*

(3e) Application Over Steel Decks—

(3e1) Laying—Mop deck thoroughly with hot asphalt using not less than 35 lb. per square.

Note: *Pitch should not be used over steel decks.*

Apply the In-Cel-Wood units while the mopping is still hot. Firmly bed the In-Cel-Wood in the binder over the entire surface. Break joints between alternate rows. *(Where more than one thickness of insulation is used on a single area. Mop the surface of the first layer and apply the second layer while the binder is still hot, breaking all joints. Press second layer firmly into position.)*

Note: *Include or omit last bracketed italicized clause above as required.*

(3f) Finished Roofing—Finished roofing shall be applied over insulation in accordance with the manufacturer's specification, using at least 35 lbs. of *(pitch) (asphalt)* per square under the first layers.

CERTAIN-TEED PRODUCTS CORPORATION

Insulating Materials

GENERAL OFFICES
100 East 42nd Street, NEW YORK, N. Y.

For Sales Offices, see Gypsum Plaster Pages
For Our Other Products, see Manufacturers' Index

BEAVER INSULATING BOARD

Thermal Insulation

This is a sturdy, 5-ply laminated fibre board containing excellent insulating and sound-proofing qualities. The carefully selected materials and structure of this board provide exceptional resistance to heat flow and to the passage of air.

Moisture Resistant

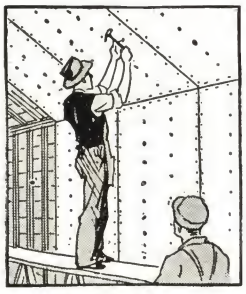
Unusual resistance to moisture has been developed in this board, and it is specially treated to withstand vermin, rot or decay.

Structural Value

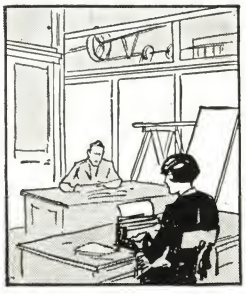
Of exceptional strength and durability, this board can replace other building materials, reducing the actual cost of insulation.



Interior Finish



For Old Homes



Quiet Offices



Garage Insulation

Tested Quality

Beaver Insulating Board meets highest standards.

It is carefully tested for its insulating value, rigidity, breaking strength and impact strength.

It passes high—not only in the laboratory, but in actual use.

Application

Beaver Insulating Board is light in weight, easy to saw and nail.

Panels are $\frac{7}{16}$ in. thick, 48 ins. wide, in lengths of 6 to 12 ft.

It is adaptable for new work or for remodeling in any type of home or building, and ready for tasteful decoration when used as an interior finish.

DRY THERMOCRETE

Superior Insulation

A light, fluffy gypsum material possessing the natural insulating properties of gypsum, plus bulk thickness and millions of dead air cells assured by its fluffy consistency.

Fire Resistant

Gypsum will not burn, so Dry Thermocrete provides valuable protection to wood members in frame construction. It acts as a fire-stop as well as an efficient insulator when poured between the walls of any building.

Easy Installation

To apply Dry Thermocrete simply pour from the bag between inner and outer walls and floors, or spread between attic joists. It is used dry—just as it comes in the sack.

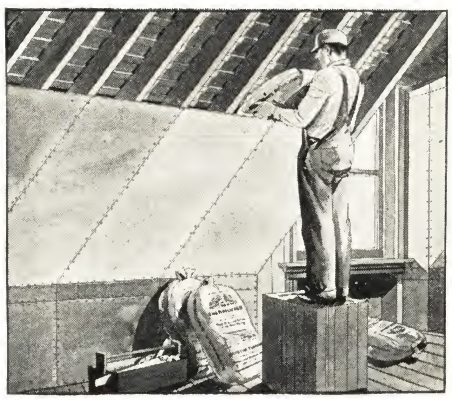


Covering Capacity

Dry Thermocrete comes in 50-lb. bags, convenient for handling. The following table shows estimated figures for installations of Dry Thermocrete. Figures for any thickness may be obtained by dividing the specified number of inches into the figures shown below.

COVERING CAPACITY OF DRY THERMOCRETE

Where used	Sq. ft., 1 in. thick		Cu. ft.	
	One 50-lb. bag	One ton	In one 50-lb. bag	In one ton
In walls	25	1000	2	83
In ceilings and floors	30	1200	2½	100



BEMIS INDUSTRIES, INC.

THERMATEX DIVISION

Manufacturers of Thermatex, an Advanced Type of Insulating Material

40 Central Street, BOSTON, MASS.

PLANT: PORTSMOUTH, N. H.

THERMATEX

Description

Thermatex is a low density wood fibre insulating board developed to fill economically the varying requirements of building and industrial insulation. Manufactured by a new patented process, exclusively owned by BEMIS INDUSTRIES, INC., 40 Central Street, Boston, Thermatex makes available new sizes, thicknesses and insulation efficiencies. Genuine Thermatex is orange tinted for ready identification.

Reg. U. S. Pat.

Standard Sizes

1 inch thick

48x24 in. 48x12 in. 24x24 in. 24x12 in. 24x8 in.

1½, 2 and 3 inches thick

48x24 in. 48x12 in. 24x24 in. 24x12 in. 24x8 in.

(Special sizes and shapes not greater than 48x24 in. up to 3 in. thick are furnished where quantities warrant.)

Permanence

Made of all wood fibre, Thermatex has the enduring qualities of wood. It is semi-rigid and stays put.

Resists Moisture

Thermatex fibres are chemically treated to resist moisture. Under average building conditions, it is non-absorbent of water.

Hygienic

Made entirely of wood fibre, Thermatex is clean and odorless. It does not attract or harbor vermin.

Efficiency

Insulation is comparative, all materials offering insulation in some degree. Thermatex is ideal because it is remarkably efficient *as a material* and because it is available in thicknesses that permit securing a wide range of insulation values. In all thicknesses Thermatex fibres are continuously interlaced—not layer built—and its low price per unit of thermal efficiency becomes increasingly favorable as the thickness increases.

The high efficiency represented by the following low heat conductivities in B.t.u.'s per square foot per degree Fahrenheit difference in temperature, per hour, were determined by tests conducted in the Armour Institute of Technology, Massachusetts Institute of Technology, and elsewhere.

1 -inch thick board.....0.294
1½-inch thick board.....0.196
2 -inch thick board.....0.147
3 -inch thick board.....0.098

Application

The range of thicknesses in which Thermatex is supplied makes it suitable insulation for practically every building and refrigeration need. By reason of its semi-rigidity, lightness and workability, it is suited to covering considerable areas or to fitting into special openings and around particular constructions. No special skill on the part of workmen is required. Thermatex Board in full size (48x24 in.) laid directly on a roof deck and mopped with tar or asphalt, provides roof insulation readily and efficiently. Thermatex in 8-in. widths, placed in accordance with the lap method (as illustrated) in the open spaces between frame members, provides insulation in walls, floors and ceilings and under roofs in a simple economical manner without necessitating changes in usual building construction. While Thermatex may be used as a plaster base, experience has shown that lath is superior to fibre board as a plaster base and the use of lath is strongly recommended.



Roof Deck Application

Building paper laid on roof deck is mopped with tar or asphalt and Thermatex boards placed directly thereon. The layer of Thermatex insulation is then mopped with tar or asphalt and building up of the roof proceeds as specified

Estimating Quantity Required

For Roof Decks and Flat Areas—

2,000 sq. ft. or less—Use total square feet over all plus 10%.

Over 2,000 sq. ft.—Use total square feet over all plus 5%.

For Application Between Frame Members—

Colonial Type Building—Wall only. Use total square feet over all net. (Do not deduct for window or door openings.)

Roof or ceiling only. Use total square feet over all plus 10%.

English Type Building—Add 5% to above amounts.

To Specify

Simply call for "Thermatex Insulation" of the thickness that gives the degree of insulating value desired.

Refrigeration and Other Manufacturing Applications

Complete information regarding the use of Thermatex for these special applications will be sent on receipt of data covering the particular problem.

Service

From the completely equipped plant, located at Portsmouth, N. H., which has rail and first class highway and water connections with all main points, BEMIS INDUSTRIES, INC., offers prompt service and economical shipments. Without obligation, architects, engineers and manufacturers are invited to make use of the experience of the Service Department Engineers in connection with particular insulation problems.



At Left:

Lap Method of Applying Thermatex Between Frame Members—for Walls, Ceilings and Roofs

Standard Size Thermatex, 8x48 in., Is Used.

First slab is placed on sheathing, pressed against one of the frame members and nailed at three or four points directly to the sheathing. Then the second slab is placed on first slab, pressed against frame member on the other side of the space and nailed at three or four points to sheathing through both slabs along overlap. The second slab may also be toenailed to frame member. If preferred, a bearing for second slab, where it contacts the frame member, may be provided by nailing lath or blocks in the corner.

Where space is 15½ to 16 ins. in width the two 8-in. slabs are placed side by side against sheathing. Where space is greater than 16 ins., three 8-in. slabs are used. Where space is less than 7½ ins., a slab is cut lengthwise to fit. (On the job Thermatex is readily cut with a sharp waved-edge knife.)

SPECIFICATIONS
and
DETAILS
on the Use and Installation
of
INSULITE
the Wood-Fiber Insulating Board

**Lath, Sheathing, Exterior Finish, Interior Finish,
Tile, Fire-Proofed Board, Termite Board,
Acoustile, and for Sound Deadening**



BACKUS-BROOKS
INDUSTRIES

THE INSULITE CO.
BUILDERS EXCHANGE
MINNEAPOLIS, MINNESOTA

MILLS AT
INTERNATIONAL FALLS, MINN.
AND KARHULA, FINLAND

OFFICES
IN ALL THE PRINCIPAL
CITIES

THE INSULITE CO.

GENERAL OFFICES
MINNEAPOLIS, MINN.
Branch Offices in All Principal Cities
MILLS: INTERNATIONAL FALLS, MINN. and KARHULA, FINLAND

PRODUCTS

Insulite Lath

Insulite Building Board

Insulite Interior Finish

Insulite Tile

Insulite Refrigerator Insulation

Insulite Cold Storage Insulation

LOCAL REPRESENTATIVE

PRODUCTS

Insulite Acoustile

Insulite Termite Board

Insulite Fireproofed Board

Insulite Roof Insulation

Insulite Industrial Insulation

Insulite Sound Deadening Insulation

INSULITE
the Wood-Fiber Insulating Board

THE ORIGINAL WOOD FIBER INSULATING BOARD

Insulite has been made and marketed for over 16 years. Experience gained through constant observation of actual installations of Insulite Products during this period, coupled with exhaustive laboratory research work, assure dependable and comprehensive information on the practical applications of Insulite in its various forms. This background of many years of practical experience offers the ultimate consumer of Insulite Products a service and protection seldom available with other products of similar nature.

MANUFACTURING

A thoroughly modern plant capable of producing an output of 300,000,000 sq. ft. per year assures an ample supply of material at all times. Special machines designed by THE INSULITE CO. Engineering Department are available for the fabrication of special insulation items required in the field. Such machines provide finished insulation units to fit practically any need at exceptionally low cost.

DISTRIBUTION

Insulite Products are distributed nationally through retail lumber dealers who maintain large stocks for immediate delivery. To facilitate shipping and handling without injury, these materials are neatly and securely packaged in strong, easily handled bundles. This service assures delivery to the job in the same condition as when the materials leave the mills.

Insulite Products are carried by dealers throughout the world. A new plant recently completed at Karhula, Finland, assures prompt delivery of fresh dealer stocks at all times.

SERVICE

THE INSULITE CO. maintains at its general office a Service Department personneled with experienced Insulation and Acoustical Engineers and experts. Competent representatives and service men are available in all principal cities. The Company tenders its full co-operation and service facilities to architects in the solution of insulation and acoustical problems.

PHYSICAL CHARACTERISTICS AND USES

GENERAL

Insulite is made by felting wood fiber into large units of various thicknesses as required for the many Insulite Products. Only firm, clean wood fiber is used in the manufacture of Insulite. Due to the cold grinding process used, Insulite fiber retains the natural light color of fresh wood. This grinding process assures the full strength of the fiber being retained in all Insulite Products. Samples on request.

Low conductivity, low water absorption and high tensile strength, while varying to some degree with different Insulite Products, are characteristic of Insulite in all of its phases.

Insulite is clean and odorless. It will not attract or harbor vermin. It will not rot or mold even under extreme moisture conditions.

Insulite, due to its natural color and pleasing surface texture, is attractive in appearance and lends itself to practically any type of decorative treatment.

INSULITE LATH

Furnished in size of 18 x 48 ins. Thicknesses of ½ in., ¾ in. and 1 in. All edges beveled with long edges shiplapped to assure heat sealed joints. Bond of plaster to Insulite Lath by authentic laboratory test is 1152 lbs. per square foot. Tensile strength over 300 lbs. per square inch. Conductivity of 0.33 B.t.u. per hour, per inch thick, per square foot, per degree temperature difference.

INSULITE BUILDING BOARD

Furnished in sizes 4 ft. wide by 6 to 12 ft. long. Thicknesses of ½ in., ¾ in. and 1 in. Used as sheathing, exterior and interior finish. Tensile strength over 300 lbs. per square inch. Conductivity of 0.33 B.t.u. per inch thickness per hour.

INSULITE INTERIOR FINISH

Furnished in sizes 4 ft. wide by 6 to 12 ft. long. Thicknesses of ½ in., ¾ in. and 1 in. Used for interior wall board finish. Has beautiful sanded surface finish one side and natural burlap texture on other side.

INSULITE TILE

Furnished in one standard size 18 x 32 ins. Thicknesses of ½ in., ¾ in. and 1 in. All four edges are beveled with two edges shiplapped to provide heat sealed joints. Surface finish either natural burlap texture or sanded. Special sizes up to 24 x 24 ins. available on special order. Special Tile has four edges beveled but no shiplapped edges.

INSULITE FIRE-PROOFED BOARD

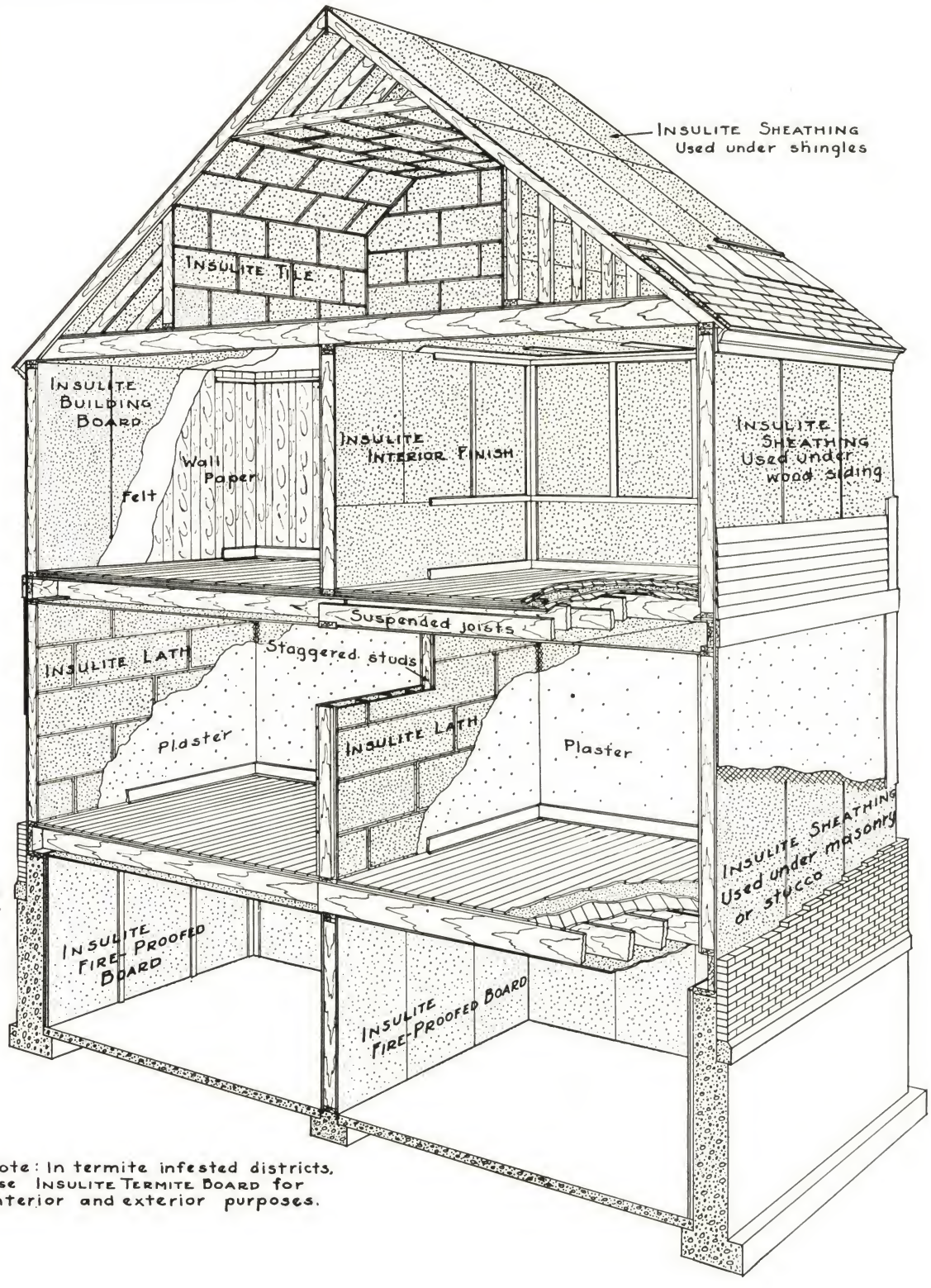
Furnished in sizes 4 ft. wide by 6 to 12 ft. long. Thickness of ½ in. Material is Insulite Building Board covered on both sides with pure asbestos sheets cemented with fireproof cement. Is adaptable to garages, airplane hangars, basements and other places where good fire-resisting qualities together with high insulating efficiency are desirable. Extremely light in weight weighing less than 1000 lbs. per thousand square feet ½ in. thick.

INSULITE TERMITE BOARD

Furnished in sizes 4 ft. wide by 6 to 12 ft. long. Thicknesses of ½ in. and 1 in. Termite Board, while manufactured specifically for use in termite infested districts, is suited for use in any type of construction. It has high tensile strength, low water absorption and a pleasing surface finish. Termite Board is different from usual materials treated for similar uses in that the termite repellent materials used in Termite Board will not evaporate or leech out. This is a necessary characteristic of any product used in termite infested districts where exceptionally high temperatures and humidities prevail.

INSULITE ACOUSTILE

Furnished in two types. Type 37 has a sound absorption co-efficient of 0.37 at 512 d.v. Type 44 has a co-efficient of 0.50 at 512 d.v. Both products have a more uniform sound absorption over entire sound frequency range than any other acoustical material. Acoustile possesses high light reflection qualities. Unbiased laboratory test shows light reflection of 65%.



Note: In termite infested districts, use INSULITE TERMITE BOARD for interior and exterior purposes.

APPLICATION DETAIL OF INSULITE

INSULITE LATH

Insulite Lath is manufactured in units 18 x 48 ins. Full ½ in., ¾ in. and 1 in. thick with beveled edges. Long edges are shiplapped.

Application—Apply Insulite Lath to studs, joists or rafters spaced 12 or 16 ins. on centers. End joints shall center on frame members and be broken or staggered. *Space units ¼ in. apart at all ends.*

Nailing—Nail ½-in. Lath with 4d galvanized, coated or blued box nails. Nail ¾-in. and 1-in. Lath with 6d galvanized, coated or blued box nails. Nails shall be spaced not more than 5½ ins. on centers. First nail to intermediate framing, then at ends. Cover all exterior angles with standard type of corner bead. Cover all interior angles with metal lath reinforcing strips.

NOTE—*Do not apply Insulite Lath with large headed nails.*

Grounds—On frame exterior walls provide ⅜-in. grounds over Insulite Lath. On other surfaces provide ½-in. grounds.

NOTE—*On ceiling areas it is advisable to apply one or more strips of metal or wire lath over Insulite Lath to act as grounds and assure uniform thickness of plaster.*

Plastering—Apply gypsum cement or gypsum wood fiber plaster in accordance with manufacturer's specifications. While plaster is drying adequate ventilation must be provided as moisture cannot pass through Insulite Lath.

NOTE—*Do not wet Insulite Lath before plastering.*

INSULITE BUILDING BOARD

Insulite Building Board is manufactured in sheets 4 ft. wide and from 6 to 12 ft. long. Thicknesses are ½ in., ¾ in. and 1 in.

USED AS SHEATHING

Application—Apply Insulite Building Board lengthwise to frame members spaced 12 or 16 ins. on centers. *Space units ¼ in. apart at all edges and ends.*

Nailing—Nail ½-in. and ¾-in. Building Board to frame with 1½-in. galvanized roofing nails spaced 4½ ins. on centers. For 1-in. Building Board nail with 2-in. galvanized roofing nails. Nail to intermediate frame members first, then nail edges and ends.

Wood Siding—Apply wood siding directly over Insulite, nailing through to frame. All siding joints shall butt over studs.

Stucco—Over Insulite Building Board apply self-furring wire or metal lath nailing through to frame with approved staple or nail of sufficient length to penetrate frame members not less than 1 in. Apply stucco in accordance with manufacturer's specifications. *Do not stucco on Insulite without metal or wire lath reinforcing.*

Brick Veneer—Nail brick ties through Insulite to studs. Lay up brick in usual manner allowing ½-in. space between Insulite and brick.

Shingles—Apply wood strips over Insulite at right angles to frame members. Space strips to fit shingle exposure.

USED AS EXTERIOR FINISH

Application—Apply Insulite lengthwise to frame members spaced 12 or 16 ins. on centers. *Space units ¼ in. apart at all edges and ends.*

Nailing—First nail to intermediate studs with 6d coated box nails spaced 12 ins. on centers. Then nail edges and ends of the ½-in. and ¾-in. board with 1½-in. galvanized roofing nails. Nail 1-in. Insulite with 2-in. nails.

Painting—Size Insulite with casein glue size or other suitable water or oil size. Allow sizing coat to dry thoroughly and apply one coat of exterior house paint. Apply wood trim and batten strips over all joints, nailing through Insulite to frame. Trim and battens to be drawn up tightly to Insulite. Apply two coats good grade exterior house paint over Insulite and trim.

INSULITE BUILDING BOARD

USED AS INTERIOR FINISH

Application—Apply burlap finished side exposed to studs, joists or rafters spaced 12 or 16 ins. on centers. *Space units ¼ in. apart at all edges and ends.* Place wood headers at ends of units.

Nailing—First nail to intermediate frame members with 2-in. finishing nails, 6 ins. on centers, driven at an angle and set slightly below the surface of board. For the ½-in. thick board nail edges of units with 4d coated box nails spaced 6 ins. on centers. For the ¾-in. and 1-in. thick board nail edges and ends of units with 6d coated box nails set 6 ins. on centers. When plastic finishes are to be used nail ½-in. board to intermediate bearings with 4d coated box nails and nail ¾-in. and 1-in. board to intermediate bearings with 6d coated box nails.

Painting—Size Insulite with glue size or other suitable water or oil size. Allow sizing to thoroughly dry and then apply finishing paints, lacquers or enamels. If plastic finish is to be used treat joints and apply plastic in accordance with manufacturer's specifications.

NOTE—*Joint fillers are not recommended unless properly reinforced.*

Paneling—Apply wood or Insulite strips over joints and elsewhere as needed to create desired effect. Nail through Insulite to frame drawing strips tightly against the Insulite.

Wall Paper—Apply 1½-lb. dry building felt directly to Insulite using wall paper paste. Butt edges of felt and roll firmly in place. Apply paper to felt in customary manner.

INSULITE INTERIOR FINISH

Insulite Interior Finish is manufactured in panels 4 ft. wide and from 6 to 12 ft. long. Thicknesses are ½ in. ¾ in. and 1 in. Panels are surfaced with beautiful sanded finish.

Application, Nailing, Painting, Paneling and application of wall paper, same as specified for the use of Insulite Building Board as interior finish.

It is recommended, however, that Insulite Interior Finish be left unpainted to obtain full decorative effects afforded by the sanded surface finish of this product.

INSULITE TILE

Insulite Tile is manufactured in one standard size—18 x 32 in. Thicknesses are ½ and ¾ in. Long edges of Tile are shiplapped and all edges are beveled. Special sizes up to 24 x 24 ins. without shiplapped edges can be furnished on special order.

Application—On frame construction apply Insulite Tile to studs or joists spaced 16 ins. on centers. *For special tile, frame members must be set to fit dimensions of tile.* When Tile is to be applied directly over plastered surfaces it must be cemented to plaster with good grade of waterproof cement.

Nailing—On frame construction nail Tile with 2-in. finishing nails 5½ ins. on centers. Nail to intermediate bearings first, then nail ends. For applications over plaster use brads of proper length to penetrate into the plaster to provide sufficient holding power to allow cement to set. *Drive all nails or brads carefully to avoid hammer marks on surface of tile.*

Painting—As specified for Insulite Interior Finish.

Staining—Water, alcohol, or benzine stains may be applied directly over Tile.

INSULITE FIRE-PROOFED BOARD

Insulite Fire-Proofed Board is manufactured in panels 4 ft. wide and from 6 to 12 ft. long. Thickness ½ in.

Application—Remove loose fibers or sawdust from edges of board. Apply lengthwise to frame members placed 12 or 16 ins. on centers. Apply first board in corner of room. Nail with 4d blued, coated or galvanized box nails. Nail to intermediate bearings first, then edges, nails to be placed not more than 6 ins. on centers. Fit joint between second board and first board carefully. Apply Insulite Fireproof cement to the contacting edges of the board. Apply second board pressing edges firmly together and nail as above. Sink nails 1/16 in. below surface of boards. Remove excess cement protruding from joints. Where units meet on exterior corners, cut edges at an angle of 45° to insure close fitting mitred joint. Cement and nail as above. Where edge of unit meets the face of an adjoining unit as in a corner, apply cement only to edge of board.

Painting—Size surface with casein or other dependable glue size. After size is dry fill nail holes and any openings between joints with plaster of paris freshly mixed. Allow plaster of paris to dry and sand to smooth finish. If oil paint is to be used apply second coat of size. If water paints are used second coat of size may be eliminated. Allow size to thoroughly dry and apply oil paint or other desired finish.

Wall Paper—Size surface of board with casein or other dependable glue size. Fill nailholes and any opening between joints as above. Sand joints and apply wall paper in regular manner.

INSULITE TERMITE BOARD

Insulite Termite Board is manufactured in panels 4 ft. wide and from 6 to 12 ft. long. Thickness ½ in.

USED AS SHEATHING

Application, Nailing, use Under Wood Siding, Brick Veneer, Stucco, and Shingles same as specified for Insulite Building Board.

In termite infested districts all wood framing to which Termite Board is secured shall be termite-proofed.

USED AS INTERIOR FINISH

Application, Nailing, Painting and Application of Wall Paper same as specified for Insulite Building Board used as interior finish.

Paneling—Apply Insulite Termite Board strips over all joints and elsewhere as needed to create desired effect. If wood strips are used, same shall be termite proofed.

USED AS EXTERIOR FINISH

Application, Nailing, and Painting same as specified for Insulite Building Board used for exterior finish.

Paneling—Apply Insulite Termite Board strips over all joints and elsewhere as needed to create desired effect. If wood strips are used, same shall be termite proofed.

GENERAL

While Insulite Termite Board was conceived mainly for use in termite infested districts, it can be used to advantage in any class of building construction. This product with its exceptionally high waterproof qualities is recommended for use on jobs where high humidities and excessive moisture conditions are liable to be encountered.

The pleasing color of Termite Board lends itself to practically any type of interior finish. For this reason it is not necessary to paint Termite Board unless specific colors other than the natural color of the board are desired.

In termite infested districts secure Termite Board to termite proofed wood frame members.

INSULITE ROOF INSULATION

Insulite Roof Insulation is manufactured in sizes 18 x 36 ins. and 24 x 60 ins. Standard thicknesses are ½ in. and 1 in. The 1-in. material has offset edges on all four sides to provide heat-sealed joints. Thicknesses up to 4 ins. are available on special order.

APPLICATION OVER WOOD DECKS

Sweep deck clear of rubbish and see that all nails are driven flush. Deck must be dry and smooth. Apply Insulite Roof Insulation staggering end joints. Edges and ends of each unit shall be butted together *but not forced into place*. Apply cant strips over Insulite at parapets and fire walls.

Nail ½-in. Insulite with 1-in. roofing nails and 1-in. Insulite with 1½-in. roofing nails. Nail center of units first, then edges and ends.

Amount of Insulite laid shall not be more than can be covered and protected by roofing laid in any one day. Roofing shall be applied in accordance with manufacturer's specifications.

APPLICATION OVER CONCRETE AND TILE DECKS

Sweep deck clear of rubbish and see that it is dry and smooth. Concrete decks shall be troweled to sidewalk finish. On unit tile decks joints are to be pointed up in accordance with manufacturer's specifications to provide a smooth surface for Insulite Roof Insulation.

If asphalt is used concrete or tile deck must be primed. Mop deck with hot pitch or asphalt using not less than 35 lbs. per hundred square feet.

Embed Insulite firmly in place while pitch or asphalt is hot. End joints to be staggered and units butted together *but not forced in place*.

NOTE—*On unit tile decks mopping of pitch or asphalt must be kept back 3 ins. from joints.*

Amount of Insulite laid shall not be more than can be covered with roofing laid in one day. Apply roofing in accordance with manufacturer's specifications.

APPLICATION OVER STEEL DECKS

The steel roof sheets shall be installed in accordance with manufacturer's specifications. All joints must be tight to prevent leakage of asphalt through steel deck.

Mop deck with hot asphalt and embed Insulite Roof Insulation firmly in place while asphalt is hot. *Do not use pitch to apply Insulite to steel decks.* Use not less than 30 lbs. of asphalt per hundred square feet. End joints to be staggered and units to be butted together *but not forced in place*.

On roof surfaces having a pitch of 3 ins. in 12 ins. or greater, mop deck with hot asphalt, embed Insulite firmly in place, and then secure Insulite to steel deck with screws or with special nails supplied by roof deck manufacturer. Amount of Insulite laid shall not be more than can be covered with roofing laid in one day. Apply roofing per manufacturer's specifications.

GENERAL

In some instances where roof decks are subjected to high humidities, it is advisable to apply one or two felts directly over deck surface before applying Insulite Roof Insulation. Felts to be mopped solidly to concrete, tile or steel decks. On wood decks nail first felt to deck with roofing nails and mop second felt firmly to first felt. Then apply Insulite Roof Insulation as specified above.

During winter months when applying Insulite over concrete deck, it is advisable to apply at least one felt over deck mopping thoroughly in place. Then apply Insulite as above.

When more than one layer of Insulite is to be used apply second layer over first with pitch or asphalt, breaking all joints between layers.

INSULITE FOR SOUND DEADENING

As the use of Insulite for sound deadening purposes involves the use of one or more Insulite Products it is not possible to list a special Insulite Product for this type of construction. Effective sound deadening can only be obtained by proper construction as well as good sound deadening insulating materials.

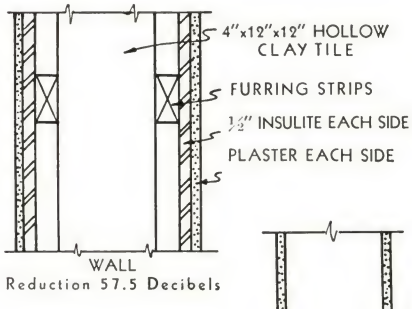
SOUND DEADENING OF FLOORS

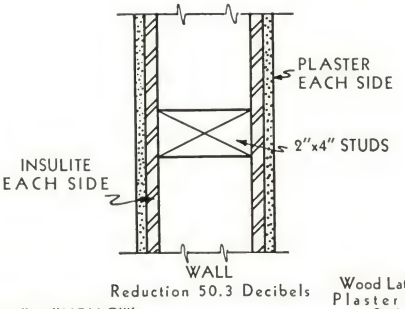
All floor constructions for sound deadening purposes must provide an average reduction of not less than 50 decibels (or more) for air-borne sounds. For impact sounds construction must provide a reduction of not less than 30 decibels (or more). Efficiency of construction to be based on U. S. Bureau of Standards method of test. Insulite and sound deadening construction to be applied in strict accordance with THE INSULITE CO.'S specifications.

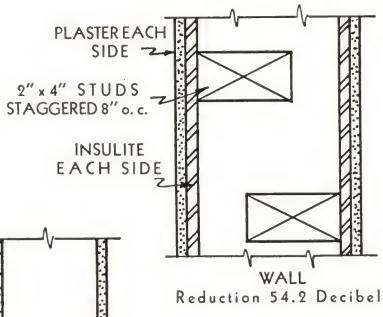
SOUND DEADENING OF PARTITIONS

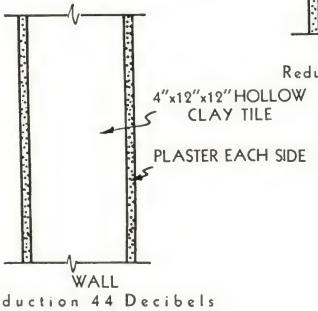
All partition constructions for sound deadening purposes must provide an average reduction of not less than 50 decibels (or more) for air-borne sounds. Efficiency of construction to be based on U. S. Bureau of Standards method of test. Apply Insulite and partition construction in strict accordance with THE INSULITE CO.'S specifications.

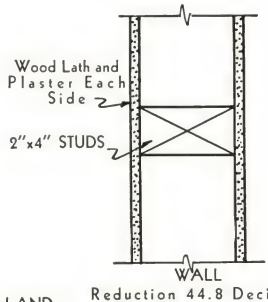
Details shown below illustrate several types of Wall and Floor Constructions that have been tested by the U. S. Bureau of Standards. Sound reduction factors for each are given. Comparison of results clearly indicates that careful attention to design can provide proper sound deadening at moderate cost.

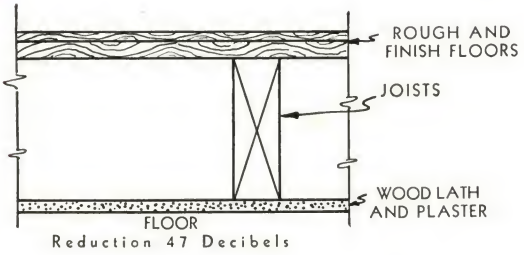


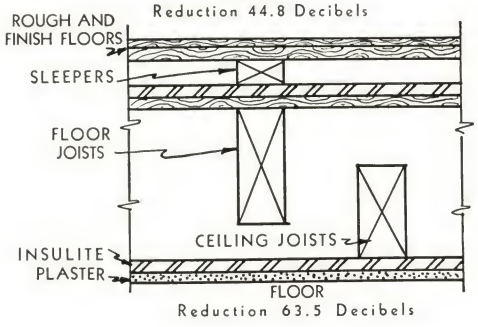










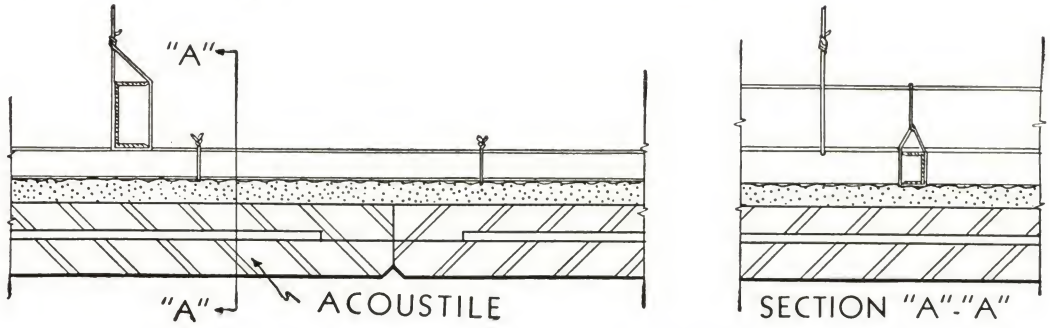


INSULITE ACOUSTILE

Insulite Acoustile is manufactured in sizes up to 24 x 24 ins. Edges of units are beveled. Material is available in two types—No. 37 being ¾ in. thick; No. 44 being 1⅜ in. thick.

APPLICATION TO PLASTERED SURFACES

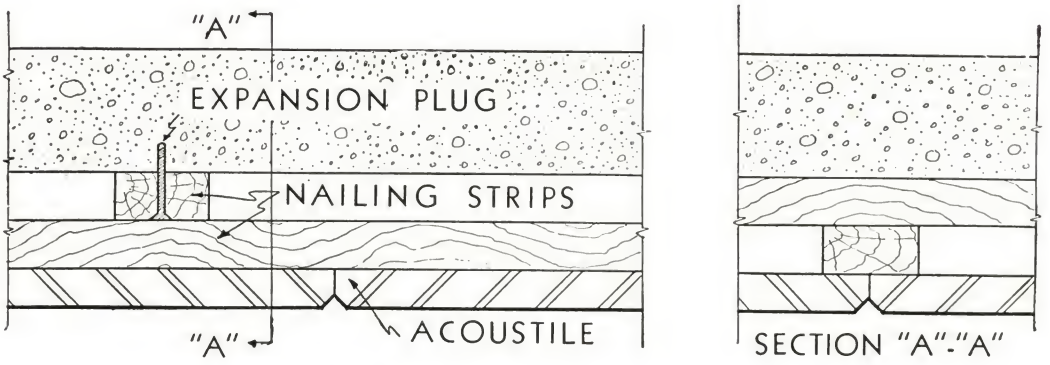
When applied to plastered surfaces, Insulite Acoustile is to be cemented with an approved brand of acoustical cement, each tile to be nailed with brads, one in each corner of each tile (see detail). For Type 37 Acoustile, a 1¼-in. brad is to be used, and for Type 44 Acoustile, a 2-in. brad is to be used. Plaster must be smooth and firm. On new work, the putty coat may be omitted providing brown coat is finished under float to an even surface.



Type 44 ACOUSTILE APPLIED ON SUSPENDED METAL LATH CEILING

APPLICATION TO WOOD STRIPS

For this type of application, the Insulite Acoustile is to be applied on wood nailing strips spaced 12 ins. on centers or in accordance with requirements of the design. Apply with brads or finishing nails placed not more than 6 ins. on centers. Nails to be driven through Acoustile at an angle to hold tile securely in place. Where furring strips are to be applied over concrete or brick surfaces, furring strips should first be applied and spaced 3 ft. on centers. These strips are to be attached to the brick or concrete with plugs or expansion bolts. On new construction, clips or grounds may be placed in forms before pouring concrete. After first set of furring strips are in place apply 1 x 2-in. strips over and at right angles to first furring nailing securely in place. Place 12 ins. on centers or to fit requirements of design.



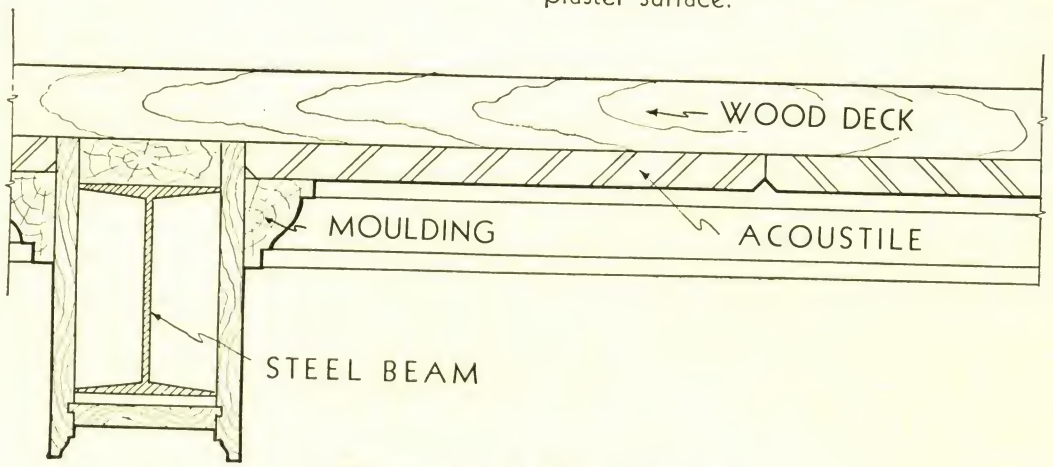
Type 37 ACOUSTILE APPLIED ON CONCRETE CEILING

INSULITE ACOUSTILE

APPLICATION TO WOOD SURFACES

In many churches and auditoriums of other types the underside of the plant roof is left exposed.

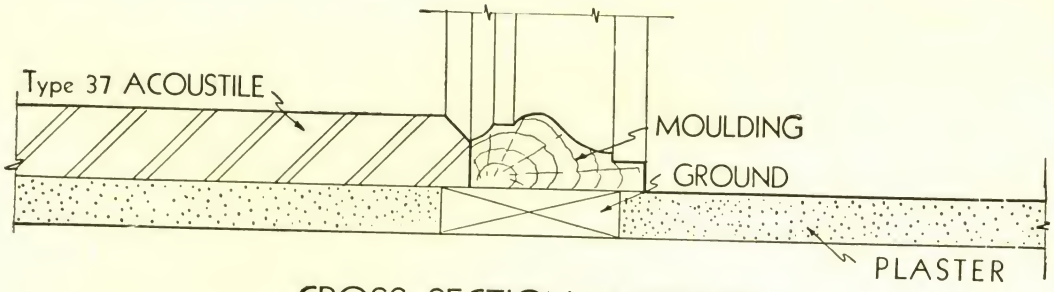
In such cases apply Insulite Acoustile directly to wood surface and fasten in place as specified for plaster surface.



Type 37 ACOUSTILE
APPLIED ON WOOD DECK

APPLICATION TO WALL OR CEILING PANELS

In many cases the area over which Insulite Acoustile is to be applied is less than the total wall or ceiling area. In such cases apply Acoustile in panels, the plastering contractor to furnish and install grounds at panel edges to which finish mouldings will be nailed after Acoustile has been applied (see detail). Mouldings to be furnished and installed by the acoustical contractor. Mouldings to be designed in keeping with interior finish trim.



CROSS SECTION THROUGH
PANEL MOULDING

APPLICATION TO CURVED SURFACES

When Insulite Acoustile is to be applied to curved surfaces, as in the case of a dome, barrel vault or arches, the proper size of Acoustile may be chosen to conform with the curved surface. For surfaces with small radius of curvature, score back side of tiles to provide easy forming.

PAINTING

Insulite Acoustile may be decorated in a wide range of either solid colors or stencil designs. For this purpose water, alcohol or benzol stains may be used.

In special instances lead and oil paint may be used.

Consult Insulite Acoustile contractors for complete painting specifications.

SPECIFICATIONS
and
DETAILS
on the Use and Installation
of
INSULITE
the Wood-Fiber Insulating Board

**Lath, Sheathing, Exterior Finish, Interior Finish,
Tile, Fire-Proofed Board, Termite Board,
Acoustile, and for Sound Deadening**



BACKUS-BROOKS
INDUSTRIES

THE INSULITE CO.
BUILDERS EXCHANGE
MINNEAPOLIS, MINNESOTA

MILLS AT
INTERNATIONAL FALLS, MINN.
AND KARHULA, FINLAND

OFFICES
IN ALL THE PRINCIPAL
CITIES

JOHNS-MANVILLE

EXECUTIVE OFFICES
292 Madison Avenue, NEW YORK, N. Y.

For Branch Offices, see Section on Wall Tile

Products

JOHNS-MANVILLE INSULATING BOARD and INSULATING LATH.

Also Packings for all purposes; Refractory Cements; Waterproofing and Dampproofing; Asbestos Ebony; Asbestos and Asphalt Roll Roofing; Rotproof Roofs; Asbestos products of all kinds.

For the following Johns-Manville products, see Manufacturers' Index:

Acoustical Treatment and Sound Isolation; Shingles; Built-up Roofing; Home Insulation; Insulations; Tile Flooring; Transite, Flat and Corrugated; Wall Tile.

JOHNS-MANVILLE INSULATING BOARD, INSULATING LATH, BEVEL BOARD, FIBRE WALL BOARD, INDUSTRIAL BOARD AND RIGID ROOFINSUL

Johns-Manville Insulating Board is a rigid, structural insulation, composed of wood fibres moulded into sheets possessing pleasing color and texture. Its major uses are for sheathing, interior finish, plaster base and roof insulation, units being furnished with characteristics of size and shape to meet the requirements of each of these uses, these various forms being identified by distinguishing names.

The color of Insulating Board is a light ecru, soft in character. In surface texture, the cross graining of the fibres suggests the interesting feeling of a wall fabric. Used as an interior finishing material it may be left without surface treatment or it may be shellacked, in which case its textural characteristics are retained. It will receive ordinary or plastic paints and certain plaster substitutes. Thicknesses greater than one-half inch are composed of two or more one-half inch units secured together in manufacture. Ordinarily this is done by stapling, although on special order such units can be furnished cemented.

Sheathing

Insulating Board is used as sheathing under wood siding, shingles, stucco or masonry veneer. On buildings of a temporary character economically constructed, such as sheds, it may be used as exterior finish.

The units are furnished 4 ft. wide, in lengths of 6, 7, 8, 9, 10 and 12 ft., in thicknesses of ½ and 1 in.

Interior Finish

For this purpose the large sheets may be used with the joints exposed or battened, or Bevel Board, small units providing a tile or ashler effect, can be employed. The Bevel Board units are provided with all face edges beveled and with two opposite side edges ship-lapped.

The units are 6 x 12, 12 x 12, 12 x 24, 24 x 24, 24 x 32 and 18 x 32 ins., in thickness of ½ in.

Plaster Base

Insulating Lath is used as a plaster base in place of wood lath, metal lath or other plaster bases, providing a bond for gypsum plaster of over 1000 lbs. per sq. ft.

The units are 18 ins. wide by 4 ft. long in thicknesses of ½ and 1 in. All face edges are beveled and the edges along the greatest dimension are also ship-lapped.

Roof Insulation

Rigid Roofinsul is designed for application over roof decks of wood sheathing or non-combustible construction, to alleviate or prevent condensation and reduce the passage of heat. It is intended that the roof waterproofing shall be applied directly over it.

The units are 2 x 4 ft. in thicknesses of ½, 1, 1½ and 2 ins. In thicknesses greater than ½ in. the sheets are ship-lapped on all four edges.

Fibre Wall Board

For use where strength, rigidity and hardness are of greater importance than insulating efficiency, Fibre Wall Board is furnished. It is of the same composition as Insulating Board, the same quantity of raw material being used in its manufacture, differing only in that it is compressed to a ¼- instead of a ½-in. thickness. Fibre Wall Board is particularly adapted for use as interior finish.

The units are furnished 4 ft. wide, in lengths of 6, 7, 8, 9, 10 and 12 ft., in thickness of ¼ in.

Specifications

Since the furnishing and applying of these materials is generally made a part of the Carpentry, Lathing, Roofing or other specification, the following specifications have been prepared to be so included.

Insulating Board Used as Sheathing

NOTE: The following information relates to work allied with the application of the Insulating Board and should be provided for in the specifications for the work involved:

Studs and rafters shall be spaced at 16-in. centers. Headers, not less than 2 x 4 in., shall be provided to center behind all end joints of the Insulating Boards. In applying siding, furring, wood sheathing, metal lath or wall ties, etc., over the Insulating Board, all nailing shall be done to enter the studs or rafters not less than 1 in. All end joints in siding, furring, wood sheathing, etc., shall be formed over a stud.

Masonry veneer shall be applied to leave a space not less than 1 in. wide between the veneer and the Insulating Board. Where stucco is to be used over the Board, metal lath applied over furring strips or self-furring lath shall be used. Waterproof felt shall be applied over the Insulating Board under masonry veneers or stucco.

The contractor shall furnish and install Johns-Manville Insulating Board (state thickness) thick, to (state in detail surfaces to be covered).

The board shall be installed in the largest stock pieces applicable under the job conditions so that there will be a minimum number of joints. The boards shall be installed with their long dimension vertical, parallel to studs or rafters, and all joints, which shall be formed open approximately 3/16 in. wide, shall be centered over a framing member. No board shall be forced tightly into place, but they shall be fitted closely to all openings and to all intersecting surfaces. Moistening the board prior to application is not required.

The boards shall be secured at each framing member with galvanized roofing nails, with 3/8-in. diameter heads and of a length sufficient to penetrate the framing members not less than 1 in. The nailing shall be placed first in the intermediate framing members at 6-in. centers and then 3/8 in. from all edges at 3-in. centers.

Insulating Lath

NOTE: The following information relates to work allied with the application of the Insulating Lath and should be provided for in the specification for the work involved:

Studs, joists, rafters, or furring shall be spaced at 16-in. centers. Only quick-setting gypsum plaster with not more than 10 per cent. lime content shall be used for the first coat of plaster. The first coat or the scratch and brown coat combined shall be not less than 3/8 in. thick on ceiling surfaces and 1/4 in. thick on wall surfaces and the total thickness of the finished plaster job shall be not less than 1/2 in. on ceiling surfaces or 3/8 in. on wall surfaces. The plaster shall be applied in accordance with the manufacturer's specification. Rooms shall be well ventilated while plaster is drying as moisture will not pass through the lath.

The contractor shall furnish and install Johns-Manville Insulating Lath (state thickness) thick, to (state in detail surfaces to be covered).

The lath shall be applied with the coarse textured and beveled side exposed, with the long dimension at right angles to the framing members and with all end joints broken and centered over a framing member. The lath shall be fitted closely to all openings and to all intersecting surfaces, but none shall be forced tightly into place. Moistening of the lath prior to application is not required.

The lath shall be secured at each framing member with common or blued nails of a length 1 in. greater than the thickness of the lath being applied. The nailing shall be placed first in the intermediate framing members and then 3/8 in. from ends at not more than 5½-in. centers, the end nails at each framing member being placed not more than ½ in. from the ship-lapped edge. The lath shall be similarly nailed at sills, headers and plates, 3/8 in. from edges at not more than 5½-in. centers.

At all interior corners, strips of metal lath not less than 4 in. wide bent 2 in. each way, shall be installed over the lath, secured to the framing members. At all exterior corners, metal corner bead shall be installed and secured to framing members.

Insulating Board and Bevel Board Used as Interior Finish

NOTE: The following information relates to work allied with the application of Insulating Board and Bevel Board and should be provided for in the specifications for the work involved:

Studs and rafters shall be spaced at not greater than 16-in. centers, and so that all vertical joints in the board shall center over same. Headers, not less than 2 x 4 in., shall be provided to center behind all end joints of the Insulating Board.

The Contractor shall furnish and install Johns-Manville (state whether "Insulating Board" or "Bevel Board," and if Insulating Board, state thickness or if Bevel Board, state size of units), to (state in detail surfaces to be covered. If "as detailed on the drawings," so state).

NOTE: If the Insulating Board is used and the joints are to be covered with battens, the following should be added:

The boards shall be installed with all joints centered over a framing member. They shall be secured at each framing member with nails of a length sufficient to penetrate the framing members not less than 1 in. Where the nailing will be covered with a batten, galvanized roofing nails with 3/8-in. diameter heads shall be used. Where the nailing is to be exposed, finishing nails driven at an angle of 30 degrees and staggered, shall be used. The nailing shall be placed first in the intermediate framing members at 6-in. centers and then 3/8 in. from all edges at 3-in. centers.

NOTE: If the Insulating Board is used without battens or if the Bevel Board is used, the following should be added:

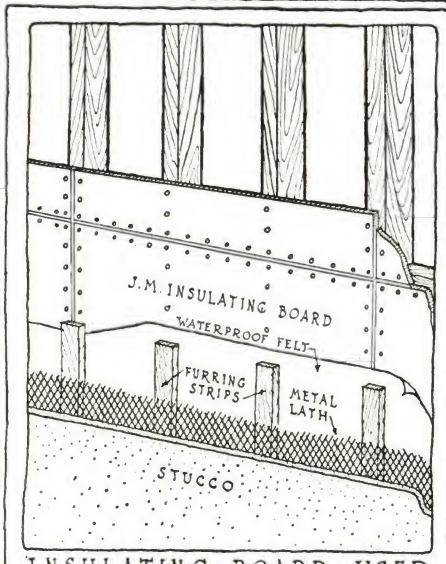
If the Bevel Board is used the units shall be erected with the ship-lapped edges at right angles to the studs or rafters and end joints centered over a framing member. If the Insulating Board is used the units shall be installed with all joints centered over a framing member.

The boards shall be secured at each framing member with finishing nails of a length sufficient to penetrate the framing members not less than 1 in., driven at an angle of 30 degrees and staggered. The nailing shall be placed first in the intermediate framing members at 6-in. centers and then 3/8 in. from all edges at 3-in. centers.

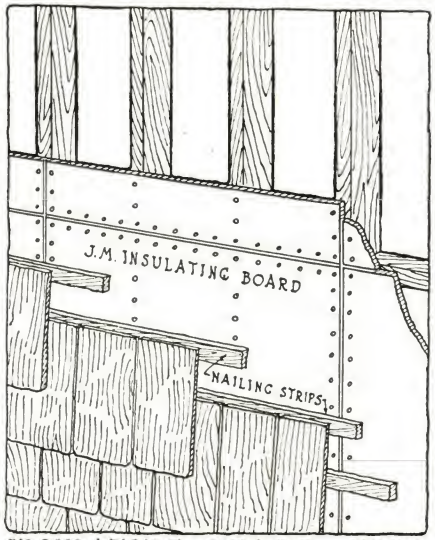
NOTE: If a design is to be followed it should be described or shown on the drawings. If battens are to be used their size, design, etc., should be described or shown.

Insulating Board Used as a Base for Plastic Paint, Plaster Substitutes, Etc.

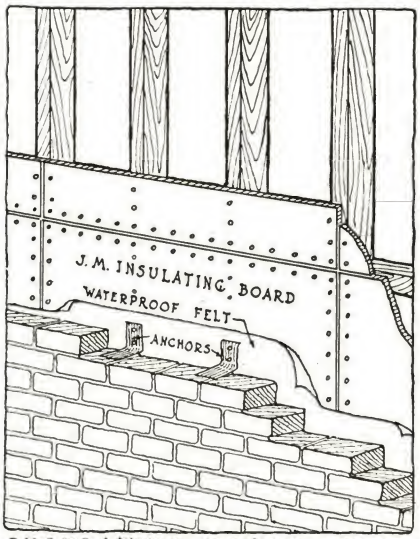
NOTE: Where J-M Insulating Board is to be used for these purposes it should be specified to be erected in accordance with the recommendations of the manufacturer of the material which is to be applied over the board.



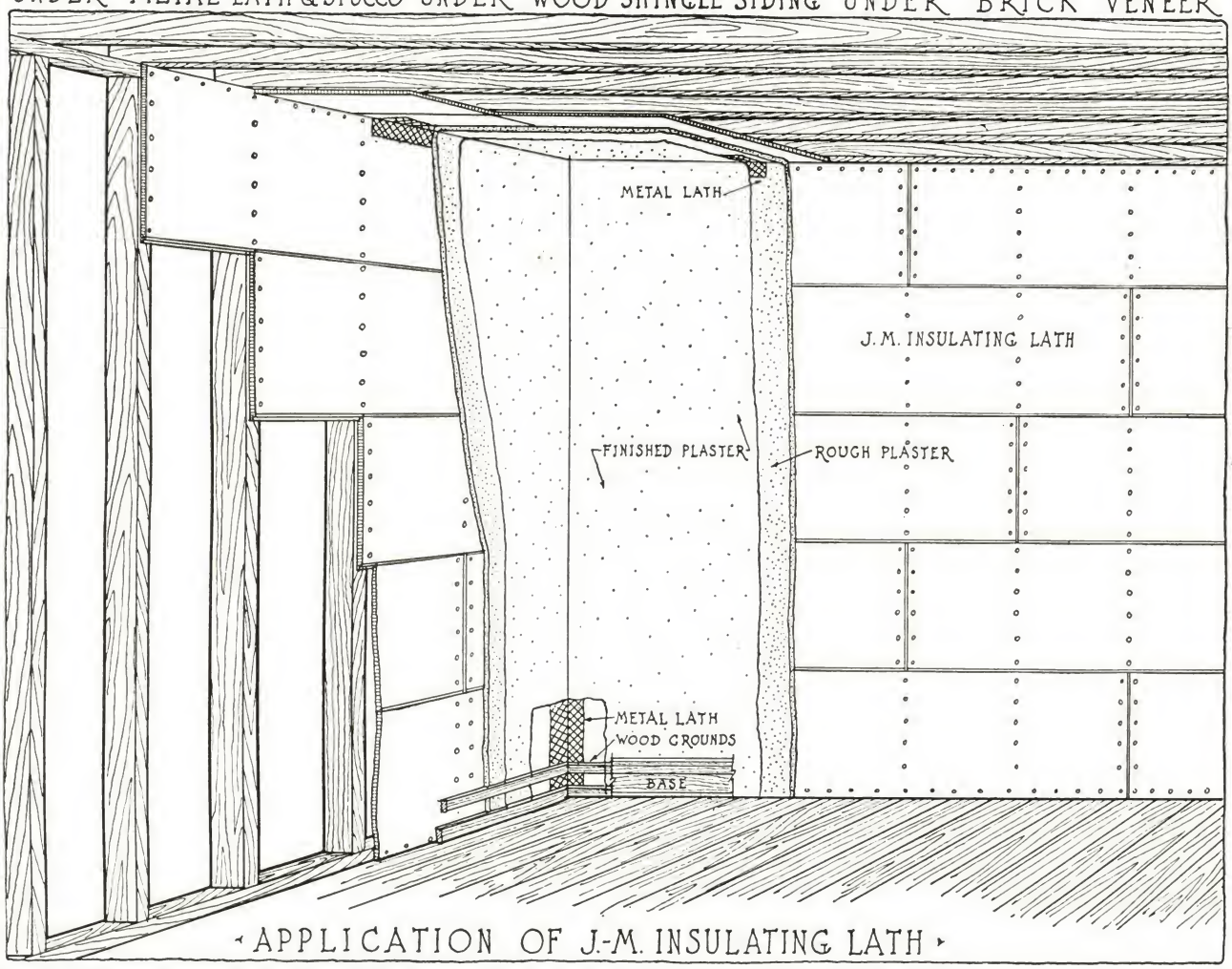
INSULATING BOARD USED AS EXTERIOR SHEATHING UNDER METAL LATH & STUCCO



INSULATING BOARD USED AS EXTERIOR SHEATHING UNDER WOOD SHINGLE SIDING



INSULATING BOARD USED AS EXTERIOR SHEATHING UNDER BRICK VENEER



APPLICATION OF J-M. INSULATING LATH

JOHNS-MANVILLE INSULATING BOARD

DETAILS SHOWING VARIOUS APPLICATIONS

MAIZEWOOD PRODUCTS CORPORATION

GENERAL OFFICES
203 North Wabash Avenue
CHICAGO, ILL.

PLANT: DUBUQUE, IOWA

Maizewood CORN STALK Insulation

The Product

Maizewood is an insulating and sound deadening board that combines most satisfactorily the desirable qualities of light weight, strength, insulating efficiency, low capillarity, and low absorption of moisture. Its properties fit it for use in all types of construction.

As Sheathing—Maizewood is used on the exterior sides of walls, under shingles or siding or under veneers of brick, stucco, or stone.

As Roof Insulation—It is used under standard roofing materials.

As Plaster Base—Maizewood lath has universal application.

As Wall Board—Maizewood may be left in its natural state or finished with any of the commonly used tinting coats, or with paints.

As Exterior Finish—Maizewood has great structural strength and, after sizing, may be finished with any kind of good exterior house paint.

As Sound Deadener—Maizewood may be used in floors as well as in walls, partitions and ceilings. Maizewood has the acoustical qualities usual in this type of board.

The Company

MAIZEWOOD PRODUCTS CORPORATION is the only company manufacturing insulating board from cornstalks, one of the most important by-products of American agriculture. The company is affiliated with National Cornstalk Processes, Incorporated, which was formed by leaders in manufacture, finance, and agriculture, to develop industries which will add to farm income by using cornstalks as raw material.

Maizewood is the outgrowth of years of research at Iowa State College, Ames, Iowa, where the processes were developed by Dr. Orland Russell Sweeney. It is the first cornstalk fiber product to enter the building field.

Facilities

The Maizewood plant at Dubuque, Iowa, is kept continually up-to-date in equipment and in practice. The company has financial backing adequate for the expansion of manufacture to meet any demands.

Distribution

Maizewood is distributed through retail lumber yards and building material dealers throughout the United States. Large stocks are carried at convenient distributing points.

PHYSICAL CHARACTERISTICS

Appearance

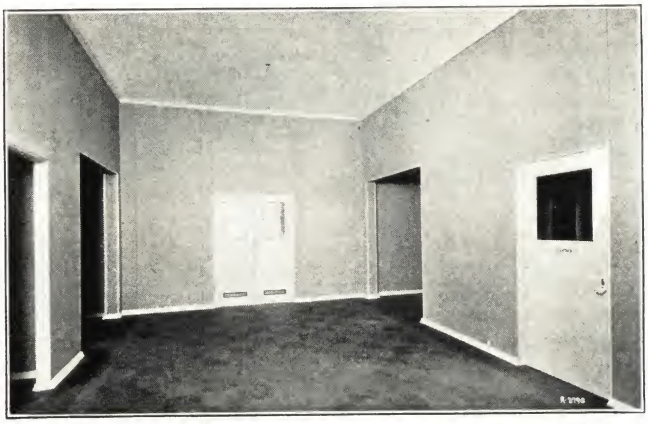
Maizewood is made by felting or weaving the fibers of mature cornstalks into a broad, continuous board with no laminations—a board ½ in. thick that may be sawed easily to any size or shape. The surface is neatly finished with a burlap-like texture. The board will be furnished $\frac{7}{16}$ in. thick with one surface sanded on special order.

The color is a light tan, that makes an attractive interior finish. Samples will be sent on request.

Board Sizes

As sheathing, Maizewood is cut to a standard 4-ft. width and is 7, 8, 9, 10, and 12 ft. in length. The standard board weighs approximately 63 lb. per 100 sq. ft.—a low weight for a board of the structural strength of Maizewood. Maizewood lath is cut 18x48 in. with long edges shiplapped. Thickness ½ in.

As roof insulation, Maizewood is furnished ½ and 1 in. thick and the standard slabs are 2x3 ft., although the roofing boards can be furnished in other sizes if desired. On the roof, the 2x3-ft. slabs are convenient, and may be applied with a minimum amount of labor. Special roofing can be furnished with thickness in multiples of ½ in., when specified. This is built up of ½-in. boards stapled together with corrosion-resisting wire with edges flush.



Maizewood in Walls of the Day School, Lake Forest, Ill.

Thermal Conductivity

The thermal conductivity of Maizewood, as established by J. C. Peebles, of the Armour Institute of Technology, is .325 B.t.u. per hour, per square foot per degree Fahrenheit, per inch thickness. *Complete report of tests will be sent upon request to the general offices of the company in Chicago.*

Tensile Strength

The breaking (modulus of rupture) strength of Maizewood Cornstalk In-

sulation is approximately 425 lb. per sq. in. *Complete details of strength tests by J. C. Peebles, of the Armour Institute of Technology, and by Iowa State College will be sent upon request.*



Maizewood Roof Insulation on a 1933 World's Fair Building, Chicago, Ill.

Structural Strength

Tests by Phil C. Huntly, of the Armour Institute of Technology, show that Maizewood used as sheathing in buildings provides a bracing against distortion greater than that provided by horizontal wood sheathing. Under a load of 900 lb. the distortion of a section of wall sheathed with Maizewood was ½ in. The distortion of the wood sheathed section was 7¼ in. under the same load and conditions. *Complete report on application.*

Nail Pulling Test

Tests show Maizewood Cornstalk Insulation to have remarkable resistance to the pulling of nailheads through the board. In the tests of J. C. Peebles, of the Armour Institute of Technology, the force required to pull a nail with a ⅜-in. head through a board of Maizewood was just equal to the force required to pull the nail from white pine.

Maizewood properly nailed to wood framing members will stand strains many times greater than those to which it will be subjected under actual conditions.

Compression

The following results, obtained by Phil C. Huntly, of the Armour Institute of Technology, show the amount of compression of Maizewood under a dead load:

Load equivalent per sq. ft.	Compression in inches
188 lb.	.002
720 lb.	.006
1584 lb.	.008

The above figures show the hard, firm nature of Maizewood Cornstalk Insulation and its resistance to depression under pressure.

Bond with Plaster

Tests made by Iowa State College and by Phil C. Huntly, of the Armour Institute of Technology, establish that a load equivalent to 1200 lb. per sq. ft. is necessary to separate gypsum plaster from a plaster base of Maizewood, when the plaster is properly applied and dried. This high bonding strength is due to the long fibers and the absence of any layers in this uniformly felted board.

Low Moisture Absorption

The individual fibers of the mature cornstalks used in Maizewood are thoroughly waterproofed. Moisture, taken on or given off among the fibers, has no effect upon the fibers themselves. Maizewood has low capillarity and little tendency to accumulate moisture content. A sample may be immersed in water for several hours up to half its thickness and at end of test upper surface of board will be dry. Cravenetting the individual fibers results in the combination of minimum moisture absorption and maximum insulating value.

Fire Resistance

Maizewood is slow burning, and, due to the absence of open joints, a wall or partition sheathed with this material, retards the progress of a fire. Maizewood may be treated with any of the standard fireproofing paints, applied according to the makers' specifications.

Durability

The mature fibers of the cornstalk are exceptionally durable. With ordinary protection, Maizewood will retain its strength and insulating value throughout the life of the building.

It has proved its durability even under most unfavorable conditions of test. In one case, where Maizewood was used in the roof insulation of a boiler room, alterations were made and the Maizewood, after having been subjected daily for several years to severe moisture and condensation conditions, was found to have suffered no determinable depreciation.

Sanitation

Maizewood does not attract rodents nor vermin. It is clean, odorless, and sanitary.

Uniformity

Samples are taken from the board at regular intervals and subjected to complete tests, thus assuring uniformity of product.

GENERAL SPECIFICATIONS

No Special Instructions Necessary

In general, standard specifications for the use of rigid insulating boards will apply to Maizewood and no special instructions are necessary. However, we are giving brief specifications covering common uses.

Maizewood as Sheathing

Standard Maizewood is to be used for all walls, under wood siding, or shingles, or veneers of stucco, brick or stone.

Framing—Studs, joists, and rafters, as in usual construction, shall be placed accurately on 16-in. centers. Headers, 2x4 in., shall be inserted between framing members where ends of Maizewood boards meet, to provide a nailing base. Headers will be unnecessary if boards are ordered in proper length.

Applying Maizewood—Maizewood shall be applied lengthwise with and directly to the framing members, with a ⅛-in. space between boards, at both sides and ends. Maizewood is cut scant enough to permit this. In applying sheathing, nail Maizewood, first, to intermediate framing members and then along the sides and ends. Use 1½-in. standard roofing nails, with ⅜-in. heads, spacing them 4 in. apart, and ⅜ in. from edges and ends of the boards. To obviate puncturing the boards, snap a chalk line on the exposed side of the

board, after it is in position, to designate accurately the line along which to nail through to the centers of the intermediate members.

Finishes—Wood siding, shingles, and veneers shall be applied according to the specifications of the makers of these various materials, the only injunction regarding Maizewood being that any furring or anchors shall be fastened to the framing members by nails that penetrate the wood at least 1 in. Maizewood is *not* a nailing base.

Stucco—Over Maizewood sheathing apply galvanized self-furring wire or metal lath. Nail to studding with 1½-in. 14-gauge staples. Apply stucco in usual manner. Do not apply direct to Maizewood.

Maizewood as Roof Insulation

Standard Maizewood, when used for the usual framed roof insulation, shall be applied by the same general methods that govern sheathing.

Over Rafters—When Maizewood is to be shingled or covered with rigid roofings, it shall be nailed directly to the rafters. Furring strips, spaced for the roofing to be used, shall then be placed at right angles to rafters and nailed through to them.

Under Rafters—When Maizewood is applied to the underside of rafters, care shall be taken to see that it extends down to a tight joint with sidewall insulation or, if the house is old with no insulation, to a tight joint with sidewall sheathing or plate.

If direct contact can not be made with the large size board, carefully fill in the intervening space with smaller pieces. See that air currents are checked.

Over Attic Joists—Nail Maizewood direct to joists, making tight connections with sidewall insulation, or sheathing. Nail the wood flooring, used over the Maizewood, through to the joists.

Maizewood may be used over old attic floors and, if a further finish is desired, it may be covered with wood flooring, linoleum, carpet, or canvas.

Plastering—If the attic is to be plastered, Maizewood cut to lath size, 18x48 in., should be used.

Flat Decks—Maizewood shall be used over wood, concrete, tile or steel decks, according to the specifications of the manufacturers of the roofing materials used. Maizewood roof slabs are 2x3 ft. and ½ or 1 in. thick. Special sizes furnished on order.

Maizewood Plaster Base

Application—Nail the 18x48-in. boards direct to framing members, with the 48-in. dimension at right angles to studs or joists, with rough side exposed for plaster. The shiplap edges shall be joined but not forced into place. Ends shall be spaced ⅛ in. Nail with 5d box nails, ⅜ in. from edges, 4½ in. apart. Do not piece out with wood lath.

Reinforce exterior corners with metal bead, and reinforce interior angles with expanded metal lath or wire mesh, bent into the angles and securely stapled.

Plastering—Plastering shall be applied according to the makers' specification, the total thickness to be not less than ½ in.

Maizewood Exterior Finish

Standard Maizewood Boards—8 to 12 ft.—shall be applied, burlap side exposed, directly to and the length parallel with the studding, with ⅛-in. spacing. After sizing, apply two coats of good exterior house paint, according to the manufacturer's specifications. Cover all joints with wood battens nailed through to studs.

Maizewood Interior Finish

Standard Maizewood Board—48 in. wide and 8 to 12 ft. long—shall be used with your choice of the finishes exposed. Nail to intermediate studs with finishing nails, heads slightly sunk. Use 4d box nails on edges, sufficient to hold the Maizewood until panel strips are applied, and nailed securely, through the Maizewood, to studs.

Wood panels may be used or an attractive effect may be gained, without paneling, by beveling.

If Maizewood is to be decorated, after glue sizing is applied, any good paint or enamel may be used according to the maker's specifications.

Maizewood Sound Deadener

Maizewood, in standard board or plaster base form, used in floors, sidewalls or partitions, has considerable value as sound deadener. However, if sound deadening between adjoining rooms is of prime importance, certain special but well-known features of construction should be adopted.

The studs may be doubled in number and staggered, and the Maizewood Plaster Base applied to the alternate studs, set on the standard 16-in. centers. The studs may be doubled in number and set with the 4-in. dimension parallel with the direction of the partition and with a 2-in. space between the two rows of studs.

In this 2-in. space Maizewood can be installed, loose, except at top and bottom.

With Maizewood Plaster Base on both sets of studs, with the middle sheet of Maizewood Standard Board, with two air chambers and with no members carrying through the partition, this is a most effective sound deadening construction.

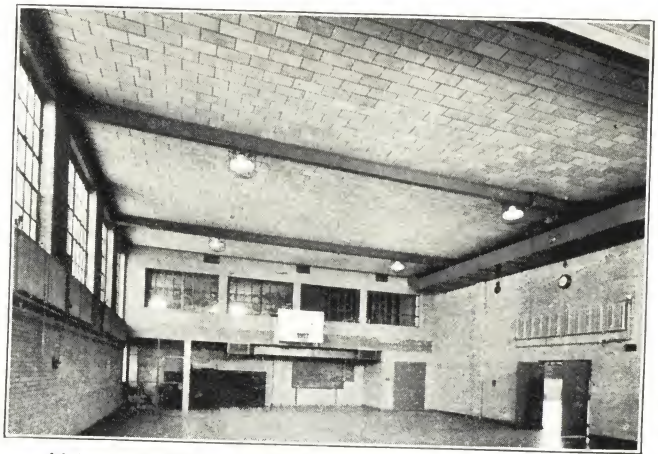
Maizewood for Acoustical Correction

Maizewood for acoustical correction, sound absorption and freedom from distortion of sound, may be applied over furring strips or directly over the plaster, with cement or glue, in a room already plastered.

Decoration should be with water, alcohol, or benzol stains.

For sound absorption where higher efficiencies are required, Maizewood special acoustic tile is recommended. The Maizewood Company offers acoustical engineering service without obligation.

For information on application, plastering, sizing, painting, etc., and for information on special problems, address the central offices, MAIZEWOOD PRODUCTS CORPORATION, 203 North Wabash Avenue, Chicago, Illinois.



Maizewood Ceiling in Girls Gymnasium, New Trier High School, Winnetka, Ill.

Masonite

Structural Insulation
Insulating Lath
Quartrboard
Presdwood



Masonite Corporation

111 W. Washington Street, Chicago, Illinois

MASONITE CORPORATION

Manufacturers of Masonite Structural Insulation and Presdwood

111 West Washington Street

CHICAGO, ILL.

PRODUCTS

MASONITE STRUCTURAL INSULATION.
MASONITE INSULATING LATH.
MASONITE CUSHIONED FLOORING.
MASONITE QUARTRBOARD.
MASONITE PRESDWOOD 1/8, 3/16, 1/4 and 5/16 INCH THICK.

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MASONITE

Its Manufacture and Adaptability

Masonite is a manufactured board, made entirely of wood fibre. It retains the natural strength and composition of wood, but is so made that a high degree of insulation value is added.

In the Mason Process of producing this scientific wood product, clean wood chips are exploded under high steam pressure, so that the wood is reduced to fibre. The product thus produced consists entirely of long cellulose fibre, with their strength unimpaired and the lignins, or natural cementing structure of the wood, entirely retained. No chemicals are used; the exploding process is purely a physical one, so that there is no change in the wood except tearing it apart into natural fibres.

Because the Mason Process has succeeded in producing a long fibre of unimpaired strength without the use of chemicals, the MASONITE CORPORATION is able to fabricate a board with the natural strength and composition of wood—an achievement never before attained.

Masonite Structural Insulation, as you buy it, is simply these long fibres thoroughly felted together and pressed into board form. No binder is added to the product. The natural cementing matter of the wood being unharmed, nothing but pressure and heat is needed to form the fibres into structural board. The pressure is applied hydraulically until the required degree of density is obtained. It is possible, therefore, to fabricate Masonite in various degrees of density, suiting the formation to the service the board is to perform.

Masonite Structural Insulation is pressed to a point which gives it the proper amount of structural rigidity, but still maintains great insulating value by leaving a myriad of minute air cells in and between the fibres. As a result, this material combines structure and insulation to a degree that has heretofore been difficult to find.

Its Insulation Value

The thermal conductivity of Masonite Structural Insulation for 1-inch thickness as determined by the G. F. Gebhardt Laboratories, expressed in B.t.u.'s per hour, per square foot of surface, per degree Fahrenheit difference in temperature between the two surfaces of the material is 0.328. Tested by Prof. Frank B. Rowley, testing engineer, University of Minnesota, it was found to have a co-efficient of heat conductivity of 0.321. Both of these tests were made by the flat plate method. According to hot box tests made by J. C. Peebles of Armour Institute of Technology, the coefficient of conductivity is 0.253.

Where to Use Masonite

The specifications listed in the following pages indicate the great spread of uses of Masonite Structural Insulation. Probably no other building material fits such a great variety of jobs as this one. Its smooth, uniform boards, $\frac{7}{16}$ inch thick, 4 feet wide and 8, 9, 10 or 12 feet long, and with a density of about 19 pounds per cubic foot, can be handled, sawed, cut and nailed like wood, because they are wood.

Only the most common uses are discussed in these pages, the more unusual ones being reserved for special bulletins.

Masonite as Sheathing

Probably the most common use of Masonite in building is sheathing. Under frame, brick, stone or stucco exterior walls it replaces other materials without increase in cost, but with a great increase in the value of the building. The added insulation meets every demand of the present day trend toward insulated buildings, and shows amazing results in the reduction of heating costs, additional comfort in winter and summer, and greater rigidity and strength in the structure.

Three important factors of saving should be noted where Masonite is used for sheathing: *Labor costs* are reduced by the increased rapidity and ease with which the big, uniform boards go into place; *building paper* is eliminated, being unnecessary on any Masonized building; *waste* is cut to the irreducible minimum.

Masonite as Plaster Base

Where Masonite is used as a plaster base, it puts an end to all controversy about the use of a substitute for lath. The introduction of Masonite in shiplapped boards, 2x4 feet, has brought such uniformly excellent results that even the most skeptical builders acclaim it as a fundamental improvement in plastering practice.

Masonite Insulating Lath (as covered in Specification No. 3) is uniformly furnished in bundles of 100 square feet and they are shiplapped along both 4-foot edges. Applied in staggered arrangement, they make an exceedingly strong rigid base. In a series of tests to determine the strength of the bond between Masonite Insulating Lath and plaster applied to it, the Robert W. Hunt Company, testing engineers, found that it withstood a pull of more than 1066 pounds per square foot of surface.

High Resistance to Moisture

The action of Masonite Insulating Lath under moisture is one of the remarkable features that causes exceedingly favorable comment everywhere. Samples of Masonite 12 inches square tested by Robert W. Hunt Company for water absorption were completely immersed. At the end of 4 hours they had absorbed, by volume 2.59%; at the end of 24 hours, 7.16% and at the end of 72 hours only 15.87%. Shrinking and swelling are practically eliminated. Walls plastered on Masonite Insulating Lath remain smooth, even, free from cracks and free from unsightly lath marks.

Note particularly that Masonite Insulating Lath requires no special treatment nor reinforcement, because joints are broken every 2 feet. The only exception to this rule is at the corners, where strips of metal lath or wire screen are recommended.

Masonite as Interior Finish

Masonite's surface suits it particularly well for use as an interior finish. It is smooth, with just enough texture and mottling to provide an interesting surface.

Used in its natural state, it makes a very pleasing panel wall, decidedly out of the ordinary in effect.

Stain, plastic paint, or textured wall finishes may be applied direct to the board. Paint or varnish should be applied over a size or priming coat.

Because of its surface texture, Masonite has won recognition as an interior finish from many builders who have heretofore questioned the use of similar materials for this purpose. Being a true wood product, Masonite eliminates the artificial, "temporary" look common to similar partitions, and provides a substantial permanent wall.

In covering joints, the usual plan of wood battens is applicable. More artistic finishes, in a great variety of paneled effects, may be secured by the use of special Masonite battens or fancy mouldings.

Masonite as Roof Insulation

To stop heat losses through the roof, Masonite may be applied in a number of ways, making it possible to reduce fuel costs in every type of building.

The recommended practice for application of Masonite on the outer roof of houses with wood rafters calls for the application of Masonite directly over the rafters, so that the entire roof is lined with insulation. The usual wood sheathing is then nailed over the Masonite, with boards spaced 1 inch apart. This well insulated roof serves as an excellent base for wood shingles, asbestos shingles, slate, burned clay tile and asphalt shingles.

On buildings already constructed, the desired insulation may be secured by the application of Masonite under the rafters.

Over concrete and wood decks, where the flat, exposed surface often leads to tremendous heat losses, Masonite is a particularly effective insulation. Nailed to the wood, or mopped on to the concrete, it serves equally well. On another page there is presented a chart giving exact figures of heat losses in different types of roofs and showing how those heat losses may be reduced and brought under control.

Special specifications for various types of roof insulation not covered in detail in these pages, may be had by writing MASONITE CORPORATION.

Masonite as Sound Deadening

Where Masonite is used on walls, ceilings and floors, it has another important function, along with its structural and heat insulating values. Masonite is an invaluable material in the control of sound. With the increasing demand for soundproof construction, it is especially interesting to note that the use of Masonite provides excellent results with little additional cost.

The control of insulation of sound is accomplished either through the weight of the wall, as in heavy masonry walls, or through the rigidity of the wall. The efficiency of Masonite is due to the latter.

Testing the reduction of sound intensity through different standard types of partitions, Prof. Paul E. Sabine, at the head of the Department of Acoustics, Riverbank Laboratories, Geneva, Ill., found that through 4-inch clay tile, plastered, weighing 28.0 pounds per square foot, there was a reduction of 34 sensation units, while through a partition of Masonite on wood studs, plastered, weighing 17.0 pounds per square foot, the reduction in sensation units was 35.1.

Conversational speech was heard faintly but was unintelligible through the Masonite partition. The sound of a phonograph was almost inaudible.

Following tests made on Masonite Structural Insulation, taken from dealers' regular stock, by Prof. Sabine, to determine the sound absorption coefficients of the standard $\frac{7}{16}$-inch board when used as the exposed finished wall or ceiling surfaces as a means of preventing excessive reflection of sound and reverberation in rooms, he made the following report:

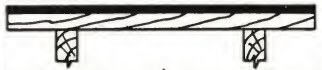
This table of coefficients covers the entire range of tones encountered in music and speech.

Tone Frequency	C2 128	C3 256	C4 512	C5 1024	C6 2048	C7 4096
Masonite on 2x4-in. studs.....	.18	.245	.31	.34	.30	.24
Masonite on 2x1-in. furring....	.17	.24	.28	.295	.30	.28

HEAT LOSSES THROUGH VARIOUS ROOF CONSTRUCTIONS—INSULATED AND UNINSULATED

TYPE OF ROOF INSULATION

Reference to this heat loss chart will show at a glance that a five-ply pitch and gravel roof with a ⅞-in. wood deck will lose a coal value of 6.79 tons per thousand feet of area in one heating season, when exposed to an average difference in temperature of 40° and uninsulated. The same roof, insulated with one layer of Masonite, loses only 3.92 tons during one heating season.

		Conductivity -K-	Percent Saving Due To Insulation	Sq. Ft. of Radiation Required Per 1000 Sq. Ft. Roof Area For 10° Difference In Temperature Multiply Amount Shown By Diff. in Temp / 10		Heat Losses In Tons Of Coal Per 1000 Sq. Ft. Of Roof Area, Per 210 Days At Differences Of Temperature Shown. Calculations Are Based On Average Heating Value Of Coal 12000 B.T.U. And Furnace Efficiency Of 60%. Temperature Difference — F									
				Steam	H.Water	10°	20°	30°	40°	50	60°	70°	80°	90°	100°
 5 Ply Pitch & Gravel Roof ⅞" Wood Deck (Soft Wood)	None	.485		20.02	30.32	1.70	3.39	5.10	6.79	8.50	10.19	11.89	13.58	15.27	17.00
	One Layer MASONITE	.280	42%	11.67	17.50	.98	1.96	2.94	3.92	4.90	5.87	6.84	7.83	8.82	9.80
	Two Layers MASONITE	.196	60%	8.16	12.50	.68	1.37	2.06	2.74	3.43	4.12	4.79	5.48	6.15	6.85
 5 Ply Pitch & Gravel Roof 1¾" Wood Deck (Soft Wood)	None	.345		14.37	21.57	1.20	2.40	3.62	4.83	6.04	7.24	8.45	9.65	10.85	12.05
	One Layer MASONITE	.226	35%	9.42	14.22	.79	1.58	2.37	3.16	3.96	4.75	5.54	6.33	7.12	7.92
	Two Layers MASONITE	.168	51%	7.00	10.50	.59	1.17	1.76	2.35	2.94	3.52	4.12	4.70	5.29	5.88
 5 Ply Pitch & Gravel Roof 2" Concrete Deck	None	.658		27.40	41.13	2.31	4.61	6.90	9.22	11.50	13.81	16.11	18.41	20.72	23.06
	One Layer MASONITE	.330	50%	13.75	20.61	1.15	2.30	3.45	4.61	5.75	6.90	8.05	9.20	10.36	11.53
	Two Layers MASONITE	220	67%	9.16	13.75	.77	1.54	2.30	3.08	3.84	4.61	5.37	6.14	6.92	7.70
 5 Ply Pitch & Gravel Roof 3" Concrete Deck	None	.610		25.40	38.17	2.13	4.27	6.40	8.54	10.68	12.81	14.95	17.10	19.20	21.35
	One Layer MASONITE	.317	48%	13.21	19.80	1.11	2.22	3.32	4.43	5.54	6.65	7.75	8.86	9.97	11.08
	Two Layers MASONITE	.214	65%	8.92	13.38	.75	1.50	2.24	2.99	3.74	4.50	5.24	5.99	6.74	7.49
 5 Ply Pitch & Gravel Roof 4" Concrete Deck	None	.568		23.65	35.75	1.99	3.98	5.96	7.95	9.94	11.92	13.90	15.89	17.88	19.86
	One Layer MASONITE	.306	46%	12.75	19.13	1.07	2.14	3.21	4.28	5.35	6.42	7.49	8.56	9.63	10.72
	Two Layers MASONITE	.209	63%	8.71	13.08	.73	1.46	2.19	2.92	3.65	4.38	5.11	5.84	6.57	7.32
 5 Ply Pitch & Gravel Roof 6" Concrete Deck	None	.500		20.81	31.25	1.75	3.50	5.25	7.00	8.75	10.50	12.25	14.00	15.75	17.50
	One Layer MASONITE	.285	43%	11.88	17.82	.99	1.98	2.97	3.96	4.95	5.94	6.93	7.92	8.91	9.90
	Two Layers MASONITE	.199	60%	8.29	12.45	.70	1.40	2.10	2.80	3.50	4.20	4.90	5.60	6.30	7.00
 5 Ply Pitch & Gravel Roof 2"Concrete 6"Hollow Tile	None	.495		20.62	30.95	1.73	3.46	5.19	6.92	8.65	10.38	12.11	13.84	15.57	17.30
	One Layer MASONITE	.292	41%	12.15	18.25	1.02	2.04	3.06	4.08	5.10	6.12	7.14	8.16	9.18	10.20
	Two Layers MASONITE	.207	58%	8.62	12.93	.72	1.44	2.16	2.88	3.60	4.32	5.04	5.76	6.48	7.20

CONDENSATION CHART

The following example will explain the condensation chart. On a roof of five-ply pitch and gravel type, condensation starts at a relative humidity of 50% when the difference in temperature is 70° and the roof is uninsulated. Insulated with one layer of Masonite, the same roof under the same conditions would show no condensation up to a humidity of 70%, while two layers of Masonite would resist humidity up to 80%.

CHART SHOWING WHETHER OR NOT CONDENSATION WILL FORM ON BOTTOM OF DECK

Black Indicates Danger Of Condensation
White Indicates No Condensation

TYPE OF ROOF	Uninsulated	With One Layer Of MASONITE	With Two Layers Of MASONITE
	Percent Relative Humidity 10 20 30 40 50 60 70 80 90	Percent Relative Humidity 10 20 30 40 50 60 70 80 90	Percent Relative Humidity 10 20 30 40 50 60 70 80 90
5 Ply Pitch & Gravel Roof $\frac{7}{8}$" Wood Deck (Soft Wood)			
5 Ply Pitch & Gravel Roof $1\frac{3}{4}$" Wood Deck (Soft Wood)			
5 Ply Pitch & Gravel Roof 2" Concrete Deck			
5 Ply Pitch & Gravel Roof 3" Concrete Deck			
5 Ply Pitch & Gravel Roof 4" Concrete Deck			
5 Ply Pitch & Gravel Roof 6" Concrete Deck			
5 Ply Pitch & Gravel Roof 2" Concrete 6" Hollow Tile			

Temperature Difference: 10 20 30 40 50 60 70 80 90

GENERAL SPECIFICATION NO. 1

Masonite as Sheathing in Frame Construction—See Fig. 1, Page 9

(1A) Material

(1Aa) Sheathing and insulation of all exterior walls shall be Masonite Structural Insulation $\frac{7}{16}$" thick, as manufactured by MASONITE CORPORATION, Chicago, Ill.

(1B) Framing

(1Ba) Studs, joists, sills and plates shall be framed as in ordinary frame construction. All studs shall be placed accurately on 16" centers. Where horizontal joints in the Masonite are necessary, use 2"x4" headers cut in between the studs. Any odd spaces required to make over-all lengths shall be located in or near the middle.

Note: *No extra cross bracing other than commonly used is required. Fire stops and wind bracing are recommended. If required, so specify.*

(1C) Application

(1Ca) The Masonite boards shall be applied with the long dimension parallel with and directly to the studding, allowing ample bearing surface for nailing on all edges. Horizontal joints shall only be made over framed headers. Boards shall be placed $\frac{3}{16}$" apart at sides, top and bottom. Do not force boards into place.

(1Cb) Around window and door frames, and where tight joints are required, bring Masonite to moderate contact.

(1Cc) Where standard frames are used, nail in a 3" wide strip of Masonite to build up back of outside window and door casings.

(1Cd) Cut Masonite to fit snugly around rafters that project beyond face of studs.

(1D) Nailing

(1Da) Beginning in center, nail Masonite first to intermediate studs, and then entirely around all edges of board to studs, sills, plates and headers. Use galvanized 1½" roofing nails, with ⅜" head, all nails shall be 4" apart on centers and ⅜" from all edges. Drive nails flush with surface of Masonite.

(1E) Siding Walls

(1Ea) Wood siding shall be applied directly over Masonite without the use of building paper, nailing through into studs. Joints in siding shall butt on center of studs.

(1F) Shingle Walls

(1Fa) Furring strips, spaced to the proper shingle weathering, 1"x2" shall be applied horizontally over Masonite and nailed through into studs.

(1Fb) Shingles shall be secured to furring strips in accordance with the manufacturer's specifications.

GENERAL SPECIFICATION NO. 2

Masonite as Sheathing Under Stucco, Brick or Stone Veneer—See Figs. 2 and 3, Page 9

(2A) Material

(2Aa) Sheathing and insulation of all exterior walls shall be Masonite Structural Insulation $\frac{7}{16}$" thick, as manufactured by MASONITE CORPORATION, Chicago, Ill.

(2B) Framing

(2Ba) Studs, joists, sills and plates shall be framed as in ordinary frame construction. All studs shall be placed accurately on 16" centers. Where horizontal joints in the Masonite are necessary, use 2"x4" headers cut in between the studs. Any odd spaces required to make over-all lengths shall be located in or near the middle.

Note: *No extra cross bracing other than commonly used is required. Fire stops and wind bracing are recommended. If required, so specify.*

(2C) Application

(2Ca) The Masonite boards shall be applied with the long dimension parallel with and directly to the frame work members, allowing ample bearing surface for nailing on all edges. Horizontal joints shall only be made over framed headers. Boards shall be placed $\frac{3}{16}$" apart at sides, top and bottom. Do not force boards into place.

(2Cb) Around window and door frames, and where tight joints are required, bring Masonite to moderate contact.

(2Cc) Where standard frames are used, nail in a 3" wide strip of Masonite to build up back of outside window and door casings.

(2Cd) Cut Masonite to fit snugly around rafters that project beyond face of studs.

(2D) Nailing

(2Da) Beginning in center, nail Masonite first to intermediate studs, and then entirely around all edges of board to studs, sills, plates and headers. Use galvanized 1½" roofing nails, with ⅜" head, all nails shall be 4" apart on centers and ⅜" from all edges. Drive nails flush with surface of Masonite.

(2E) Stucco Finish

(2Ea) 1"x2" wood furring strips for *(metal) (wood)* lath shall be applied vertically, nailed through Masonite into each stud.

(2Eb) Apply all metal lath in accordance with the standard specifications of the Associated Metal Lath Manufacturers.

(2Ec) Wood lath to be applied in the customary manner.

(2Ed) Stucco shall be applied in accordance with the stucco manufacturer's specifications.

Note: *No stucco shall be applied direct to Masonite on exterior walls.*

(2F) Brick or Stone Veneer

(2Fa) Shelf angles for the support of lintels, etc. and metal ties shall be nailed through Masonite into studs only. Do not nail into Masonite between studs.

(2Fb) Brick or stone shall be set out at least ½" from the face of Masonite.

GENERAL SPECIFICATION NO. 3

Masonite Insulating Lath as Plaster Base and Insulation for Outside and Partition Walls and Ceilings—See Figs. 4 and 5, Page 9

(3A) Material

(3Aa) Plaster base shall be Masonite Insulating Lath as manufactured by MASONITE CORPORATION, Chicago, Ill. Lath shall be $\frac{7}{16}$" thick, 48" wide, 12", 18", or 24" high, with the 48" edges shiplapped.

(3B) Framing

(3Ba) Studs, joists, sills and plates shall be framed as in ordinary frame construction. All studs shall be spaced accurately on 12" or 16" centers.

(3C) Application for Frame Construction

(3Ca) The Masonite Insulating Lath shall be applied at right angles to the studding, joists or rafters. Apply boards to break joints, space ⅛" apart at all ends. Bring shiplapped edges to moderate contact. Do not force into place.

(3Cb) Around window or door frames, or where tight joints are required, bring Masonite to moderate contact.

(3Cc) All re-entrant angles shall be protected with galvanized *(metal lath Cornerite) (strips of wire screen cloth)* from floor to ceilings and where side walls meet ceiling.

The *(Cornerite) (wire screen cloth)* shall be nailed through Masonite to studs.

(3Cd) The center joint of all room ceilings shall be covered with a piece of rib lath cut so the rib covers center of joint. Allow portion of expanded lath to extend on each side. Rooms over 16 ft. wide shall have two additional strips spaced midway between the center strip and the wall. All strips shall run the long way of the room.

(3D) Nailing

(3Da) Nail Masonite Insulating Lath with 4d box nails every 4″ on centers. Nail intermediate studs first and then the ends.

(3E) Application for Masonry Construction

(3Ea) Wood furring strips 1″ x 2″ shall be applied vertically, secured in the usual manner to the masonry walls, set 12″ or 16″ on centers.

Note: *Application of Masonite Insulating Lath to the furring strips shall be as specified in (3C), page 5.*

(3F) Plaster

(3Fa) Quick setting gypsum plaster containing not more than 2% lime shall be used. Plaster should set in about one and one-half hours and not to exceed two hours. Apply plaster directly to the surface of the Masonite. The first coat (scratch coat and brown coat together) shall be brought out flush to ½″ grounds and must be thoroughly dry before applying finish coat. Total thickness shall be not less than ½″.

(3Fb) The plasterer shall use the darby in the direction of the studding or joist, and it shall be of sufficient length to span two or more studs or joists.

Note: *Do not wet Masonite before applying plaster. Keep room being plastered well ventilated in both winter and summer. Lime plaster is not recommended over Masonite.*

GENERAL SPECIFICATION NO. 4

Masonite Structural Insulation as an Interior Finish

See Fig. 6, Page 9

(4A) Material

(4Aa) All interior walls and ceilings shall be covered with Masonite Structural Insulation 7/16″ thick, as manufactured by MASONITE CORPORATION, Chicago, Ill.

(4B) Framing

(4Ba) Studs, joists, sills and plates shall be framed as in ordinary frame construction. All studs shall be placed accurately on 16″ centers. Where horizontal joints in the Masonite are necessary, use 2″x4″ headers cut in between the studs.

(4Bb) Consideration shall be given for the design of the paneling desired, using extra studs if necessary.

(4Bc) Headers shall be installed back of chair rails and all similar moulded trim.

(4C) Application

(4Ca) The Masonite boards shall be applied directly to the frame work members, allowing ample bearing surface for nailing on all edges. Horizontal joints shall only be made over framed headers. Boards shall be placed 3/16″ apart at sides, top and bottom. Do not force boards into place.

(4Cb) Around window and door frames, and where tight joints are required, bring Masonite to moderate contact.

(4D) Nailing

(4Da) Beginning in the center, nail Masonite to intermediate studs with 1¾″ finishing nails, driven at a 30 degree angle every 6″. Heads shall be countersunk with nail set. Nail edges with standard galvanized 1½″ roofing nails with ⅜″ heads, spacing them 4″ apart on centers and ⅜″ from edge of board.

(4E) Trim

(4Ea) Joints shall be covered with Masonite battens 7/16″ x 4″ beveled at a 45 degree angle on each edge. For corners or angles, bevel one edge only. Do not bevel the ends.

(4Eb) Baseboard and other trim shall be as commonly used.

(4Ec) Nail battens secured to framing, headers, etc., with 6d finish nails set at a 30 degree angle.

(4F) Painting and Decorating

Note: *Masonite may be left in its pleasing natural color and finish, or it may be painted or enameled. Before painting, size with a glue, casein or prepared sizing. Painting without size will use more paint than necessary. See paint specifications.*

GENERAL SPECIFICATION NO. 5

Masonite Structural Insulation for Ceiling and Floor Insulation

See Figs. 7 and 8, Page 10

(5A) Material

(5Aa) Ceilings—For ceilings, use Masonite Insulating Lath, as manufactured by MASONITE CORPORATION, Chicago, Ill.

(5Ab) Floors—For floor insulation, use Masonite Structural Insulation (full size boards).

(5B) Application

(5Ba) Ceilings—For ceilings, nail Masonite Insulating Lath directly to ceiling joists, using standard 4d box nails, when plaster is to be applied. Framing shall follow usual framing specifications, as given in plastering specifications No. 4.

(5Bb) Floors—For floor insulation, apply on usual framing specifications, nailing Masonite Structural Insulation directly to the joists, using standard 5d box nails. Nail rough floor through Masonite to the joists.

GENERAL SPECIFICATION NO. 6

Sizing, Painting, Staining, Tinting, Plastic Paints or Wall Paper on Masonite Structural Insulation

(6A) Staining

Note: *Any stain, whether oil, benzol, alcohol or acid may be applied over Masonite in the usual manner. Water stain and oil commercial stains used for dyeing wood can be used over Masonite. Apply according to the manufacturer's specifications. Masonite will take paste-water stain without first sizing.*

(6B) Sizing

Note: *In order to get maximum covering capacity for oil paints, the surface of the Masonite boards shall be sized. We recommend: National Lead Company's Dutch Boy Wall Primer, Pittsburgh Plate Glass Company's Special Sealer No. 19489-A, Denny, Hilborn & Rosenbach's Dhrlac Sealer, Benjamin Moore Company's Fillcoat, or equal. In all cases, follow the manufacturer's specifications for mixing and applying. A glue size made from chip glue, in the proportion of ¾ lbs. of glue to each gallon of water may also be used.*

(6C) Painting

Note: *Allow size coat to become thoroughly dry, then apply one or two coats of paint, or enamel.*

GENERAL SPECIFICATION NO. 7

Masonite as Insulation and Base for Plastic Paints

(7A) Material

(7Aa) All interior walls and ceilings shall be covered with Masonite Structural Insulation $\frac{7}{16}$" thick, as manufactured by MASONITE CORPORATION, Chicago, Ill.

(7B) Framing

(7Ba) Follow usual framing specifications. Headers are particularly recommended behind chair rails and all other moldings.

(7C) Nailing

(7Ca) A 5d box nail placed 6" apart on centers through center of board and 4" apart around all edges shall be used. Set all nail heads with a ball head hammer. Apply small amount of plastic paint over the heads of the nails and smooth down to an even finish.

(7D) Joint Construction

(7Da) Sand the Masonite for a width of about 3" each way from the joints, using a block of wood and No. 1 sand paper. Over each joint apply a strip of muslin 2" or 3" wide, or buckram tape, embedding it in the plastic paint that has been applied to the joint to receive it. The plastic paint must be spread along each side of the tape for an inch or more to prevent the edges of the tape from showing through the finished wall. The cloth tape must be pressed firmly into the plastic paint by the use of a painter's scraping knife, or pointing trowel and with sufficient force to bring the tape into intimate contact with the Masonite.

(7E) Corner Construction

(7Ea) A strip of wire screen cloth or metal cloth bent to a right angle, shall be inserted in all re-entrant angles and bonded in place with the plastic paint as specified in paragraph (7Da).

(7F) Application

(7Fa) After the plastic paint in the joints and angles has become thoroughly dry, sand to a smooth even surface, using No. ½ sand paper to prepare the surface ready for the application of the plastic paint. The plastic paint shall be applied in accordance with the manufacturer's specifications.

GENERAL SPECIFICATION NO. 8

Wall Paper Applied to Masonite Structural Insulation

(8A) Framing

Note: *Follow usual framing specification. Headers behind chair rails and all other mouldings are recommended.*

(8B) Nailing

Note: *Follow plastic paint nailing specifications, then set all nail heads with a ball head hammer and apply a small amount of Swedish putty over the heads of the nails and smooth down to an even finish.*

(8C) Joint Construction

Note: *Follow method as specified in Specification No. 7 for plastic paint, except instead of treating the joints with plastic paint and muslin strip or buckram, they should be treated with Swedish Putty and muslin strip or buckram. After the Swedish Putty has become thoroughly dry, sand to a smooth and even finish. Use No. ½ sandpaper.*

Swedish Putty may be made by mixing the following ingredients in the following proportions: 5 lbs. bolted whiting, ½ gallon liquid glue, ½ pint paint (light), ½ pint varnish. If too thin add whiting to make stiff paste.

(8D) Application

(8Da) After proper joint treatment, the entire wall surface shall be given a coat of paperhanger's size, or casein size. Size coat shall be thoroughly dry before applying paper.

(8Db) The paper shall be hung in the usual manner.

GENERAL SPECIFICATION NO. 9

Masonite as Roof Insulation Under Wood Rafters

See Fig. 9, Page 10

Note: *Application of Masonite under wood rafters should be specified for the insulation of all existing roofs and also for new roofs covered with wood shingles, slate, zinc, copper and all other types of roof covering materials requiring a solid wood deck for nailing.*

(9A) Material

(9Aa) Insulation shall be Masonite Structural Insulation $\frac{7}{16}$" thick, manufactured by MASONITE CORPORATION, Chicago, Ill., in sizes 4'x8', 9', 10', or 12'.

(9Ab) Use Masonite Insulating Lath for attics where scuttle holes will not permit the use of the larger size boards.

(9B) Framing

(9Ba) The rafters shall be spaced 16" on centers.

(9Bb) Whenever it is necessary to have a horizontal joint in Masonite, a 2"x4" header shall be cut in between the rafters.

(9C) Application

(9Ca) The Masonite boards shall be applied parallel with and directly to the rafters, with a bearing for nailing on all edges.

(9D) Nailing

(9Da) Nail with either 5d box or 1½" roofing nails, spaced 6" apart in body of board and 4" apart around all edges.

(9Db) Wherever a tight joint is desired around openings, at corners, etc., fit Masonite carefully and bring to moderate contact. Do not force boards into place.

(9E) Interior Finish

(9Ea) If interior finish is desired, care shall be exercised in laying out rafters, studs and headers for the paneling design required. Intermediate rafters, studs and headers shall be nailed with 1¾" finishing nails every 6", nails to be driven at a 30 degree angle.

Note: *For nailing sides and ends, see specification No. 4.*

(9Eb) Panel strips shall be of Masonite $\frac{7}{16}$"x4", with edges beveled at a 45 degree angle.

(9F) Plaster Base

(9Fa) When plaster is to be applied, Masonite Insulating Lath shall be used, applied in accordance with standard specification No. 3 for the application of plaster to Masonite Insulating Lath.

(9G) Special Treatment

Note: *Many unusually artistic battens and all-over decorative effects may be secured with Masonite. By using special cutting tools, or by sanding strips of Masonite, many different designs may be made quickly and easily.*

GENERAL SPECIFICATION NO. 10

Masonite as Roof Insulation on Top of Wood Rafters—See Fig. 10, Page 10

Note: The use of Masonite on top of wood rafters is applicable for roofs of wood shingle, asbestos shingle, etc.

(10A) Material

(10Aa) Roof insulation shall be Masonite Roof Insulation $\frac{7}{16}$" thick, manufactured by MASONITE CORPORATION, Chicago, Ill.

(10B) Framing

(10Ba) Space rafters 16" on centers. Cut in a 2" x 4" header wherever there is a horizontal joint in the Masonite. Provide suitable pieces for a nailing base at the ends of all rafters, ridges, hips, valleys, etc.

(10C) Application

(10Ca) Apply Masonite parallel with and directly to the rafters with a bearing for nailing along all edges.

(10Cb) Leave $\frac{3}{16}$" space between all boards at top, bottom and sides. Around corners, gables, openings, chimneys, and at all points where a tight joint is required, the Masonite shall be finished carefully and brought to moderate contact. Boards should not be forced into place.

(10D) Nailing

(10Da) Masonite shall be nailed first to intermediate rafters and headers, then nailed around all edges of each board. Nails shall be standard 1½" roofing nails with ⅜" heads, spaced 4" apart. Drive heads flush with the surface of the Masonite. Place nail not less than ⅜" from the edges of the board.

(10E) Roof Sheathing

(10Ea) For *(wood shingles) (asbestos shingles) (tile) (specify)* roofs, apply wood sheathing over Masonite in the usual manner, nailed through the Masonite into the rafters.

GENERAL SPECIFICATION NO. 11

Masonite Roof Insulation Over Concrete, Gypsum, Wood and Steel Decks See Figs. 11 and 12, Page 10

(11A) Material

(11Aa) Roof insulation shall be Masonite Roof Insulation, size 3'x4' or 4'x4', as manufactured by MASONITE CORPORATION, Chicago, Ill.

(11B) Preparation of Concrete and Gypsum Decks

(11Ba) The roof deck shall be reasonably smooth, dry, well cured and free from all rubbish.

(11Bb) If not well cured, the deck shall be primed, using not less than one gallon of standard concrete primer per 100 square feet of roof.

(11C) Application over Concrete and Gypsum Decks

(11Ca) Mop deck solid with a heavy, uniform coat of hot roofing pitch, or asphalt, using not less than 30 pounds per 100 square feet. Masonite shall be laid in pitch or asphalt having a melting point of approximately 200° F. and pressed firmly into place while the asphalt or pitch is hot. All edges of Masonite shall be brought to moderate contact. Do not force boards into place. Transverse joints and joints of successive layers shall be broken.

(11Cb) If more than one layer of Masonite is applied, mop the top surface of the previous layer in the same manner as stated above, using 30 pounds of pitch or asphalt to each 100 square feet of surface, but without primer.

(11Cc) Apply roofing in the usual manner, over Masonite, according to the roofing manufacturer's specifications.

(11D) Preparation of Wood Decks

(11Da) The roof deck shall be made of seasoned, dressed and matched lumber, properly nailed, all nails driven flush with boards. The deck shall be laid to slope and pitched to drain as shown on plans. The deck shall be swept clean before laying Masonite.

(11Db) Nail cant strips around walls and elsewhere where required.

(11E) Application over Wood Decks

(11Ea) The first layer of Masonite shall be nailed to wood deck, using 1½" standard roofing nails with ⅜" heads and spaced 12" on centers, nails to be driven flush with surface. Nails in body of board to be staggered.

(11Eb) If more than one layer of Masonite is to be used, mop the surface of the first layer with not less than 30 pounds of pitch or asphalt, per 100 square feet of surface.

(11Ec) Press Masonite firmly into the hot pitch or asphalt, breaking all joints.

(11Ed) Apply roofing in usual manner over the Masonite, according to the roofing manufacturer's specifications.

(11F) Preparation of Steel Decks

Decks shall be free from grease, oil, dirt, etc., and the weather surface properly coated with suitable asphalt primer. All rubbish shall be removed and the deck swept clean. All sharp angles shall be rounded out so as to avoid rough sharp edges. Lay a strip of roofing felt 6" wide, uncemented, over expansion joints at ridge, cementing the Masonite over it.

(11G) Application Over Steel Decks

Note: *Follow the method of application as given in (11C).*

GENERAL SPECIFICATION NO. 12

Masonite Insulation Applied to Walls and Ceilings for Acoustical Correction

(12A) Material

(12Aa) The plastered walls or ceilings or both, shall be covered with Masonite Structural Insulation $\frac{7}{16}$" thick, as manufactured by MASONITE CORPORATION, Chicago, Ill.

(12B) Application

(12Ba) The Masonite Structural Insulation boards shall be fastened to the plastered walls and ceilings by means of one of the commercial adhesives, applied according to the manufacturer's specifications.

Note: *The adhesive should be a waterproof glue or cement and of such a character that it would be easily worked and applied. It must be quick setting, have a certain degree of elasticity when set, be inedible and unattractive to insects and rodents and should be comparatively inexpensive.*

(12C) Masonite Acoustical Paint

Note: *Masonite Acoustical Paint is a product to be used over Masonite Insulation for changing the color where the insulation is used for acoustical correction. For complete specifications for mixing and applying write Masonite Corporation, Room 2037, 111 W. Washington Street, Chicago.*

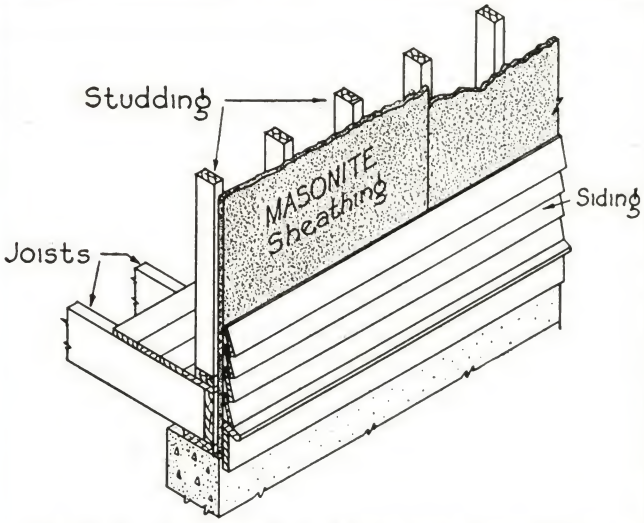


FIG. 1 FRAME CONSTRUCTION

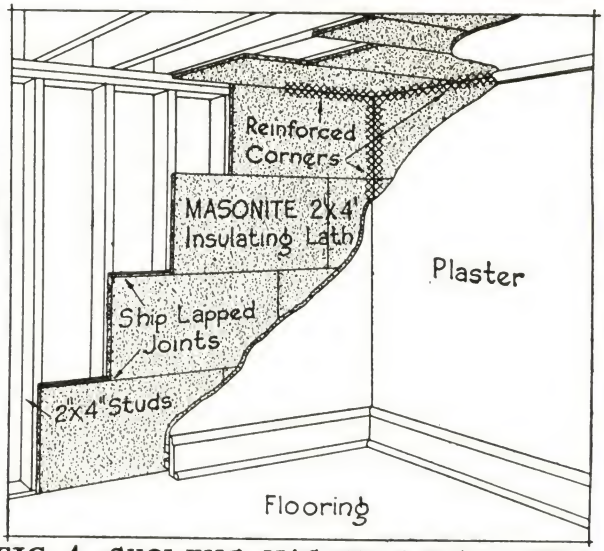


FIG. 4 SHOWING MASONITE INSULATING LATH USED AS PLASTER BASE

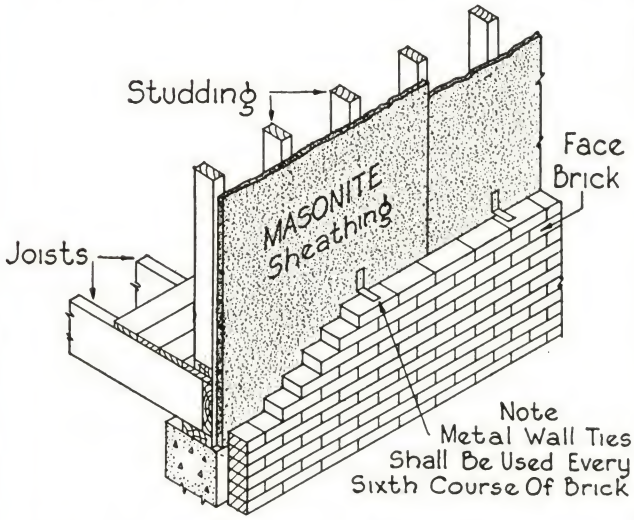


FIG. 2 BRICK VENEER

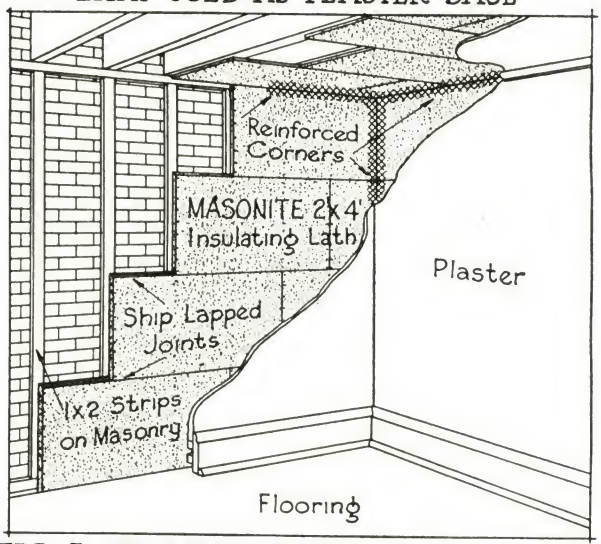


FIG. 5 SHOWING MASONITE INSULATING LATH USED AS PLASTER BASE ON MASONRY

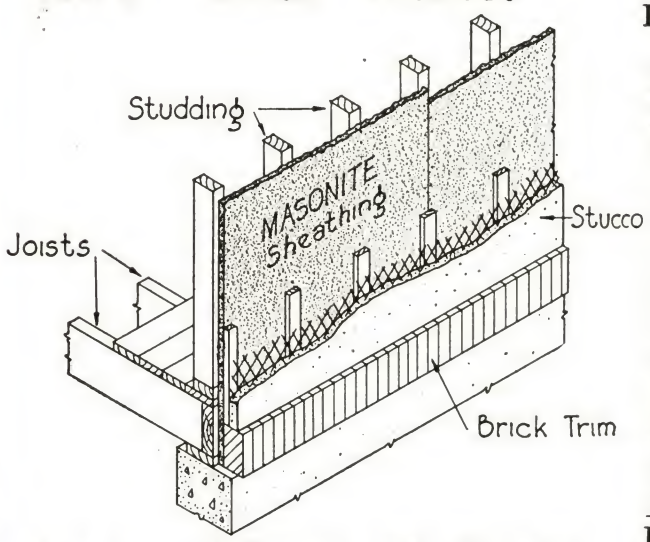


FIG. 3 STUCCO ON FRAME

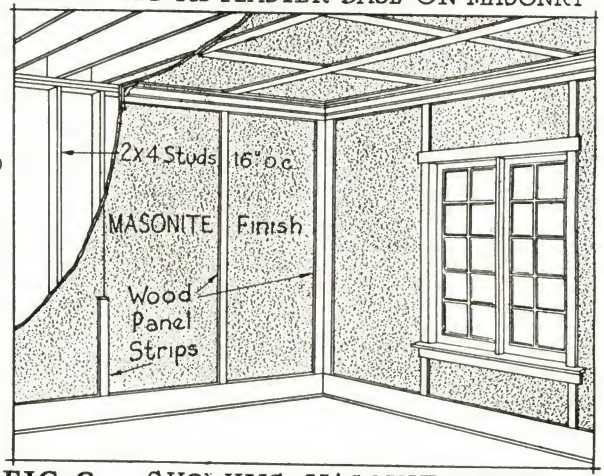


FIG. 6 SHOWING MASONITE USED AS AN INTERIOR TRIM

MASONITE CONSTRUCTION DETAILS

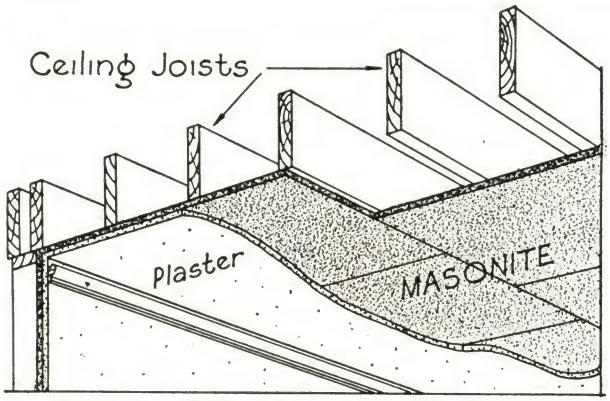


FIG. 7 CEILING INSULATION

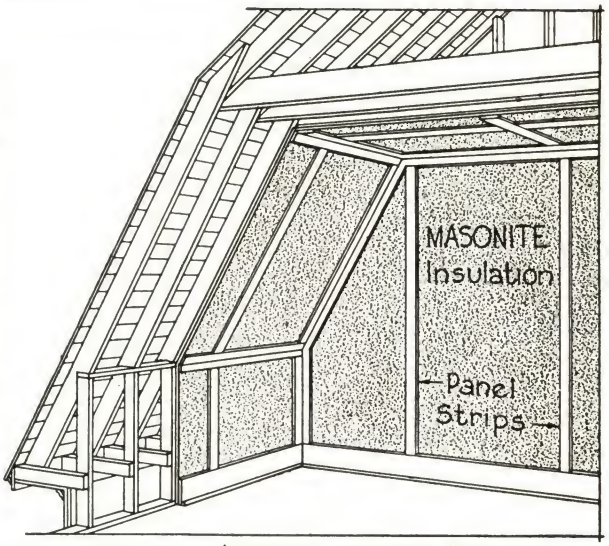


FIG. 9 ATTIC INSULATION

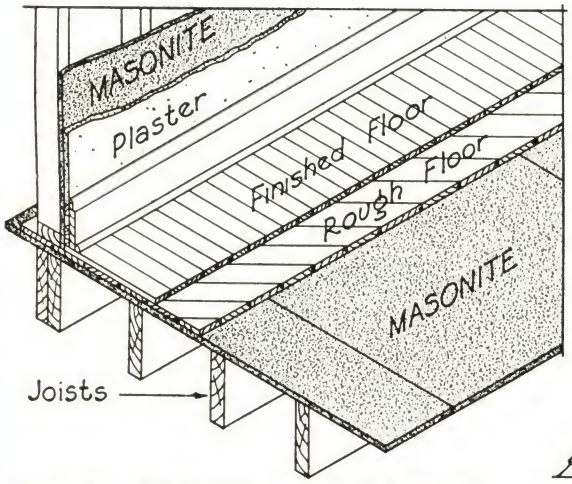


FIG. 8 FLOOR INSULATION

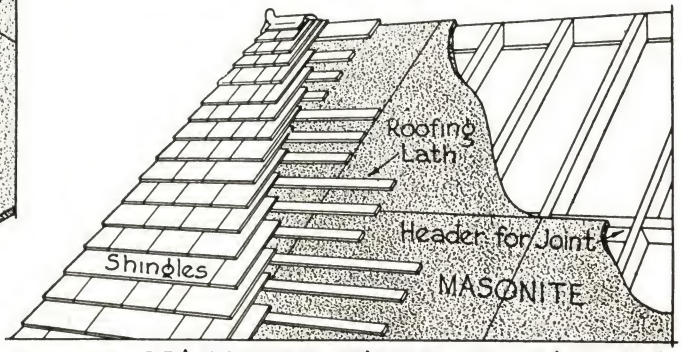


FIG. 10 MASONITE NAILED TO RAFTERS

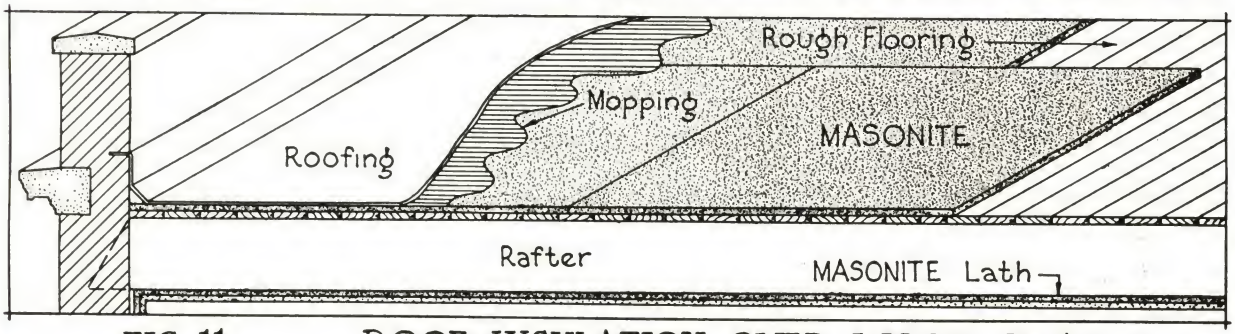


FIG. 11 ROOF INSULATION OVER WOOD DECK

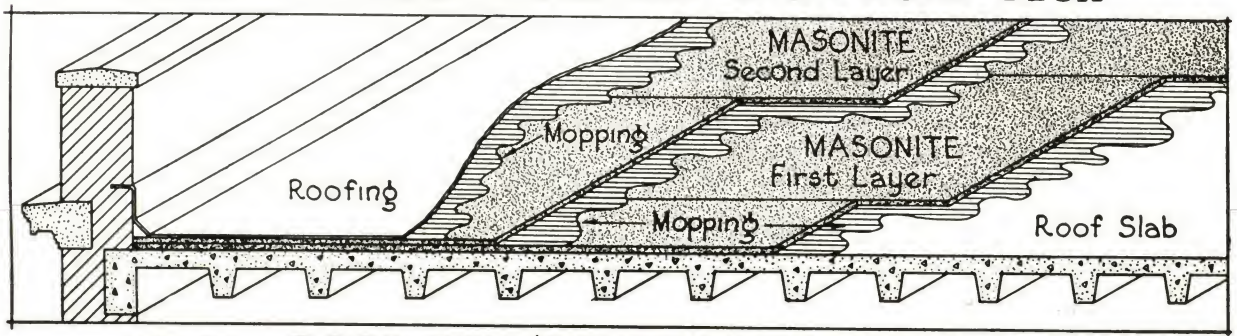
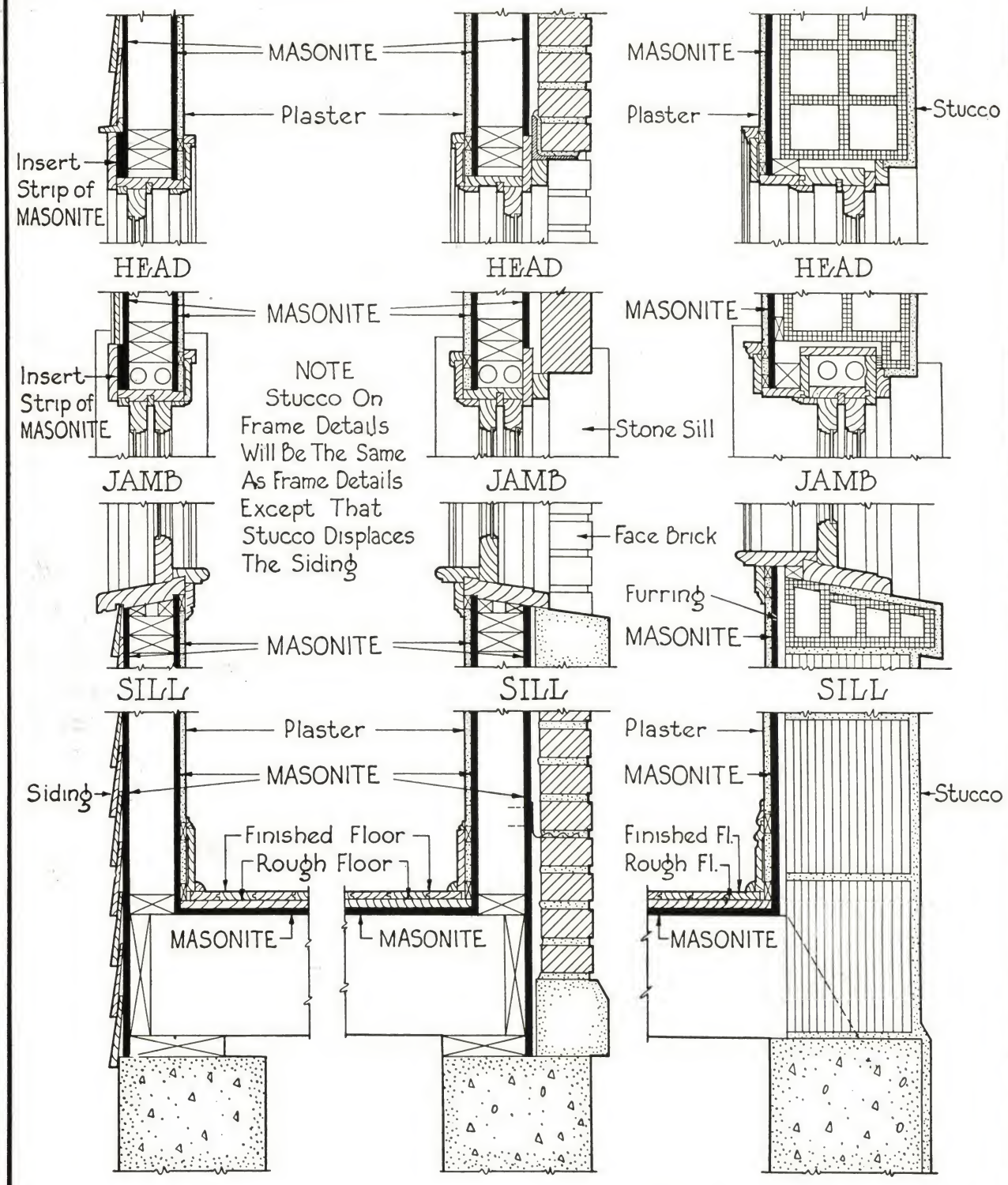


FIG. 12 ROOF INSULATION OVER CONCRETE DECK

MASONITE CONSTRUCTION DETAILS



SECTION THRU FRAME WALL

FIGURE 13

SECTION THRU BRICK VENEER WALL

FIGURE 14

SECTION THRU HOLLOW TILE WALL

FIGURE 15

MASONITE CONSTRUCTION DETAILS

MASONITE PRESDWOOD

What Masonite Presdwood Is

It is an all-wood fibre board, made from fibre obtained by exploding fresh, clean chips by high pressure steam. These fibres are then thoroughly felted together and are finished into boards in steam heated, flat-bed hydraulic presses where they are subjected to hundreds of tons of pressure and at the same time to a temperature of nearly 500° F.

In four ways, Masonite Presdwood is a better product than nature's own original material. It is both grainless and knotless, has greater resistance to moisture, is much denser and far tougher. Yet it contains no foreign substance, not even a chemical binder. It is genuine wood—and nothing else—torn apart by steam and put together again by heat and pressure.

Shape, Size and Thickness

Presdwood is made only in board form to a standard width of 4 feet and to a maximum length of 12 feet. These boards are available in two thicknesses only, ⅛ and $\frac{3}{16}$ inch.

Advantages Presdwood Offers

It will not crack, split or splinter. It is highly resistive to wear and to moisture and shows little contraction or expansion. It contains no grit or foreign substance of any kind and does not, in any way, damage tools. It is easily worked on planers, sanders and shapers, as well as with hand tools.

Uses of Masonite Presdwood

To cover this subject would necessitate the use of much space, for Presdwood is being used extensively in many diversified fields. The uses pointed out herewith are therefore those uses which are of particular interest to the architect, builder, contractor, carpenter and home owner.

For Interior Decoration

Presdwood is used for panels on walls and ceilings, either natural, or as a ground for any desired decorative treatment in private homes, business offices, stores or public buildings. Properly installed, there is no danger of the broad, smooth, handsome boards curling, warping or buckling. It is also used extensively in built-in cabinets and for closet lining.

For Stores and Business Houses

It is used for paneling sidewalls and ceilings, for partitions, for the front and tops of counters, as tops for desks and tables and as drawer bottoms. In some instances it is being used for flooring.

For Lining Concrete Forms

In this field, the use of Presdwood is attracting much attention. Where concrete surfaces are to be left exposed, the use of Presdwood for form lining results in a fine, smooth surface on the concrete wall or column, so that no special surfacing or grinding work is required. In this work the same piece of Presdwood may be used several times. On one big job it was reported that a part of the Presdwood was used eight times.

For Special Uses

Presdwood is also being used to build radiator cabinets, clothes hampers, fire screens, radio tension boards, radio cabinets, card tables, incubators, brooders, shipping cases and children's playhouses.

Method of Applying Presdwood

Cutting and Fitting—Any woodworking tool may be used. Boards should be cut accurately to size. Under no condition should Presdwood be sprung or forced into place.

Nailing—Both size and type of nails to be used are determined by the particular requirements of the case. Where any nailing is required in the center of the board, it should be done first, after which the nailing at the edges would be done. Never "toe nail" Presdwood.

Gluing—Glue Presdwood just as you would any other wood board, using a good grade of waterproof cement or glue and being careful to secure a solid contact.

Note: Where Presdwood is to be exposed to high humidity, it should have water sprinkled or brushed on the screen side and allowed to stand 48 hours or longer before being installed. This insures a permanent smooth, flat surface, as the board will absorb the proper amount of moisture, after which it will show no further contraction or expansion.

Finishes Applied to Presdwood

Among the manufacturers whose products have been applied to Masonite Presdwood with thoroughly satisfactory results are the following:

Adams & Elting, Berry Bros., Inc., Cook Paint & Varnish, DeVoe & Raynolds, DuPont, Eagle Picher Lead, Elaterite Paint & Manufacturing, Glidden, Grand Rapids Wood Finishing, Heath & Milligan, Hockaday, Inc., Marietta Paint & Color, Martin-Senour, Benj. Moore & Co., Murphy Varnish, National Lead, Peaslee-Gaulbert, Pittsburgh Plate Glass, Pratt & Lambert, Sherwin-Williams, Truscon Laboratories, U. S. Gutta Percha Paint, and Watson Paint & Varnish.

Note: While the sealers, lacquers, enamels and varnishes of certain well-known manufacturers are mentioned specifically in these specifications, it will be found that similar products of other reputable manufacturers will serve equally as well. Confer with your paint dealer or manufacturer concerning any special finishes or effects you may desire.

Brush Applied

Natural—The rare beauty of rich brown burled Presdwood that always arouses admiration may be preserved by applying first a high grade clear sealer, then two or more coats of clear lacquer or varnish. A beautiful natural finish may be attained by:

First—Applying one coat of Pratt & Lambert's Filtex, reduced 50% with turpentine substitute or one coat of Sherwin-Williams Sanding Sealer No. 04598.

Second—Sanding, when dry, with 000 sandpaper or rub lightly with fine steel wool.

Third—Flow on two or more coats of varnish or two coats of Sherwin-Williams Wood Finishing Lacquer No. 04623. Rub lightly with fine steel wool after each coat dries. For the finest varnish finish rub down the last coat with pumicestone and sweet oil. A number of interesting finishes have been developed which retain the natural burl, but change the color.

Gold Bronze—Secured by applying a mixture of Mongolian Gold Powder No. 10, oil and japan with waste and then wiping. After allowing to dry 12 hours, spray with white lacquer.

Beryl Green—Secured by brushing on one coat of Beryl Green wiping oil stain, wiping, allow to dry 12 hours, then spraying one coat of water white lacquer and one coat of clear flat lacquer.

Gray Marble—Secured by brushing on one coat of Gray Wiping Oil Stain, and finishing as in the Beryl Green.

The following finish is particularly good for outside use:

DuPont Duco—Apply one or more coats of lacquer sealer No. 233-1041. Sand with fine sandpaper or steel wool. Then apply two coats of DuPont No. 259 Finishing Lacquer. Many colors are available and the lacquer number 259 should be given in connection with the color number.

Spray Applied

Note: There are many spraying lacquers suitable for inside use. Among them being:

DuPont Duco—Use one or more coats of sealer No. 233-1041 rubbed when dry with fine sandpaper or steel wool, then two coats of finish lacquer No. 237.

Mill White Enamel—An inexpensive finish for factories and workrooms is one coat of Filtex reduced by adding one-fourth part turpentine substitute. One coat of Lyt-all flat finish and one coat of Lyt-all Gloss Finish.

Satin Finish Enamel—Apply one coat of Benj. Moore & Co. Filcote. One coat of Moore's Sani-Flat White, reduced with 1 pint of raw linseed oil to 1 gallon of paint. One coat of Moore's Dulamel White. Rub lightly with 000 sandpaper or fine steel wool, after the first two coats, if desired.

Outside Paint

Outdoor Paint Finish—Apply one coat lead and oil, using raw linseed oil in large proportions. Second coat with lead and oil, using less oil than in the first coat. The third or finish coat will contain the usual proportion of lead, oil and zinc.

Masonite

Structural Insulation
Insulating Lath
Quartrboard
Presdwood



THERMAX CORPORATION

228 NORTH LaSALLE STREET CHICAGO, ILLINOIS



THERMAX

The Fireproofing Insulation

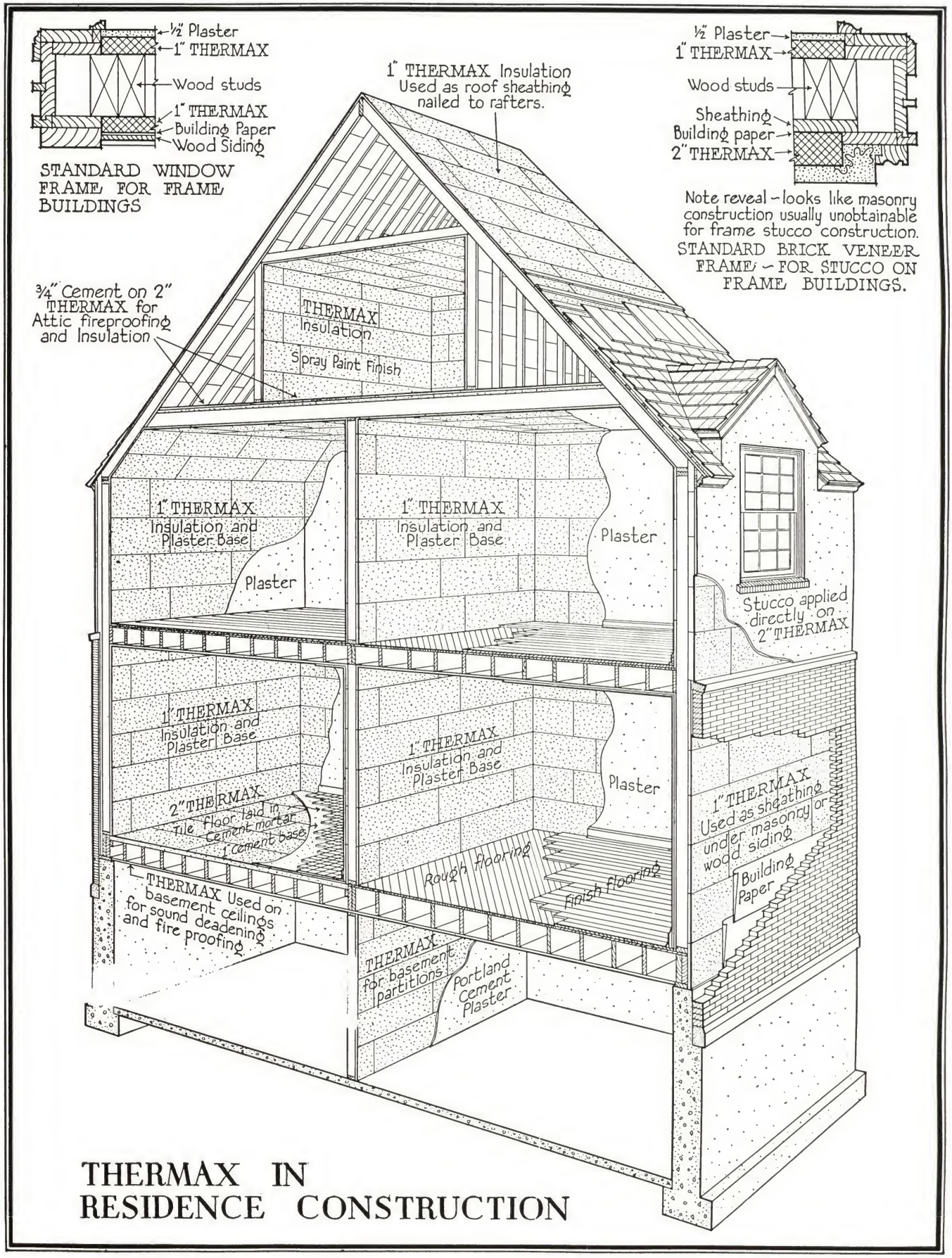
Specifications and Technical Data

1. **Insulation:** Thermax combines real insulation with fireproofing; qualifications possessed by no other insulation board.

2. **Fireproofing:** Thermax, tested in accordance with the standard fire test specifications of the American Society for Testing Materials, meets requirements for Class A fireproof construction.

3. **Structurally Strong:** Thermax satisfies code requirements for self-supporting insulated roof decks, and non-bearing partitions.

4. **Sound-Deadening:** Thermax 2-inch partitions transmit less than one-fifth of one per cent of sound.



THERMAX IN RESIDENCE CONSTRUCTION

THERMAX CORPORATION

GENERAL SALES OFFICE

228 North La Salle Street, CHICAGO, ILL.

PLANT

Chewelah, State of Washington

THERMAX—THE FIREPROOFING STRUCTURAL INSULATION

Since 1918, this material has been used in continental Europe under the foreign trade name of Heraklith and there has won a leading place in building industry.

This twelve-year demonstration under varied building and climatic conditions from Iceland to tropical Palestine has established the unique and practical characteristics of this insulation. Europe buys over fifty million feet of this product per year.

Thermax is now available to American architects and builders. A large plant adequately financed by American capital has been erected at Chewelah in the State of Washington. The Thermax Corporation has complete control of every step in the manufacture of its products—first, because its plant equipment is new and of the latest type and, second, because the Thermax factory is located in the heart of the very finest source of raw materials, thus assuring uniformity and economical production costs.



TRADE-MARK

Already Thermax has found a ready acceptance in America. Architects, Engineers and Builders are convinced of its practicability, completely fulfilling, as it does, their demands in modern construction. Thermax, in its three thicknesses, provides adequate insulation, plus *fireproofing,* plus *great structural strength,* plus *sound deadening,* plus verminproof properties, acoustical value, permanence and non-absorbent features—all these qualities in one material and at *one cost.*

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MANUFACTURING PROCESS

Raw Stock

Thermax is made of two basic materials—long, tough wood shreds and fire resisting cement. The cellular wood fibers alone have an established high insulation value, which is increased by the air containing interstices between the fibers when these are compacted and cemented together.

Details of Process

Thermax is produced in one continuous mechanical operation that shreds the timber into long fibers; passes these fibers through a binding emulsion of fire resisting cement; rolls and forms this mass into boards or slabs exactly 1 in., 2 in. and 3 in. thick by 20 in. wide and dries and cuts the product into standard length.

DIVERSIFIED ADAPTABILITY IN THE BUILDING FIELD

Frame Building Insulation

(1) As Sheathing and Roof Boarding—The full one (1) inch minimum thickness of Thermax as against the ordinary $\frac{7}{16}$ in. or ½ in. structural board insulation is an economy. The added fuel savings and comfort more than compensate for any slight added cost. The fireproofing feature is absolutely unique in the insulation field and alone should influence its choice. Structurally it is an ideal sheathing and roof boarding material.

As an exterior stucco base it is practically inert so far as contraction and expansion are concerned and the bond between the stucco and the Thermax surface is equal to that of the best masonry stucco base. Two (2) inch Thermax is recommended for stucco base—the architectural effect, using standard brick veneer frames, is the same as in a masonry building with a masonry reveal (see detail).

(2) As Interior Plaster Base—On walls and ceilings it is an ideal fireproofing plaster base—strong bond, no expansion or contraction. On basement ceilings it reduces the fire hazard to a minimum.

(3) As a Floor Slab—In kitchens or other rooms where a composition floor, such as linoleum, asphalt tile, rubber tile, etc. is practical or appropriate, Thermax (3 in. thickness) finished with a 1 in. thick topping of Portland cement mortar (1:2 mix) troweled smooth, provides the ideal sub-floor or base for these materials. (Joists 16 in. o. c.)

So used, a cement floor is economically practical in attics, materially lessening fire risk.

Beside the benefits of heat insulation, sound deadening is an inherent quality of Thermax.

Industrial Roof Deck Insulation

Thermax units are high in insulation value in the three thicknesses marketed—1, 2 and 3 in.—and where required over wood, concrete or steel roof decks are laid in a single operation (not laminated) in the required thickness—a labor economy. Thermax presents a firm insulating base for built-up roofing.

Fireproofing-Insulating Structural Roof Slabs

Used as precast roof slabs in conjunction with steel roof framing, Thermax (2 and 3 in. thick) is ideal. It is easily and inexpensively erected and is an ideal base for built-up finished roofing on industrial buildings. The exposed underside may be painted with aluminum or light reflecting cold water or oil paint, producing an efficient, attractive and much desired acoustical treatment. It may also be plastered with gypsum or Portland cement plaster (lime gauged).

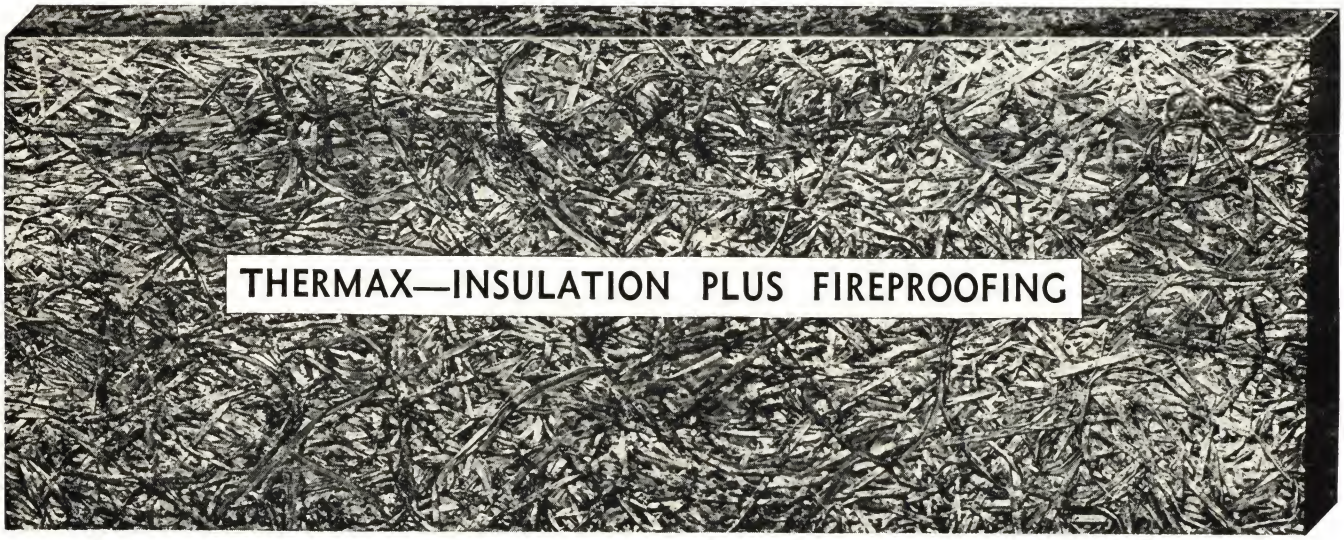
Fireproofing Insulation for Structural Floor and Ceiling Slabs

For use in conjunction with Steel Joists and Junior I Beam Floor or Battle Deck Constructions. Light weight, structural strength, definite fireproofing, heat and sound insulation and an ideal base for cement, terrazzo and similar floor finishes and ceiling plaster are the salient characteristics. The 2 in. thick fireproof ceiling slab adds a practical and definite fire protection to these light steel constructions, hitherto difficult to accomplish.

Fireproofing Partitions (Non-Bearing)

(1) 2 in. Thick with Metal Studs—Fulfills 1 hour fireproofing requirements, using 1 in. thick Thermax units supported by special metal studs, plastered both sides (2 in. thick finished). Thermax is an unexcelled plaster base.

(2) 2 in. and 3 in. Thick Partition Blocks—Fulfills 1 and 2 hour, respectively, fireproofing requirements. The Thermax units 2 and 3 in. thick x 20 in. wide x 64 in. long are easily handled due to their light weight. They are erected in mortar (Portland cement gauged with lime) exactly the same as standard gypsum or clay tile partition blocks and are plastered both sides, finishing 3 in. and 4 in. thick respectively. Cutting and fitting are easily accomplished with an ordinary saw. Thermax is ideal as a plaster base and has exceptional value as a sound insulating material.



PHYSICAL CHARACTERISTICS

Tests

All data is backed by authentic tests. Sources, where not given, will be furnished on request.

Fireproofing—Thermax Passes Fire Endurance Tests

Thermax 3 in. thick partitions (non-bearing) plastered two sides (total thickness 4 in.) have passed the 2¼ hr. fire endurance and hose stream tests in accordance with the current specifications of the American Society for Testing Materials.

The 1 in. and 2 in. plastered (2 in. and 3 in. finished) Thermax non-bearing partitions have passed the 1 hr. fire endurance and hose stream tests.

While made of shredded, cellular, insulating wood fibers, each fiber is coated with fire resisting cement. The outstanding characteristic of Thermax as an insulating board is its fireproofing quality. Direct a blow torch flame, adjusted to produce a hot, non-luminous flame approximately 6 in. long when burning free, with the burner tip placed 2½ in. from the center of a 1 in. thick Thermax board—it requires approximately one (1) hour to burn a hole through the board. Combustion ceases immediately when the flame is removed. (Standard demonstration test).

Thermal Conductivity

The thermal conductivity of Thermax, a Fireproofing Insulation, is but slightly higher than standard non-fireproof fiber insulation. However, the minimum thickness of Thermax is 1 in., whereas ordinary insulation boards as marketed are $\frac{7}{16}$ in. and ½ in. in thickness, resulting in an actual efficiency of but one half or less of their rating based on the standard 1 in. thickness.

The thermal conductivity of Thermax established by Prof. J. C. Peebles, Armour Institute (flat plate method) follows:

1 in. thick—0.458 B.t.u. per hr., per sq. ft., per degree F.
2 in. thick—0.229 B.t.u. per hr., per sq. ft., per degree F.
3 in. thick—0.153 B.t.u. per hr., per sq. ft., per degree F.

Sizes

Thicknesses—Thermax is made 1, 2 and 3 in. thick. An axiom of insulation efficiency is that a sufficient thickness of insulating material must be used. Therefore, one of the outstanding advantages of Thermax as an insulating material is the greater thickness.

Area—Thermax in each thickness is made 20 in. wide x 64 in. long. Longer lengths up to 9′ 0″ can be furnished on special order.

Weight

1 in. thick Thermax weighs 2.2 lbs. per sq. ft. (approx.).
2 in. thick Thermax weighs 4.4 lbs. per sq. ft. (approx.).
3 in. thick Thermax weighs 6.6 lbs. per sq. ft. (approx.).

Moisture Resistance (Capillarity)

With one edge immersed in water, moisture in four (4) days rises to an average of but 3 in. in the slab. No further rise occurs for the next six (6) days. After drying, Thermax has the same strength as it had originally (University of Washington test). Non-absorption not only is essential to sanitation, but to insulating efficiency.

Structural Strength

Tests (Pittsburgh Testing Laboratory) determine that Thermax fulfills all practical requirements for roof decks.

Slabs were placed on flat supports spaced 24 in. or 16 in. o.c. and a central load applied over 1 in. x 3 in. plate in increments up to ultimate failure, deflections being measured and corresponding loads recorded.

The results of these tests showed that the maximum load per sq. ft. for 2 and 3 in. Thermax at 24 in. span between supports is 210 and 345 lbs. respectively and for 2 in. Thermax at 16 in. span is 765 lbs. per sq. ft. (for complete table of tests, see page 6).

Impact—A 1 in. topping of Portland cement mortar was applied on top of 2 in. thick Thermax blocks. Samples were kept moist for one week, then thoroughly dried. The concrete topping was then subjected to 20,000 blows of 600 lbs. per sq. in. concentrated at one point. There was no cracking of the concrete topping or loosening of the bond between the concrete and Thermax slab (University of Washington).

Firm Roof Foundation

Where used as structural roof slabs or as insulation over roof decks, Thermax provides a firm surface as foundation for built-up finished roofing. There is no danger of puncturing the finished roofing material under normal wear and tear.

Expansion and Contraction

In Europe, Thermax (under the name of Heraklith) has been in use extensively for over twelve years as an exterior stucco and interior plaster base. None of these installations show any defects due to expansion or contraction of the base under any of the various climatic conditions encountered.

Portland Cement Stucco and Plaster Bond

Sample Thermax Boards, each 10 in. x 10 in. x 2 in. thick were cut from boards selected at random from stock. One side of each board or slab was first given a scratch coat consisting of one part of gypsum to two parts of clean, well graded plaster sand over a 6 in. square surface (an area of one-fourth of a square foot). The two specimen boards were then bonded together by a browning coat of one part of gypsum to two parts of plaster sand, the thickness of the coat being 1 in. by 6 in. square and applied directly over the surface which received the scratch coat.

A series of four tests was made on slabs thus bonded resulting in an average of 234.3 lbs. per sq. ft. Failure in each case occurred by separation or pulling apart of wood fibers from the bottom board in the test (Pittsburgh Testing Laboratory).

Note: *60 lbs. per sq. ft. is the accepted standard for bonding strength.*

Sterility

Made of clean, shredded wood, with each strand cement coated, Thermax is odorless and contains no food value to attract insects. The cement coating successfully prevents attack by rodents.

Durability

In addition to being moisture resistant, the cement coated wood shreds in Thermax are definitely sealed against attack by fungus growth. Under actual use abroad for many years no instance of deterioration has been discovered. (Vienna report.)

Sound Insulation

Thermax has a remarkable sound insulation coefficient. Tests made on a 2 in. thick partition, plastered (base and finish coats), establish that the per cent of the incident sound transmitted through the construction is 0.18% (less than ⅛ of 1%) at a frequency of 512 cycles. (Massachusetts Institute of Technology.)

Uniformity

Uniformity of raw materials, complete laboratory control and rigid factory supervision assure a uniform product.

Reasonable Cost

Compared with other insulation of equal thickness or efficiency, but lacking the fire resisting and structural characteristics of Thermax, the cost of Thermax is very low.

Low Labor Installation Cost

Thermax is easily and rapidly erected by the ordinary mechanic without special training. It saws like lumber where cutting and fitting is required. The light weight of the units makes one man handling convenient and the large boards or slabs with a surface area of approximately 1 sq. yd. combines speed with economy.

THERMAX AS SHEATHING AND ROOF BOARDING Specifications

Note: *Use on walls under wood siding, shingles, stucco or masonry veneer. Use on sloping roofs under shingles, slate, tile or similar rigid roof units which may be laid over wood furring strips.*

Note: *Notes are explanatory or advisory only and should not be included in the specifications.*

Note: *Select and include only those clauses which apply to the particular work. Words or clauses within brackets in italics are selective.*

(1) Work Included

Note: *Here list and locate definitely the wall and roof areas to be covered. If both 1 in. and 2 in. thicknesses are used, list separately and the respective locations or areas covered. Use 2 in. thick Thermax for stucco base.*

(2) Material

(Sheathing) (and) (roof boarding) shall be Thermax Insulating Board as made by Thermax Corporation, 228 No. LaSalle Street, Chicago. Boards shall be full *(1 in.) (and) (2 in.)* thick *(as above designated),* 20 in. wide by 64 in. long.

(3) Application

(3a) General—Continuity of insulation is imperative. Apply Thermax boards with the length at right angles to the framing members. End joints (except at corners, openings, etc.) shall center over framing members. Break end joints in alternate courses.

(3b) Spacing—Thermax boards shall be brought to moderate contact at all joints and with window and door frames and trim *(and with vertical walls on roofs).* Do not force Thermax into place.

(3c) Nails—

(3c1) Use 8d common *(cement coated)* nails with 1 in. galvanized roofing washers under heads for 1 in. Thermax.

(3c2) Use 16d common *(cement coated)* nails with 1 in. galvanized roofing washers under heads for 2 in. Thermax.

(3d) Nailing—First nail Thermax to intermediate framing members and then nail the ends on all framing members spaced four (4) nails, approximately 6 in. apart on centers. On ends four (4) nails shall be set at least ⅝ in. from the edge.

(4) Supplementary Provisions

Note: *Provide for the following in other specification divisions.*

Note: *Thermax is not a nailing base.*

(4a) Construction—Framing shall be in accordance with the recommendations of the U. S. Department of Commerce and the National Lumber Manufacturers' Association.

(4b) Waterproof Paper—Cover all exterior Thermax surfaces *(except those under stucco)* with *(specify brand)* waterproof building paper. Lap at least 2 in. at all joints and secure, through the insulation to framing members with nails driven through galvanized washers.

(4c) Furring Strips—

(4c1) Provide 1x2 in. furring strips properly spaced over Thermax to take *(wood siding) (shingles) (slate) (tile) (specify) (wall) (and) (roof)* covering. Strips shall be laid *(directly over and parallel with the framing members for wood siding) (and) (at right angles to the framing members for shingles, etc.)* and nailed to each bearing.

(4c2) Furring nails shall be sufficiently long to pass through the furring and Thermax to penetrate the framing members at least 1 in.

(4d) Wood Siding—All joints shall butt over the center of a furring strip.

(4e) Masonry Veneer Ties—Provide *(specify type)* galvanized masonry ties at each stud spaced approximately 16 in. apart vertically. Nails shall be sufficiently long to pass through the Thermax and penetrate the stud at least 1 in.

(4f) Exterior Stucco—Apply the exterior stucco approximately 1 in. thick directly to the Thermax in accordance with the manufacturer's standard specification for application over masonry base. Do not wet the Thermax surface before applying the stucco.

THERMAX AS INTERIOR PLASTER BASE—Specifications

Note: *Use as an insulating plaster base.*

Note: *Notes are explanatory or advisory only and should not be included in the specifications.*

Note: *Select and include only those clauses which apply to the particular work. Words or clauses within brackets in italics are selective.*

(1) Work Included

Note: *Here list and locate definitely the wall and ceiling areas to be covered. If both 1 in. and 2 in. thicknesses are used, list separately and the respective locations or areas covered. 2 in. thickness is advocated for masonry walls, see par. 4.*

(2) Material

Plaster base shall be Thermax Insulating Board as made by Thermax Corporation, 228 No. LaSalle Street, Chicago. Units shall be full *(1 in.) (and) (2 in.)* thick *(as above designated),* 20 in. wide by 64 in. long.

Note: *2 in. thick Thermax is advocated for insulating plaster base against masonry construction, see par. 4.*

(3) Application on Frame Construction

(3a) General—Do not moisten board before application. Apply Thermax boards with length at right angles to the framing members. End joints shall center over framing members. Stagger end joints in successive courses on all walls and ceilings; likewise stagger end joints at juncture of walls and ceilings.

(3b) Spacing—Thermax Board units shall be brought to moderate contact at all joints and with window and door frames. Do not force Thermax into place.

(3c) Nails—

(3c1) Use 8d common *(cement coated)* nails with 1 in. galvanized roofing washers for 1 in. Thermax units.

(3c2) Use 16d common *(cement coated)* nails with 1 in. galvanized roofing washers for 2 in. Thermax units.

(3d) Nailing—Space four (4) nails approximately 6 in. apart on centers on each bearing and set ⅝ in. from the edges at ends. First nail to intermediate framing members and then at ends.

(4) Application on Masonry Walls

(4a) General—Do not moisten board before application. Apply Thermax Boards to the masonry with *(Emulsified Asphalt) (½ in. thick backing of waterproofed portland cement mortar).* Stagger end joints in successive courses.

Note: *Emulsified Asphalt is advocated since this not only thoroughly bonds the Thermax to the masonry, but also seals the masonry against air infiltration or moisture due to capillarity. "Integrally Waterproofed" Portland cement mortar for backing is advocated for the same reasons.*

(4b) Backing—

(4b1) Asphalt—Apply a heavy coat of high grade emulsified asphalt in which clay is used as the emulsifying agent and containing not less than 60% of asphalt *(specify)* approximately ⅛ in thick *(sprayed) (troweled)* on to the thoroughly cleaned masonry wall.

(4b2) Cement Mortar—Apply a ½ in. thick backing of fresh portland cement mortar (1 to 2 mix) to the thoroughly cleaned masonry wall.

(4c) Erecting Thermax—Apply the Thermax Boards against the backing while plastic with sufficient pressure to assure a thorough bond. Units shall be set in moderate contact, with exposed faces in a true vertical plane. Do not force Thermax into place. Cut and fit Thermax tight against all wood grounds attached to masonry (see 5b2).

(5) Supplementary Provisions

Note: Provide for the following in other specification divisions.

(5a) Construction—Framing shall be in accordance with the recommendations of the U. S. Department of Commerce and the National Lumber Manufacturers' Association.

(5b) Grounds—

(5b1) For Frame Construction—Furnish and erect, substantially secured to framing members through the Thermax, ½ in. grounds to receive all woodwork trim.

(5b2) For Masonry Construction—Furnish and erect, substantially secured to the masonry, grounds the thickness of the insulation plus the thickness of the backing to which, after the insulation has been erected, shall be secured ½ in. grounds to receive all woodwork trim.

(5c) Plastering—

(5c1) Caution—Do not wet Thermax before applying plaster.

(5c2) Plaster—Use gypsum cement or gypsum wood fiber plasters for scratch and brown coat.

(5c3) Thickness—Full ½ in. thick.

(5c4) Application—Apply plaster in three (3) coats in accordance with the plaster manufacturer's specifications, except that at least one coat shall contain 10% hydrated lime or lime putty. Surfaces shall be rodded to a true plane. All corners and angles shall be plumb and true. Wherever necessary and particularly on ceilings, provide plaster screeds to insure a uniform full plaster thickness.

(5c5) Ventilation—Provide adequate ventilation for the proper drying of the plaster work.

THERMAX INSULATING STRUCTURAL ROOF SLABS

Engineering Data

STRENGTH OF THERMAX DECKS

Uniformly Distributed Loads for 2 and 3 inch Thick Slabs

(Pittsburgh Testing Laboratory)

Slab thickness	Span between support c. to c.	Slab area between supports	Ultimate total load	Equivalent uniformly distributed load	Maximum load per sq. ft.	Modulus of rupture lbs. per sq. in.	Average ultimate load center deflection*
3 in.	**24 in.**	**3.33 sq. ft.**	**575 lbs.**	**1150 lbs.**	**345 lbs.**	**255 lbs.**	**.327 in.**
2 in.	**24 in.**	**3.33 sq. ft.**	**350 lbs.**	**700 lbs.**	**210 lbs.**	**158 lbs.**	**.314 in.**
2 in.	**16 in.**	**2.22 sq. ft.**	**850 lbs.**	**1700 lbs.**	**765 lbs.**	**115 lbs.**	**.236 in.**

Note: Deflections shown are not permanent. Permanent deflections in all cases are within allowable limits.

THERMAX ROOF DECKS—40 LBS. LIVE LOAD

Weight of Purlin and Rafter System for Various Spacings

Trusses c. c.	16′ 0″					20′ 0″					24′ 0″					Size of Thermax tees 2′ 0″ c. c.
Purlins c. c.	A		B	C	D	A		B	C	D	A		B	C	D	
		Lbs.	Lbs.	Lbs.	Lbs.		Lbs.	Lbs.	Lbs.	Lbs.		Lbs.	Lbs.	Lbs.	Lbs.	
5′ 6″	5″ I	10.	1.94	1.64	3.58	7″ I	15.3	2.98	1.64	4.62	8″ I	18.4	3.55	1.64	5.19	4″
6′ 0″	6″ I	12.5	2.20	1.64	3.84	7″ I	15.3	2.73	1.64	4.37	8″ I	20.5	3.60	1.64	5.24	4″
6′ 6″	6″ I	12.5	2.03	2.24	4.27	8″ BI	17.5	2.86	2.24	5.10	8″ I	20.5	3.32	2.24	5.56	5″
7′ 0″	6″ I	12.5	1.90	2.24	4.14	8″ BI	17.5	2.65	2.24	4.89	9″ I	21.8	3.27	2.24	5.51	5″
7′ 6″	6″ I	14.75	2.09	2.24	4.33	8″ BI	17.5	2.47	2.24	4.71	8″ CI	24.0	3.34	2.24	5.58	5″
8′ 0″	7″ I	15.3	2.04	2.24	4.28	8″ BI	17.5	2.31	2.24	4.55	8″ CI	24.0	3.13	2.24	5.37	5″
8′ 6″	7″ I	15.3	1.92	2.94	4.86	8″ I	18.4	2.28	2.94	5.22	8″ CI	24.0	2.94	2.94	5.84	6″
9′ 0″	7″ I	15.3	1.81	2.94	4.75	9″ I	21.8	2.54	2.94	5.48	8″ CI	24.0	2.78	2.94	5.72	6″

A—Size of purlin and weight per lineal foot.
B—Purlin weight per square foot of roof.
C—Rafter weight per square foot of roof.
D—Total weight purlin and rafter system per square foot of roof.

THERMAX ROOFING TEES

I—Moment of Inertia. S—Section Modulus

Section	Flange	Depth	Weight per ft.	I	S
6 in.	**3.06 in.**	**5.75 in.**	**5.87**	**5.22**	**1.390**
5 in.	**2.69 in.**	**4.75 in.**	**4.48**	**3.04**	**0.917**
4 in.	**2.28 in.**	**3.75 in.**	**3.27**	**1.25**	**0.472**

THERMAX SIZES AND WEIGHTS

Thickness ..... **2 in.—3 in.**

Weights (lbs. per sq. ft.) ..... **4.4 —6.6**

Lengths ..... **64 in.** (longer up to 9 ft. on special order)

Width ..... All sizes **20** in. wide

THERMAX INSULATING STRUCTURAL ROOF SLABS
Specifications

Note: *Use on flat or pitched roofs as a structural insulating precast slab applied over structural steel or wood roof framing.*

Note: *Notes are explanatory or advisory only and should not be included in the specifications.*

Note: *Select and include only those clauses which apply to the particular work. Words or clauses within brackets in italics are selective.*

(1) Work Included

Note: *Here list and locate definitely the roof areas to be constructed of Thermax Slabs. If both 2 in and 3 in. thicknesses are used, list separately and the respective location or areas.*

(2) Material

Roof Slabs—Roof slabs shall be Thermax Insulative Structural Roof Slabs as made by Thermax Corporation, 228 No. LaSalle Street, Chicago. Slabs shall be full *(2 in.) (and) (3 in.)* thick *(as above designated)*, 20 in. wide by *(64 in.) (72 in.) (96 in.)* long.

Clips—Clips for attaching Thermax Slabs to the structural steel supporting Ts shall be Thermax Galvanized Roofing Clips.

(3) Laying Roof Slabs

Thermax Roof Slabs shall be laid at right angles to the steel framing Ts and fastened with Thermax Clips, using not less than three (3) clips to each unit. Clips shall be secured in place with galvanized nails driven into the Thermax. Ends of units shall rest on steel rafters with the joint between adjacent slabs centered over the T. Sufficient clips shall be applied at eaves and ridges to form soldering grounds for sheet metal work. Thermax slabs shall be brought to moderate contact. Do not force Thermax into place. Break end joints in alternate rows. Grout all joints with Portland cement mortar (1:4 mix) and brush a skin coat of thick consistence over the entire surface before applying built up roofing. Thoroughly protect Thermax Roof Slabs from moisture until waterproof roofing is applied.

(4) Finished Roofing

Finished roofing shall be applied over the Thermax Roof Slabs in accordance with the roofing manufacturer's specifications.

Note: *A standard built-up 4 or 5-ply roof is recommended.*

(5) Supplementary Provisions

Note: *Provide for the following in other specification divisions.*

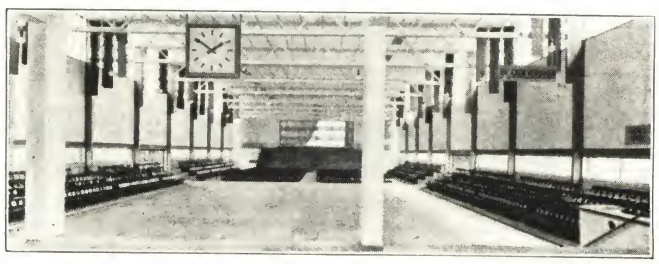
(5a) Steel Roof Construction—Design and strength of framing to support Thermax Roof Slabs shall be in accordance with the engineering data pertaining to span and thickness of slab units furnished by the Thermax Corporation to sustain the specified live and dead loads.

The steel, its fabrication and its protection shall be in accordance with the Standard Specifications of the American Institute of Steel Construction.

(5b) Painting—The exposed underside of the Thermax Roof Slabs shall be *(spray) (brush)* painted with *(specify brand) (aluminum paint) (light reflecting cold water or oil paint) (specify).*

(5c) Plastering—The exposed underside of the Thermax Roof Slabs shall be plastered with a thin coat of *(gypsum plaster tempered with 10% hydrated lime) (white Portland cement tempered with hydrated lime) (specify).*





Exposition Hall, Mannheim, Germany. Steel Frame Construction. Thermax 2 in. and 3 in. Thickness for Walls and Roof. Portland Cement Stucco Finish.

THERMAX INSULATING STRUCTURAL FLOOR AND CEILING SLABS—Specifications

Note: *Use for fireproof construction in conjunction with Bar Joists, Metal Joists and Junior Beam Construction.*

Note: *For Engineering Data, see page 6.*

Note: *Notes are explanatory or advisory only and should not be included in the specifications.*

Note: *Select and include only those clauses which apply to the particular work. Words or clauses within brackets in italics are selective.*

(1) Work Included

Note: *Here list and locate definitely the floor and ceiling areas to be covered. If more than one thickness is used, list separately and the respective locations or areas covered.*

(2) Construction

The *(floors) (and) (ceilings)* are constructed *(by others) (specify)* of *(specify type of joist)* spaced 16 in. o. c. as noted on plans.

(3) Materials

(3a) Slab Material—*(Floor) (and) (ceiling)* slabs shall be Thermax as made by Thermax Corporation, 228 No. LaSalle Street, Chicago.

(3b) Floor Slabs—Floor slabs shall be 3 in. thick x 20 in. wide x 64 in. long.

(3c) Ceiling Slabs—Ceiling slabs shall be *(1 in.) (2 in.)* thick x 20 in. wide x 64 in. long.

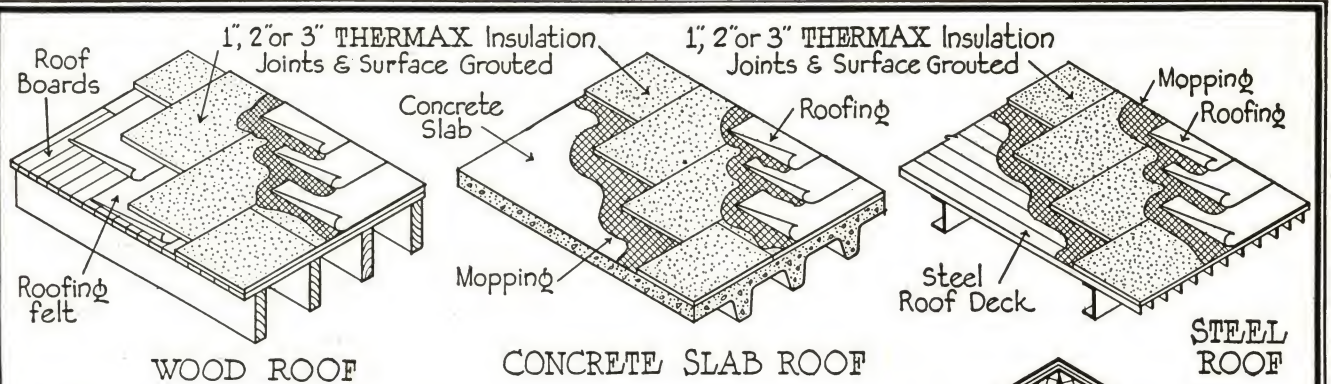
Note: *Select thickness with regard to fireproofing required by local ordinances.*

(3d) Cross-furring—*(¾ in.) (specify)* cold rolled furring channels.

Note: *Specify on Standard Metal Joists and Junior Beam Construction.*

(3e) Floor Slab Clips—Special Thermax galvanized clips adapted to fit the top flange of the floor construction.

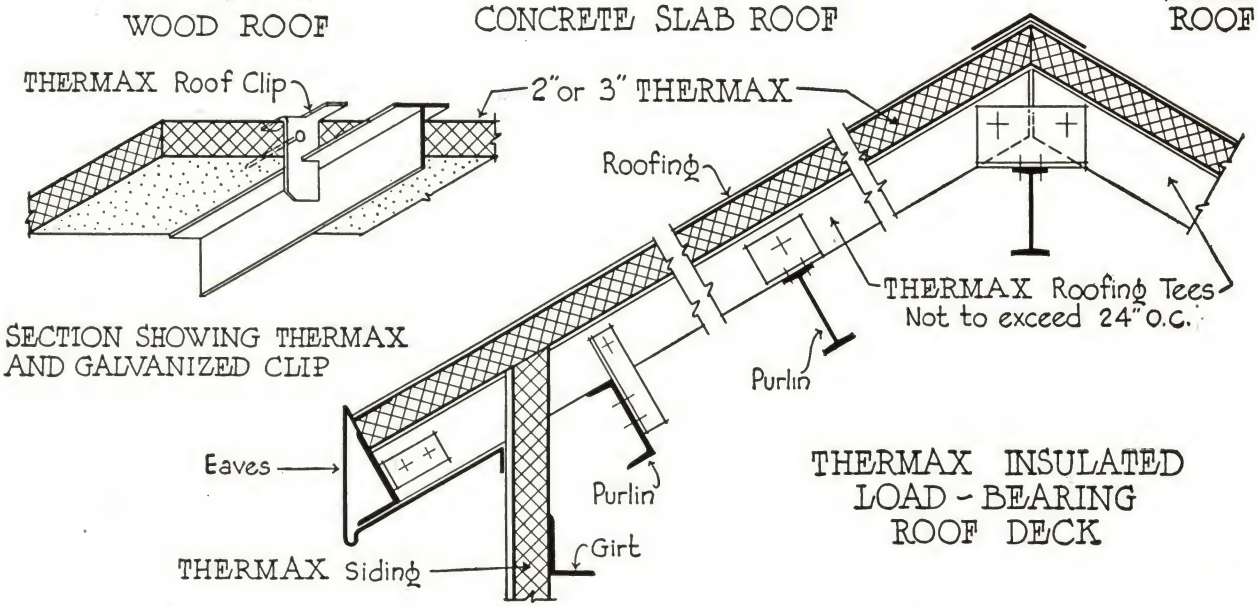
(3f) Ceiling Suspension Wire—18 gauge galvanized annealed wire.



WOOD ROOF

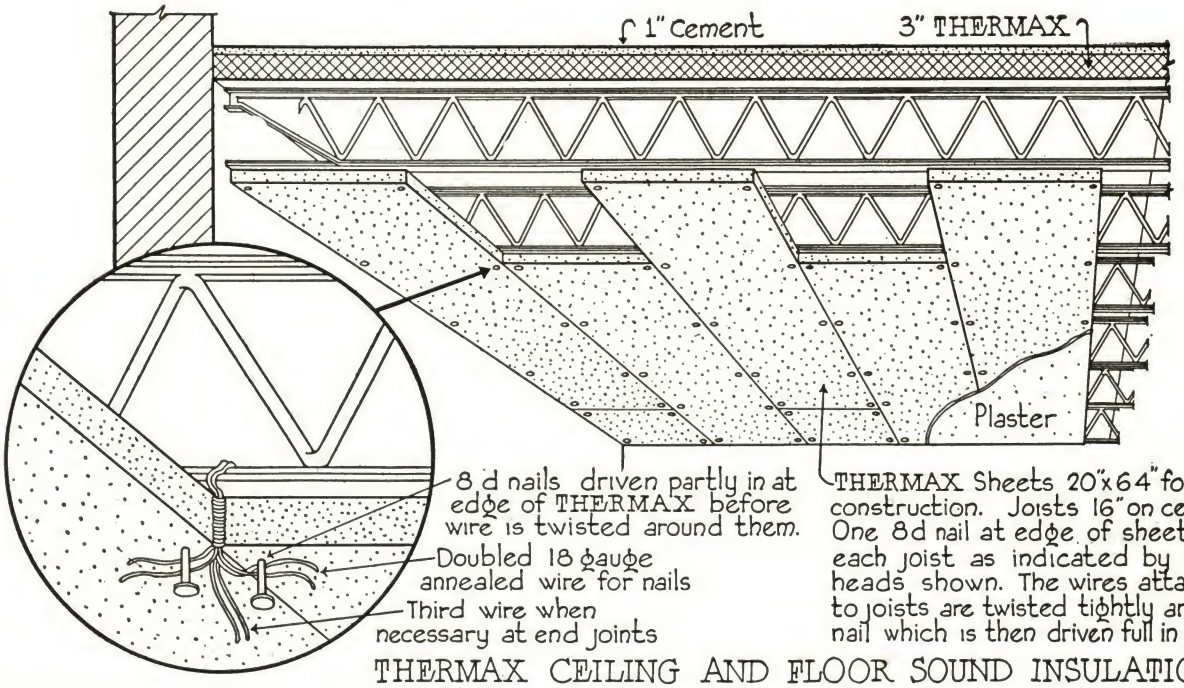
CONCRETE SLAB ROOF

STEEL ROOF



SECTION SHOWING THERMAX AND GALVANIZED CLIP

THERMAX INSULATED LOAD - BEARING ROOF DECK



THERMAX CEILING AND FLOOR SOUND INSULATION

THERMAX INSULATED ROOF AND FLOOR DECK DETAILS

(4) Laying the Floor Slabs

Thermax Floor Slabs shall be laid at right angles to the joists, using not less than three (3) clips to each unit. Clips shall be secured in place with galvanized nails driven into the Thermax. Ends of units shall rest on the joists with the joint between adjacent slabs centered over the flange. Thermax slabs shall be brought to moderate contact. Do not force Thermax into place. Break end joints in alternate rows. Grout all joints with Portland cement mortar (1:4 mix).

Note: *Specify elsewhere the finish to be applied over the structural slabs. Use a minimum of 1 in. of cement mortar for cement finish. Terrazzo finish 1½ in. thick may be applied directly over the slab.*

(5) Erecting the Ceiling Slabs

(5a) Cross-furring—Apply cross-furring at right angles to the joists, 16 in. o. c. substantially secured to the flange.

Note: *Cross-furring is not required on bar joists.*

(5b) Ceiling slabs shall be erected at right angles to the *(joists) (cross-furring).* Thermax slabs shall be brought to moderate contact. Do not force Thermax into place. Break end joints in alternate rows centering these over the center of the *(joist flange) (cross-furring member).*

Slabs shall be secured to the ceiling construction in accordance with the detail with twisted double strands of wire looped over the *(bottom of bar joists) (cross-furring)* and twisted over a nail partially driven vertically into the Thermax near the edge. Each wire support shall be drawn tight with the slab in firm contact with the ceiling construction after which the nails shall be driven home. Slabs at both sides and ends shall be supported in this manner at each support.

Note: *Slabs may be plastered with gypsum plaster (one coat to contain at least 10% of hydrated lime or lime putty) in accordance with the plaster manufacturer's standard specifications.*

THERMAX PARTITION AND FURRING BLOCKS AND COLUMN COVERING—Specifications

Note: *Use for fireproof construction.*
Note: *Notes are explanatory or advisory only and should not be included in the specifications.*
Note: *Select and include only those clauses which apply to the particular work. Words or clauses within brackets in italics are selective.*

(1) Work Included

All partitions *(and) (all furring for exterior masonry walls) (and) (all column covering)* shall be built of Thermax.

Note: *If there are any exceptions, so note. List and locate any special requirements if not clearly indicated on plans and dettils.*
Note: *Thermax partitions, etc., requiring no plaster may be finished with plastic or other high grade paint. Thermax has excellent acoustical absorption qualities and is pleasing in appearance when the blocks are symmetrically disposed and carefully laid. The surface is not fragile. If required, list separately here.*

(2) Preliminary Provisions

(2a) All rough bucks for openings will be provided and accurately set by others.

(2b) All wood nailing blocks to receive grounds, etc., will be provided and attached to blocks by others.

Note: *Rawl plugs if specified are excellent for attaching wood trim.*

(3) Materials

(3a) General—All Thermax Blocks shall be as manufactured by the Thermax Corporation, 228 No. LaSalle Street, Chicago.

(3b) Partition Blocks—Thermax, 2 or 3 in. thicknesses, as indicated on plans, 20 in. wide x 64 in. long.

Note: *Use 2 or 3 in. for partitions up to 9 ft. in height. Use 3 in. Thermax for partitions over 9 ft. in height.*

(3c) Furring Block—Thermax *(2 in.) (3 in.)* thick, 20 in. wide x 64 in. long.

(3d) Column Covering—Thermax *(2 in.) (3 in.)* thick, 20 in. wide x 64 in. long.

(3e) Mortar—Portland cement mortar (gauged with hydrated lime) fulfilling requirements of the standard A. S. T. M. Specifications. Sand shall be clean and sharp, free from organic matter with grains graded from fine to coarse. Mortar shall be mixed in the proportion of one (1) part of lime putty to three (3) parts of sand.

(3f) Emulsified Asphalt—Emulsified asphalt for setting exterior masonry wall furring shall be of high grade in which clay is used as the emulsifying agent and containing not less than 60% of asphalt *(specify).*

(4) Erection

(4a) General—All blocks *(except furring set with asphalt)* shall be laid in cement mortar (gauged with lime) with full, flush joints to a line, with horizontal beds uniformly level on each course. All joints, chinks and crevices between the tile and other work shall be filled with mortar well slushed in. Joints in alternate courses shall be broken.

All blocks shall be started on the fireproof floor, set plumb straight and true, and wedged at ceiling and slushed with mortar. Tile at corners and re-entrant angles shall be laid interlocked in alternate courses. Cut blocks into 16 in. lengths where end nailing blocks for grounds are necessary.

All joints of unplastered blocks shall be neatly pointed smooth as the work progresses.

(4b) Partitions—All partitions coming in contact with existing walls shall be rigidly anchored *(by driving 10d spikes into the mortar joints of the wall at the joints of each partition tile course) (by building in at each partition tile course metal ties provided and built into the masonry by others) (specify).*

(4c) Furring—Furring shall be laid *(against) (or) (free from)* the walls as shown on the plans and details.

(4c1) Apply a heavy coat of emulsified asphalt approximately ⅛ in. thick *(sprayed) (troweled)* on to the thoroughly cleaned masonry wall. Apply the Thermax blocks while asphalt is plastic *(without mortar joints)* against this backing with sufficient pressure to assure a thorough bond. Units shall be set in moderate contact with exposed faces in a true vertical plane. Do not force Thermax into place.

Note: *This method is advocated since it not only firmly bonds the Thermax to the masonry, but also seals the masonry against air infiltration or moisture due to capillarity.*

(4c2) Rigidly anchor the free standing furring tile to the masonry wall approximately every square yard of face area *(by 10d spikes driven into the mortar joints of the wall at the course joints of the furring tile) (by building in at the furring tile course metal ties provided and built into the masonry by others) (specify).*

Note: *Use for free standing furring. Dampproofing of wall back of furring is advocated.*
Note: *See also par. 4, page 5, under "Thermax as Interior Plaster Base."*

(4d) Column Covering—A single thickness of block shall be laid against the outside edges of the steel *(and the space between the tile and steel shall be solidly backfilled with pieces of Thermax blocks and mortar).*

Note: *Include or omit clause covering backfilling as required by local ordinance.*

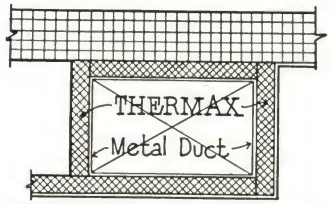
(4e) Buck Anchors—Anchor all wood bucks to block by 10d cut nails driven into the buck at each block course or with other approved metal anchor.

(4f) Lintels—Lintels shall have at least 4 in. bearing at each end on the block beneath. Lintels over openings more than 4 ft. 8 in. wide shall be provided with steel lintel furnished by others.

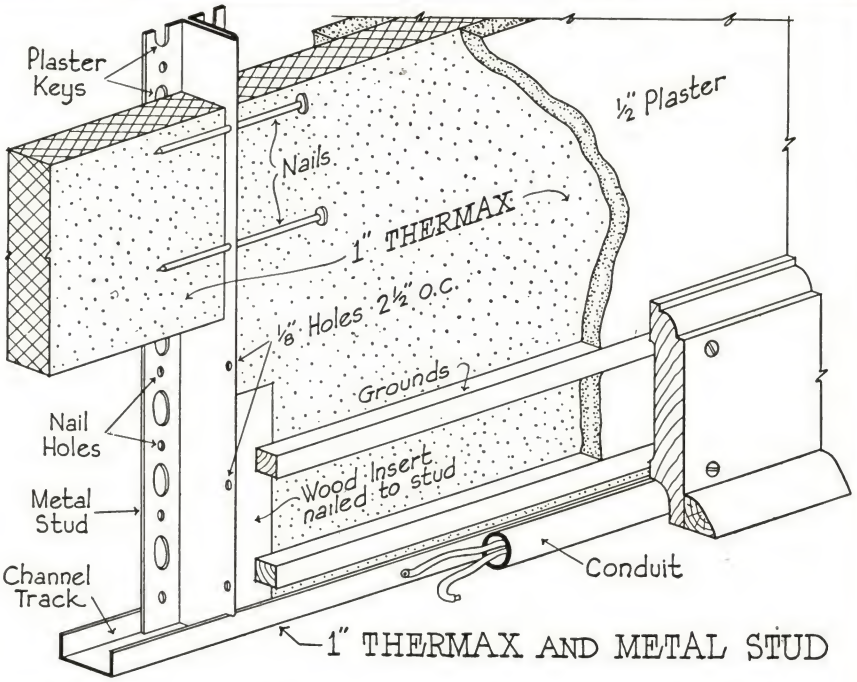
Cover all end joints of lintels with expanded metal lath strips 8 in. wide, tacked to blocks with large head nails or staples.



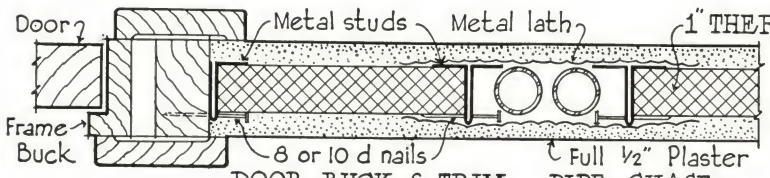
METAL PICTURE MOULD



THERMAX FOR DUCTS
Fireproof and Soundproof
to highest degree

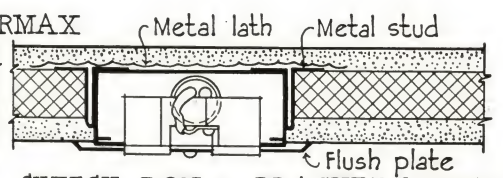


1" THERMAX AND METAL STUD

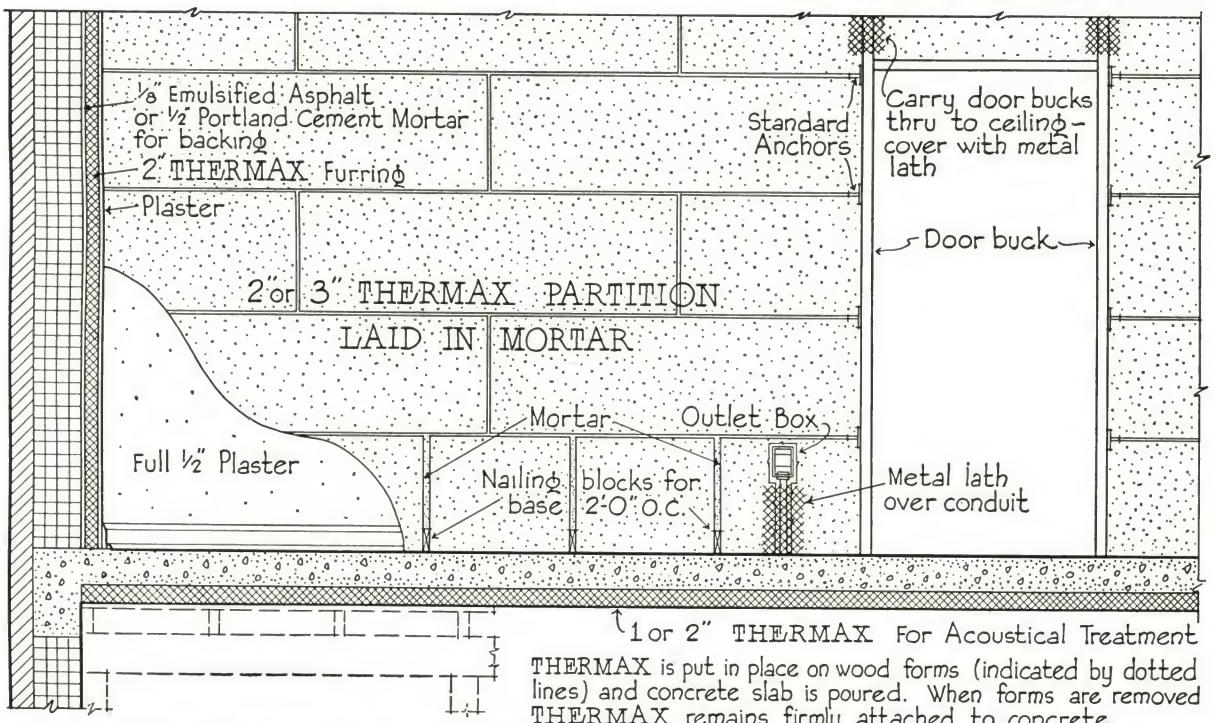


DOOR BUCK & TRIM

PIPE CHASE



SWITCH BOX or BRACKET OUTLET



THERMAX is put in place on wood forms (indicated by dotted lines) and concrete slab is poured. When forms are removed THERMAX remains firmly attached to concrete.

THERMAX FIREPROOF PARTITION DETAILS LIGHT WEIGHT - SOUND INSULATION

2 INCH THICK METAL STUD AND THERMAX PARTITIONS
Specifications

Note: *Use for fireproof construction.*

Note: *Notes are explanatory or advisory only and should not be included in the specifications.*

Note: *Select and include only those clauses which apply to the particular work. Words or clauses within brackets in italics are selective.*

(1) Work Included

All partitions *(so indicated)* shall be 2 in. thick (finished) metal stud and Thermax construction.

(2) Preliminary Provisions

All rough bucks for openings will be provided and set by others.

(3) Materials

(3a) Thermax—1 in. thick, 20 in. wide x 64 in. Thermax as manufactured by the Thermax Corporation, 228 No. LaSalle Street, Chicago.

(3b) Metal Studs—Special Thermax T studs with floor and ceiling receiving channels.

(4) Erection

(4a) Secure the floor and ceiling channels (to receive the studs) to the structural floor and ceiling in a thoroughly rigid and workmanlike manner best suited to the particular construction. Align channels accurately in a vertical plane.

(4b) Insert the first T stud against a structural wall and secure in position (clip or bend one flange of T stud to form an angle).

(4c) Erect next stud (approx. 20 in. c. to c.) and set in 1 in. thick slabs of Thermax, end to end from floor to ceiling. Secure Thermax and stud temporarily with nails driven through the flange of the T. Erect the next stud and panel of Thermax in similar manner. Permanently secure the Thermax slabs between channels with nails driven through the holes provided in the ends of the webs of the T studs in accordance with the details.

(4d) Where so indicated provide nailing blocks secured to studs to receive wood grounds.

(4e) At all doors or similar openings secure T studs to wood bucks as detailed (clip or bend one flange of T stud to form an angle).

(4f) Accurately fit Thermax slabs at ceilings, openings, etc., and around conduits, outlet boxes, etc. Where necessary form pipe and conduit space with studs. Cover all pipe spaces, conduits, etc., with metal lath strips tacked to Thermax.

THERMAX INSULATION OVER ROOF DECKS
Specifications

Note: *Use over wood, concrete, steel and similar roof decks.*

Note: *Notes are explanatory or advisory only and should not be included in the specifications.*

Note: *Select and include only those clauses which apply to the particular work. Words or clauses within brackets in italics are selective.*

(1) Work Included

Note: *Here list and locate definitely the roof areas to be covered. If more than one thickness is used, list separately and the respective locations or areas covered.*

(2) Material

Roof insulation shall be Thermax as made by Thermax Corporation, 228 No. LaSalle Street, Chicago. Insulation shall be *(1 in.) (2in.) (3 in.)* thick boards, 20 in. wide by 64 in. long.

(3) Application

(3a) Condition of Deck—Deck shall be smooth, dry and swept clean.

(3b) General—Thermax shall be dry when applied. Lay only as much insulation as can be covered and protected by the finished roof covering in a single day. Where work is stopped, protect the edges of insulation with overlapping mopped strips of roofing felt, leaving the felt strips as a permanent seal. Apply Thermax units with edges in moderate contact. Cut units to fit snugly against all parapets or similar vertical surfaces. Do not force Thermax into place. Break joints between alternate rows.

Seal off at least each 30x30 ft. area (900 sq. ft.) with overlapping mopped strips of roofing felt on all edges.

Grout all joints with Portland cement mortar (1:4 mix) and brush a skin coat of thick consistence over the entire surface before applying built-up roofing.

(3c) Application Over Wood Decks—

(3c1) Felt—Apply *(one) (two)* layer *(s)* of dry, saturated roofing felt over the roof boards. Lap the felt at least 1½ in. at joints. *(Felt shall extend 6 in. up on walls and all vertical surfaces and shall finally be turned over and mopped to top of insulation.)*

Note: *Felt protects against dripping of pitch or asphalt through deck. Include last bracketed italicized clause only where there is excessive humidity inside the structure. Depending on humidity conditions use one or two layers.*

(3c2) Laying—Apply the Thermax units over the felt in a single layer of the thickness specified.

(3c3) Nailing—Insulation shall be secured to deck with common (cement coated) nails with 1 in. galvanized roofing washers under the heads sufficiently long to penetrate through the insulation and provide firm hold in deck. Space nails approximately 12 in. apart on centers and not more than 2 in. from edges of the unit. Carry one row of nails longitudinally through the center of each unit.

(3d) Application Over Concrete Decks—

(3d1) Felt—Apply *(one) (two)* layer *(s)* of saturated roofing felt over the roof deck, thoroughly stuck in hot *(pitch) (asphalt)*. Felt shall extend 6 in. up on walls and all vertical surfaces and shall finally be turned over and mopped to top of insulation.

Note: *Include clause (3d1) where interior of structure is subject to high humidity conditions as in paper, textile mills, etc., or on applications made during winter months where decks do not have opportunity to thoroughly cure and dry out before insulation is applied.*

(3d2) Laying—Mop deck thoroughly with *(hot pitch) (hot asphalt)* using not less than 35 lbs. per square. Apply the Thermax units while the mopping is still hot. Firmly bed a single layer of Thermax, of the thickness specified, in the binder over the entire surface.

(3e) Application Over Steel Decks—

(3e1) Laying—Mop deck thoroughly with hot asphalt using not less than 35 lbs. per square.

Note: *Pitch should not be used over steel decks.*

Apply the Thermax units while the mopping is still hot. Firmly bed a single layer of Thermax, of the thickness specified, in the binder over the entire surface.

(4) Finished Roofing

Finished roofing shall be applied over insulation in accordance with the roofing manufacturer's specification.

HEAT TRANSMISSION COEFFICIENTS
As Applied to Various Standard Constructions

Note: *The various coefficients given in the following tables have been determined in accordance with the method employed in the 1931 "Guide" of the American Society of Heating and Ventilating Engineers. The thermal conductivity of Thermax employed throughout the calculation is 0.458 B.t.u.'s per 1 in. thickness, per hour, per sq. ft., per degree F. difference in temperature between the surfaces. (Prof. J. C. Peebles—Armour Institute).*

TABLE I. H.T.C. of Pitched Residential Roofs

No.	Type of roofing	Insulation over rafters	Type of ceiling and plastering			
			None	Wood lath	1 in. Ther.	2 in. Ther.
1	Wood shingles	None	0.483	0.288	0.186	0.132
2	Composition r'f'g	None	0.518	0.300	0.191	0.135
3	Slate or tile r'f'g	None	0.548	0.309	0.195	0.137
4	Wood shingles	1 in. Ther.	0.236	0.152	0.118	0.094
5	Wood shingles	2 in. Ther.	0.156	0.114	0.094	0.078
6	Composition r'f'g	1 in. Ther.	0.243	0.155	0.120	0.095
7	Composition r'f'g	2 in. Ther.	0.159	0.116	0.095	0.079
8	Slate or tile r'f'g	1 in. Ther.	0.249	0.158	0.121	0.096
9	Slate or tile r'f'g	2 in. Ther.	0.162	0.118	0.096	0.080

TABLE II. H.T.C. of Frame Walls

No.	Sheathing	Plaster base		
		Wood lath	1 in. Thermax	2 in. Thermax
1	1 in. Wood	0.262	.....	.....
2	1 in. Wood	.....	0.175	.....
3	1 in. Wood	.....	.....	0.127
4	1 in. Thermax	0.192	.....	.....
5	1 in. Thermax	.....	0.141	.....
6	1 in. Thermax	.....	.....	0.108
7	2 in. Thermax	0.135	.....	.....
8	2 in. Thermax	.....	0.108	.....
9	2 in. Thermax	.....	.....	0.087

TABLE III. H.T.C. of Stucco over Frame Walls

No.	Sheathing	Plaster base		
		Wood lath	1 in. Thermax	2 in. Thermax
1	1 in. Wood	0.302	.....	.....
2	1 in. Wood	.....	0.191	.....
3	1 in. Wood	.....	.....	0.135
4	1 in. Thermax	0.212	.....	.....
5	1 in. Thermax	.....	0.151	.....
6	1 in. Thermax	.....	.....	0.114
7	2 in. Thermax	0.145	.....	.....
8	2 in. Thermax	.....	0.114	.....
9	2 in. Thermax	.....	.....	0.091

TABLE IV. H.T.C. of Brick Veneer over Frame Walls

No.	Sheathing	Plaster base		
		Wood lath	1 in. Thermax	2 in. Thermax
1	1 in. Wood	0.247	.....	.....
2	1 in. Wood	.....	0.168	.....
3	1 in. Wood	.....	.....	0.123
4	1 in. Thermax	0.183	.....	.....
5	1 in. Thermax	.....	0.136	.....
6	1 in. Thermax	.....	.....	0.105
7	2 in. Thermax	0.131	.....	.....
8	2 in. Thermax	.....	0.105	.....
9	2 in. Thermax	.....	.....	0.085

TABLE V. H.T.C. of Stucco on Hollow Clay Tile Walls

No.	Interior construction	Thickness of hollow tile		
		8 in.	10 in.	12 in.
1	½ in. plaster direct on tile	0.296	0.285	0.229
2	½ in. pl. on wood lath; furred	0.219	0.213	0.180
3	½ in. pl. on 1 in. Thermax on tile	0.179	0.175	0.152
4	½ in. pl. on 2 in. Thermax on tile	0.129	0.126	0.114
5	½ in. pl. on 1 in. Thermax; furred	0.154	0.151	0.134
6	½ in. pl. on 2 in. Thermax; furred	0.116	0.114	0.104

TABLE VI. H.T.C. of 4 in. Br. Veneer on H.C. Tile Walls

No.	Interior construction	Thickness of hollow tile		
		6 in.	8 in.	10 in.
1	½ in. plaster direct on tile	0.254	0.243	0.235
2	½ in. pl. on wood lath; furred	0.195	0.188	0.184
3	½ in. pl. on 1 in. Thermax on tile	0.164	0.160	0.153
4	½ in. pl. on 2 in. Thermax on tile	0.121	0.118	0.115
5	½ in. pl. on 1 in. Thermax; furred	0.143	0.139	0.136
6	½ in. pl. on 2 in. Thermax; furred	0.109	0.106	0.107

TABLE VII. H.T.C. of Solid Brick Walls

No	Interior construction	Thickness of brick	
		8 in.	12 in.
1	½ in. plaster direct on brick	0.356	0.277
2	½ in. plaster on wood lath; furred	0.250	0.208
3	½ in. plaster on 1 in. Thermax on brick	0.198	0.170
4	½ in. plaster on 2 in. Thermax on brick	0.138	0.124
5	½ in. plaster on 1 in. Thermax; furred	0.170	0.149
6	½ in. plaster on 2 in. Thermax; furred	0.123	0.113

TABLE VIII. H.T.C. of Solid Concrete Walls

No.	Interior construction	Thickness of concrete		
		6 in.	8 in.	10 in.
1	½ in. plaster direct on concrete	0.518	0.461	0.416
2	½ in. pl. on wood lath; furred	0.320	0.297	0.277
3	½ in. pl. on 1 in. Thermax on concrete	0.236	0.226	0.215
4	½ in. pl. on 2 in. Thermax on concrete	0.156	0.151	0.147
5	½ in. pl. on 1 in. Thermax; furred	0.198	0.189	0.182
6	½ in. pl. on 2 in. Thermax; furred	0.139	0.134	0.130

TABLE IX. H.T.C. of Flat Concrete Roofs

No.	Kind of insulation	Thickness of concrete		
		2 in.	3 in.	4 in.
1	None	0.658	0.610	0.568
2	1 in. Thermax	0.270	0.262	0.254
3	2 in. Thermax	0.170	0.166	0.163
4	3 in. Thermax	0.124	0.122	0.120

TABLE X. H.T.C. of Flat Wood Roofs

No.	Kind of insulation	Thickness of wood			
		1 in.	1½ in.	2 in.	3 in.
1	None	0.485	0.386	0.345	0.256
2	1 in. Thermax	0.236	0.210	0.197	0.164
3	2 in. Thermax	0.156	0.144	0.138	0.121
4	3 in. Thermax	0.116	0.109	0.106	0.096

(Heat Transmission Coefficients Continued)

TABLE XI. H.T.C. of Flat Wood Roof Decks, with Ceilings

No.	Kind of insulation	Thickness of wood deck			
		1 in.	1½ in.	2 in.	3 in.
1	None	0.304	0.262	0.242	0.195
2	1 in. Thermax	0.183	0.166	0.158	0.136
3	2 in. Thermax	0.131	0.122	0.118	0.105
4	3 in. Thermax	0.102	0.097	0.094	0.086

TABLE XII. H.T.C. of Flat Concrete Roofs, with Ceilings

No.	Kind of insulation	Thickness of concrete		
		2 in.	3 in.	4 in.
1	None	0.363	0.348	0.334
2	1 in. Thermax	0.204	0.198	0.194
3	2 in. Thermax	0.141	0.138	0.136
4	3 in. Thermax	0.108	0.106	0.105

TABLE XIII. H.T.C. of Flat Steel Roofs

No.	Kind of insulation	Flat steel roof deck
1	None	0.781
2	1 in. Thermax	0.288
3	2 in. Thermax	0.177
4	3 in. Thermax	0.128

TABLE XIV. H.T.C. of Flat Steel Roofs, with Ceilings

No.	Kind of insulation	Metal roof deck
1	None	0.398
2	1 in. Thermax	0.213
3	2 in. Thermax	0.145
4	3 in. Thermax	0.110

TABLE XV. H.T.C. of Residential Ceilings

No.	Attic flooring	Type of plaster base		
		Wood lath	1 in. Thermax	2 in. Thermax
1	None	0.502	0.257	0.165
2	1 in. Wood	0.272	0.180	0.129

PREVENTION OF CONDENSATION ON BUILDING SURFACES

Note: *Reprinted by special permission from the A. S. H. V. E. Guide 1931. Copyright, American Society of Heating and Ventilating Engineers.*

Condensation on the interior surfaces of buildings is often a serious problem. Water dripping from a ceiling may cause irreparable damage to manufactured articles and machinery. It often results in short-circuiting of electric power and lighting systems, necessitating shut-downs and incurring costly repairs. It also causes rotting of wood roof structures, corrosion of metal roofs, and spalling and disintegration of gypsum and other types of roof decks not properly protected.

Condensation is caused by the contact of the warm humid air in a building with surfaces below the dew-point temperature, and can be remedied in two ways, (1) by increasing the temperature of such surfaces above the dew-point temperature, or (2) by lowering the humidity.

Dehumidification, of course, is not permissible where a high relative humidity is necessary for manufacturing processes. Hence, the only alternative is to increase the surface temperature by decreasing the inside surface resistance. This can be accomplished by increasing the velocity of air passing over the surface, or by increasing the overall resistance of the wall or roof by installing a sufficient thickness of insulation.

The latter method is generally used, and the thickness of insulation is determined by ascertaining the amount of resistance to be added to increase the temperature of the interior surface above the dew-point temperature for the maximum conditions involved. This in turn is based on the fundamental principle that the drop in temperature is proportional to the resistance.

The thickness of insulation required to prevent condensation on the interior surface of a wall or roof can be determined by means of the following formula:

$$x = k\left(\frac{t - t_o}{f_i\,(t - t_a)} - \frac{1}{U}\right)$$

x = thickness in inches of insulation to prevent condensation.

k = conductivity of insulation in B.t.u. per hour per square foot per degree Fahrenheit per inch thickness.

U = coefficient of transmission of uninsulated wall or roof in B.t.u. per hour per square foot per degree Fahrenheit.

f_i = conductance of interior surface of wall or roof in B.t.u. per hour per square foot per degree Fahrenheit.

t = dry-bulb temperature of air near wall or roof surface.

t_a = dew-point temperature of air near wall or roof surface.

t_o = minimum outside temperature (usually taken as 15 deg. above lowest temperature on record for locality of building).

Example Showing Use of Condensation Formula

The following example will illustrate the use of this formula:

Determine the thickness of insulation required to prevent ceiling condensation on a roof constructed of 1-in. yellow pine sheathing covered with built-up roofing for an inside temperature at the ceiling of 85 deg. Fahrenheit, a relative humidity of 70 per cent, and an outside temperature of —10 deg. Fahrenheit, assuming the conductivity of the insulation to be 0.30 B.t.u. per hour per square foot per degree Fahrenheit per inch thickness:

k = 0.30 B.t.u. per hour per square foot per degree Fahrenheit per inch thickness.

t = 85 deg. Fahrenheit.

t_o = —10 deg. Fahrenheit.

R.H. = 70 per cent.

t_a = 74 deg. Fahrenheit.

f_i = 1.34 B.t.u. per hour per square foot per degree Fahrenheit.

U = 0.485 B.t.u. per hour per square foot per degree Fahrenheit (Table X, page 12).

$$x = 0.30\left(\frac{(85 - (-10)}{(1.34\ (85 - 74)} - \frac{1\ )}{0.485)}\right) = 1.3 \text{ in.}$$

Condensation Chart

The chart (page 14) can be used for approximating the thickness of insulation required to prevent condensation on the interior wall or roof surfaces of a building. The procedure for using this chart is as follows:

(1) Locate the dry-bulb temperature (t) of the air near the ceiling on scale A, and pass vertically downward to the proper relative humidity curve indicated on scale B.

(2) From this point pass horizontally.

(3) Locate the difference between the temperature of the air at the ceiling and the lowest outside temperature on scale D, and draw a line vertically downward until it intersects line 2. (The vertical line drawn as per paragraph 2.)

(4) From the intersection of lines 2 and 3 draw a line to the point P in the upper left hand corner of the chart.

(5) From the intersection of line 4 and line AB, draw a line vertically downward until it intersects the diagonal line corresponding to the heat transmission coefficient of the uninsulated roof shown on scale F.

(6) From the intersection found as per paragraph 5, draw a line horizontally to the left.

(7) Locate the conductivity of the insulation to be used (expressed in B.t.u. per hour per square foot per degree Fahrenheit) on scale G and draw a line to point Q.

(8) From the intersection of lines 6 and 7, draw a line vertically upward, and the correct thickness of insulation to use will be indicated on scale H.

Although this chart is intended primarily for roofs, it can be used for walls by taking the dry-bulb temperature and the corresponding relative humidity of the air near the walls at the point which will necessitate the maximum heat resistance to prevent condensation, instead of using the temperature and humidity near the ceiling.

Example Showing Use of Condensation Chart

Determine the thickness of insulation required to prevent ceiling condensation for the following conditions:

Dry-bulb temperature near ceiling.....85 deg. Fahr.
Relative humidity.....70 per cent.
Lowest outside temperature.....—10 deg. Fahr.
Construction of uninsulated roof.....1 in. yellow pine sheathing and built-up roofing.
Coefficient of transmission roof.....0.485
Conductivity of insulation to be used.....0.30

The solution of this problem is indicated on the chart by the dotted line:

(1) Locate the inside dry-bulb temperature of 85 deg. on scale A, and draw a line vertically downward to the 70 per cent relative humidity curve, indicated on scale B.

(2) Draw line 2 horizontally from the intersection located as per paragraph 1.

(3) Locate on scale D the temperature difference of 95 deg. between the ceiling temperature of 85 deg. and the lowest outside temperature of —10 deg., and draw a line vertically downward until it intersects with line 2.

(4) From the point of intersection of lines 2 and 3, draw a line to the point P.

(5) From the intersection of lines 4 and AB, draw a line vertically downward until it intersects with the diagonal line corresponding to a coefficient of transmission of the roof of 0.485, located on scale F.

(6) From the intersection found as per paragraph 5, draw line 6 horizontally to the left.

(7) Locate the conductivity of 0.30 B.t.u. per hour, per square foot per degree Fahrenheit of the insulation on scale G and draw a line to point Q.

(8) From the intersecion of lines 6 and 7, draw a line vertically upward to scale H, on which the thickness of insulation of this conductivity is indicated, which is 1.3 in. The nearest commercial thickness above 1.3 in. would, of course, be selected.

CHART FOR DETERMINING THICKNESS OF INSULATION REQUIRED TO PREVENT CONDENSATION

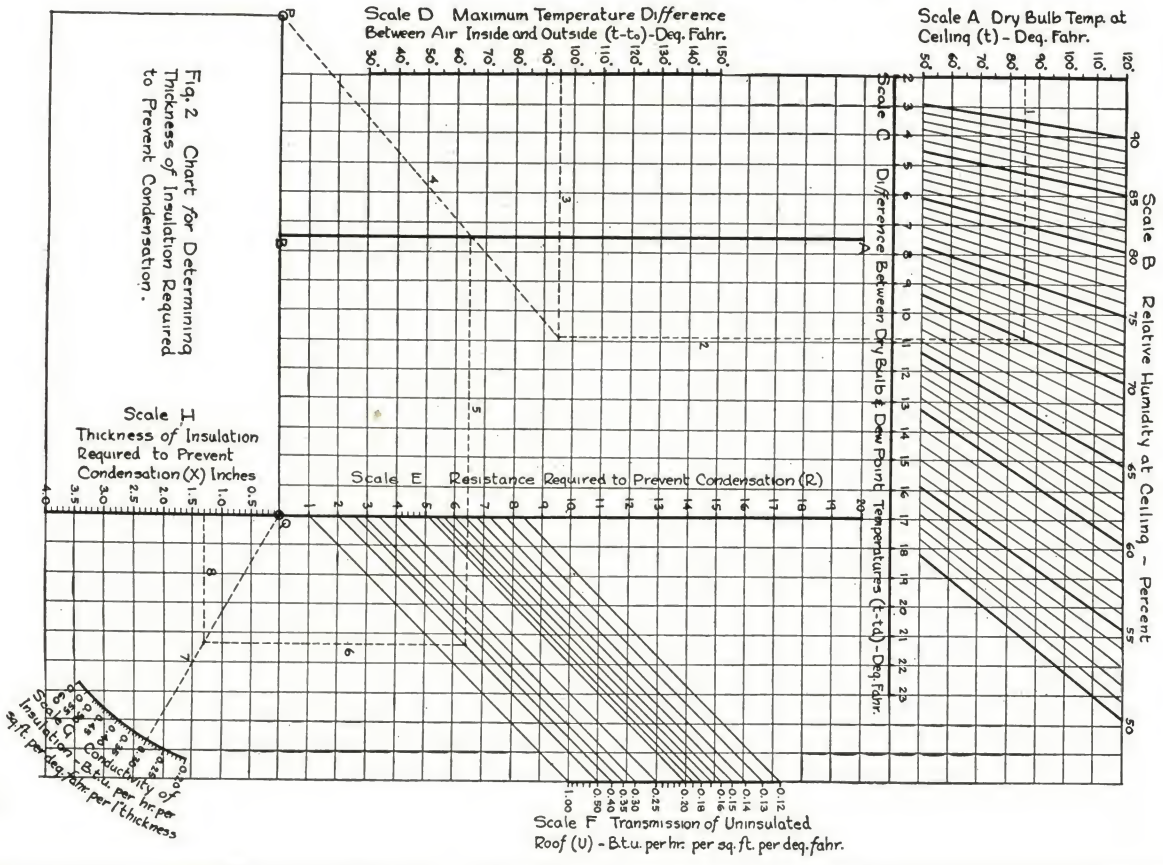


Fig. 2 Chart for Determining Thickness of Insulation Required to Prevent Condensation.

THERMAX TYPICAL INSTALLATIONS

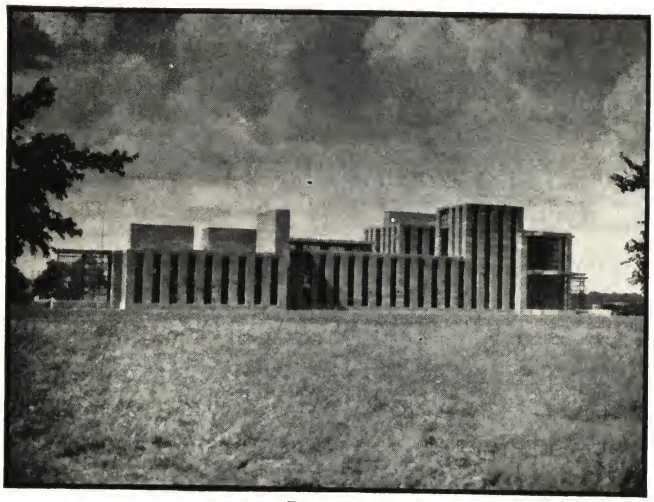


Exterior



Roof Detail

Cemetery Building, Los Angeles, Cal.—Morgan, Walls and Clements, Architects
Thermax used for insulation and fire protection under roof tile



Exterior



Living Room

Residence of Richard L. Jones, Tulsa, Okla.—Frank Lloyd Wright, Architect
Thermax used for roof insulation and plaster base



Ralphs Market, Los Angeles, Cal.
Thermax used under roof tile for insulation and fire protection



Junior-Senior High School, Washington, Pa.
Edward B. Lee, Architect, Pittsburgh
Thermax roof insulation and acoustical treatment

THERMAX TYPICAL INSTALLATIONS



3006 Wilshire Blvd., Los Angeles, Cal.
Morgan, Walls and Clements, Architects
Thermax for roof insulation and fire-proofing



Nederland Pavilion, Antwerp, Belgium
Exterior walls of Thermax (Heraklith) sheathing, stuccoed
Interior Partitions (1 and 2 in. Heraklith) plastered



Residence, Santa Ana, Cal.
Thermax insulating sheathing and stucco base,
Thermax interior plaster base



Fox Theater, Spokane, Wash.
Whitehouse and Price, Architects
Thermax roof insulation



Phenix Box and Label Co., Kansas City, Mo.
17,000 sq. ft. of 2 in. Thermax roof insulation



King David Hotel, Jerusalem
Thermax (Heraklith) fire-proofing insulation used throughout



THERMAX

Insulation *Plus* Fireproofing

NATIONAL GYPSUM COMPANY

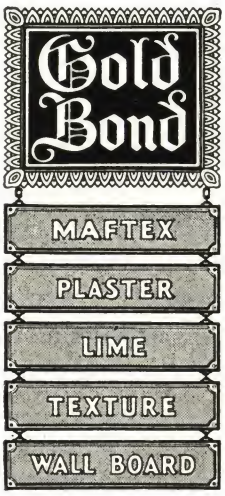
Gold Bond Maftex Insulation Board

GENERAL OFFICES
409 Jackson Building, BUFFALO, N. Y.
CHICAGO OFFICE, Conway Building
MILLS: CLARENCE CENTER, N. Y., NATIONAL CITY, MICH., LUCKEY, OHIO, CAMDEN, N. J.

Products

GOLD BOND MAFTEX INSULATION BOARD and GOLD BOND MAFTEX INSULATION LATH.

For Gold Bond Wall Board, Plaster, Lime, Tile Board, Lath, Sheathing Board, Dry Fill Insulation and Color Texture, see Manufacturers' Index.



Fibres

The value of any insulating material depends upon the fibres that compose it. Maftex is the only insulation board made from the fibres of imported licorice roots and these fibres not only are notably high in minute air cell content—the basis of all insulation—but they are the toughest fibres used for insulation purposes.

These fibres are necessarily tough and moisture resistant because they are four-year, subsoil growths, brought to this country from the licorice fields of the Orient and the Mediterranean districts.

Homogeneous

Gold Bond Maftex is built up as a homogeneous, single-ply board. There are no plies to weaken the structure. All fibres are reduced to the pure fibre state by long cooking under high steam pressure and then moistureproofed by a sizing treatment before being built up into the finished board. The board is kiln dried and then tempered to have the correct moisture content for use on the job.

Insulation

In repeated tests by leading insulation authorities, Maftex has consistently earned the low conductivity rating of .337 B.t.u. This means that Maftex provides all the insulation that can be obtained "plus" other services not to be had in equal degree by any board except Maftex. Proof upon application.

Structural Strength

Any building material to be worthy of the name should contribute to the staunchness and stamina of the building. Maftex does just that, and does it to an exceptional degree, since it is made from the world's toughest insulating fibres—imported licorice roots—and resists torsional strains and stresses far beyond the usual expectancy with any fibre product.

Fire Retardation

Maftex is distinctly slow burning, charring rather than flaming when subjected to the hot blast of a closely placed blow torch.

Verminproof

Rodents do not attack Maftex and will not live in it.

Sound Deadening

The fibre density of Maftex, together with the resilience of the board, makes it an excellent sound deadener. The licorice fibres are natural sound deadeners and the resiliency of the board prevents diaphragm action, so that it does not transmit sound by vibration in the way that sound is carried by many rigid materials.

Acoustical Service

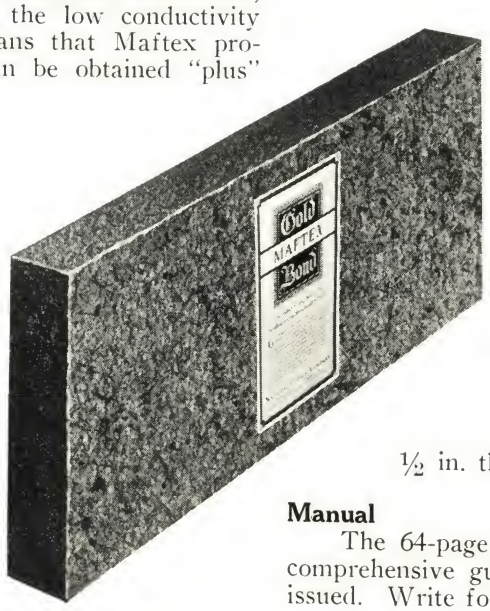
The sound absorbing fibres of Maftex render another highly important "plus" service, in that they hush the echoes in a room and prevent unpleasant reverberations. Poor acoustics have spoiled many a beautiful room, but they are easily avoided by using Maftex.

Plaster Base

Maftex Insulation Board and Maftex Lath have a plaster bond of exceptional tenacity, since there is a natural penetration of gypsum plaster into the licorice fibres.

Sheathing

Maftex provides an exceptional structural service when used as outside sheathing and notably strengthens the stability of the building.



Wall Board

Maftex can be used wherever wallboard is required and its pleasing mat surface may be left undecorated or finished by plastering or painting.

Sizes

Maftex Insulation Board is $\frac{7}{16}$ in. thick, 4 ft. wide, and comes in lengths of 8, 9, 10 and 12 ft. The weight is approximately 750 lb. per 1000 ft.

Maftex Insulating Lath is $\frac{7}{16}$ in. thick. It is made with square edges, 16x48 in. or ship-lap edges, 18x48 in.

Maftex Roof Insulation Board is ½ in. thick and comes in sheets 4x4 ft.

Manual

The 64-page Maftex Manual is one of the most comprehensive guide books to correct insulation ever issued. Write for your copy.

UNITED STATES GYPSUM COMPANY

Insulation Products

300 West Adams Street, CHICAGO, ILL.

For Sales Offices, see Sweet's Manufacturers' Index for U.S.G. Catalogue on Gypsum Lathing and Plaster Products

PRODUCTS IN OTHER CATALOGUES

See Sweet's Manufacturers' Index for:

(1) Econo Expanded Metal.
(2) Sound Control Service—Architectural Acoustics and Noise Abatement.
(3) U.S.G. Red Book "Gypsum Fireproof Products," for complete information on Sheetrock-Pyrofill Roof Construction, Pyrobar Precast Roof Tile, Pyrobar Precast Ceiling and Floor Tiles; Marks T System of Roof Construction; Monolithic Floors and Roofs; Pyrobar Partition and Furring Tile; Pyrobar Beam and Column Fireproofing.
(4) U.S.G. Red Book, "Gypsum—General Commodities," for complete information on Red Top Rocklath; Metal Laths and Accessories; Standard X Plastering System; Complete line of Gypsum Plasters; Finishing Lime; Oriental Exterior Stucco; Sheetrock (Wallboard); Sheetrock Tile Board; Gyplap Sheathing.
(5) U.S.G. Paint Products.
(6) Chromite—Sheet Metal Wall Tile.

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RED TOP INSULATING BOARD

DESCRIPTION—PHYSICAL CHARACTERISTICS

Manufacturing Process

Red Top Insulating Board is made of Southern hardwood. The clean wood, free from bark or other impurities, first passes through the fiber-reducing equipment, where it is ground into the various types of fiber constituting the finished board. Prior to the felting of the fiber, the "stock" is treated with a waterproofing solution, which uniformly coats each individual fiber; this also acts as a sterilizing and preservative agent.

The treated fiber mass after being reduced to the proper consistency by the addition of clean water, is passed on to an improved type of felting machine where the fibers are felted into the finished board, homogeneous (without lamination) and full ½ in. thick. A dry kiln of the air-circulation type removes the excess moisture and sets the weatherproofing and preservative agent. Cutting the dry board to the various product requirements is the final stage of production.

Physical Properties

Due to the nature of the raw material and to the manufacturing process described, the board has the following desirable features. All data is backed by authentic tests made by qualified, responsible testing laboratories. Sources and complete logs of all tests will be furnished on request.

Low Thermal Conductivity

The hardwood fibers, which are small, end-sealed air cells, make for low and uniform conductivity. The average established is .32 B.t.u.'s per hour, per sq. ft., per inch thickness, per degree F.

Resistance to Moisture

Tests show that this board, after being submerged in water for a period of two (2) hours, has an average water absorption of less than 15 per cent. Low water absorption is important because it reduces expansion and contraction to a minimum and prevents loss of insulation.

Structural Strength

The board being felted from tough, resilient hardwood fibers in one piece, assures great strength and rigidity. The tensile strength is over 280 lb. per sq. in., and the modulus of rupture, over 400 lb.

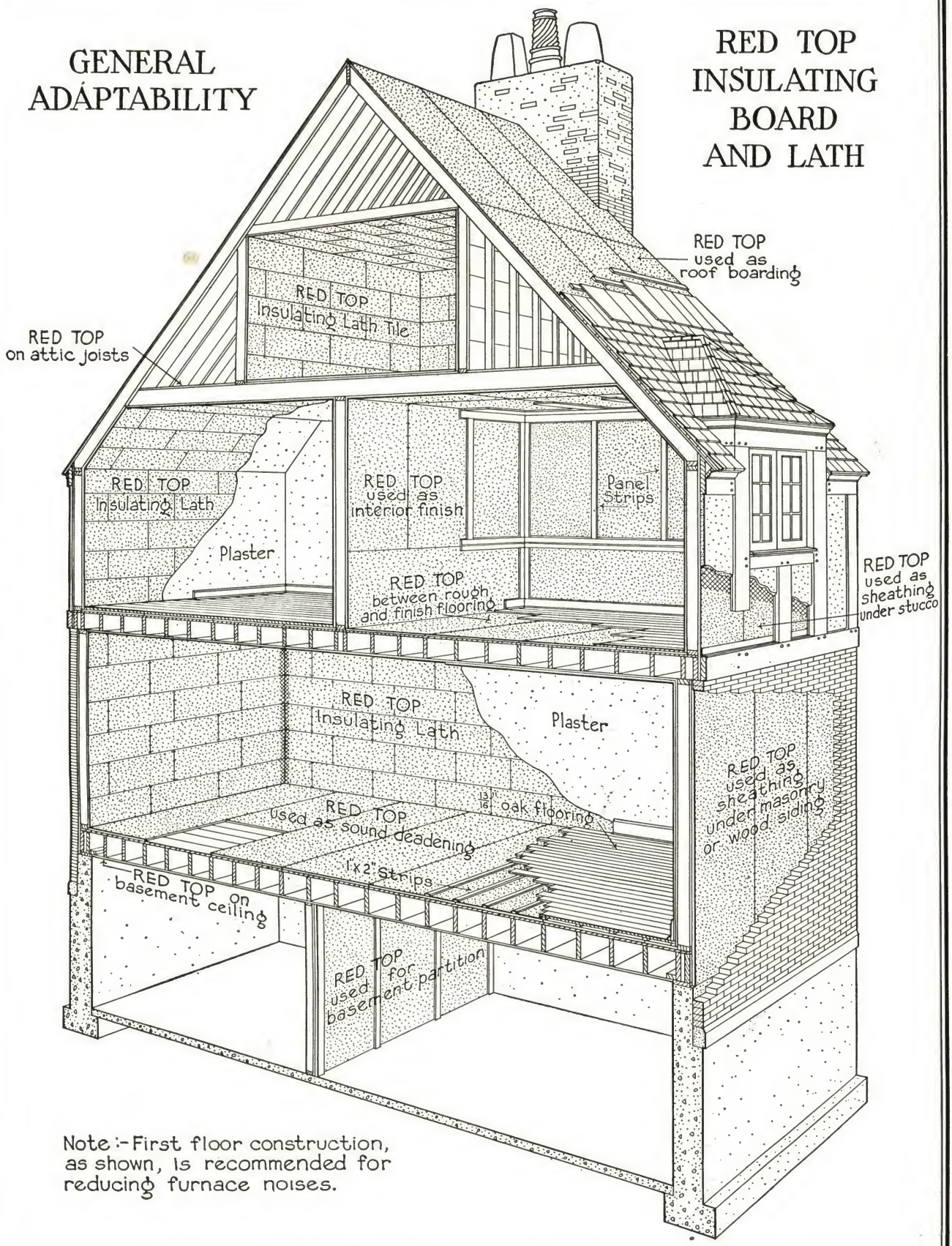
Tests show that this board when used as sheathing stiffens the building better than wood sheathing applied horizontally.

Durability

Besides being naturally enduring, each hardwood fiber is treated with a preservative. There is nothing in

GENERAL ADAPTABILITY

RED TOP INSULATING BOARD AND LATH



Note:-First floor construction, as shown, is recommended for reducing furnace noises.

this board that will deteriorate prematurely and impair the original insulation value. Since the board is homogeneous, the fibers being interwoven through the sheet, it will not split. The weatherproofing chemical with which the fibers are treated makes the board distinctly distasteful to rodents and insects.

Non-compressibility—Resilience

When laid over roof decks under standard roofing materials, it is sufficiently firm to prevent injurious denting or cutting of the roofing under normal use. Red Top Insulation will not compress under furring strips. When compressed under heavy concentrated loads, it resumes its original shape after the load is removed.

Uniformity

Adequate laboratory control and mill inspection assure uniformity in density and structural strength. Handling facilities and packing methods eliminate damage under normal shipping conditions.

Appearance

The high quality of the product is reflected in its fine appearance. One surface is finished in a uniform semi-rough texture and the other in a smooth screen surface. The color is an attractive deep cream, which reflects light when the material is used as a wallboard.

Cost

Advanced methods of manufacture, quantity production, and national distribution assure a reasonable cost and one which will be absorbed in fuel savings in from four to five heating seasons. Because of the light weight and large units, the board is easy to handle and install at low labor costs. It is cut and nailed like lumber.

Sizes

Red Top Insulating Board—(Used as sheathing or as wallboard) : 4 ft. wide by 6, 7, 8, 9, 10 or 12 ft. long, and ½ or 1 in. thick.

Red Top Insulating Lath—18x48 in. and ½ in. thick, 1 in. thick (two half-inch boards stapled together).

Red Top Roof Insulation—2x5 ft. and various thicknesses in multiples of ½ in. up to full 3 in.

The Exclusive Red Top Lath Joint

The Red Top Insulating Lath has a tongue and groove joint along the long edge—an *exclusive* Red Top patented feature of outstanding advantage. The strong joint spans the space between studs, yet permits the slight necessary expansion and contraction without bulging when the wet plaster is applied and dries out. This joint prevents plaster hairline cracks at this hitherto unsupported joint.

RED TOP INSULATION AS SHEATHING AND ROOF BOARDING MASTER SPECIFICATIONS

Note: *On walls use under wood siding, shingles, stucco, or masonry veneer. On roofs use under shingles, slate, tile or similar rigid roof units which may be laid over wood furring strips.*

Note: *Notes are explanatory or advisory only and should not be included in the specifications.*

Note: *Select and include only those clauses which apply to the particular work. Words in bracketed italics are selective.*

(1) Work Included

Note: *Here list and locate definitely the wall and roof areas to be covered. If both ½-in. and 1-in. thicknesses are used, list separately and the respective locations or areas covered.*

(2) Material

(Sheathing) (and) (roof boarding) shall be Red Top Insulation Board as made by the UNITED STATES GYPSUM COMPANY, 300 West Adams Street, Chicago. Boards shall be full *(½ in.) (and) (1 in.)* thick *(as above designated)*, 4 ft. wide by 6, 7, 8, 9, 10 or 12 ft. long as best adapted.

(3) Application

(3a) General—Continuity of insulation is imperative. Apply boards with the length parallel with the framing members. Where possible, boards shall be of sufficient length to completely span between sills and plates or other structural members. Where end joints are necessary, these shall only be made centered over 2x4-in. headers cut in between framing members. Side joints shall center over framing members.

(3b) Spacing—Boards shall be spaced ¼ in. apart at all edges. Bring the boards in close contact with window and door frames and trim.

(3c) Nails—Galvanized roofing nails.

(3c1) Use 1½ in. nails for ½ in. thickness.

(3c2) Use 2 in. nails for 1 in. thickness.

(3d) Nailing—At all edges, space nails 3 in. apart on centers and ½ in. from the edge. On intermediate framing members, space nails 6 in. apart on centers. First nail the boards to intermediate studs and then nail the edges.

(4) Supplementary Provisions

Note: *Provide for the following in other specification divisions.*

Note: *Red Top Insulation is not a nailing base.*

(4a) Construction—Follow the recommendations of the Building Code Committee of the U. S. Department of Commerce and the National Lumber Manufacturers Association.

(4b) Wood Siding—All joints shall butt over the center of a stud.

(4c) Furring Strips—Provide 1x2-in. furring strips properly spaced over Red Top Insulation to take shingles, slate, tile and similar wall and roof covering. Nails shall be sufficiently long to pass through the furring and the board and penetrate the framing members at least 1 in.

(4d) Stucco Base—Stucco must be reinforced with self-furring galvanized wire or expanded metal exterior stucco lath secured to studs with nails sufficiently long to pass through the board and penetrate the stud at least 1 in.

(4e) Masonry Veneer Ties—Provide masonry ties at each stud spaced 16 in. apart vertically. Nails shall be sufficiently long to pass through the board and penetrate the stud at least 1 in.

(4f) Frame Furring, Etc.—Provide in accordance with the details window and door frame furring strips to compensate for the thickness of Red Top Insulation.

Note: *We advocate wide outside blind stops in frame construction. If, however, these are omitted, provide that the inside of the outside casings be lined with beveled strips of Red Top Insulation.*

RED TOP INSULATING LATH MASTER SPECIFICATIONS

Note: *Use as an insulating plaster base.*

Note: *Notes are explanatory or advisory only and should not be included in the specifications.*

Note: *Select and include only those clauses which apply to the particular work. Words in bracketed italics are selective.*

(1) Work Included

Note: *Here list and locate definitely the wall and ceiling areas to be covered. If both ½ in. and 1 in. thickness are used, list separately and the respective locations or areas covered.*

(2) Material

Plaster base shall be Red Top Insulating Lath as made by the UNITED STATES GYPSUM COMPANY, 300 West Adams Street, Chicago. Units shall be full *(½ in.) (and) (1 in.)* thick *(as designed above)*, 18 in. wide by 48 in. long.

(3) Application

(3a) General—Do not moisten lath before application. Apply lath, rough or textured side exposed, with the length at right angles to the framing *(or furring)* members. End joints shall center over framing members. Stagger end joints in successive courses on all walls and ceilings; likewise stagger end joints at juncture of walls and ceilings.

(3b) Spacing—Tongue and groove joints shall be brought tight in moderate contact. Units shall be spaced ¼ in. apart at ends.

(3c) Nails—

(3c1) Use 4d common, blued or box nails, for ½ in. thickness.

(3c2) Use 6d common, blued or box nails, for 1 in. thickness.

Note: *Large headed nails are unnecessary.*

(3d) Nailing—Space nails 5½ in. apart on centers set ½ in. from the edges. First nail to intermediate framing *(or furring)* members and then at ends. Secure long edges at angles of walls and ceilings, spacing nails 5½ in. on centers and not more than ½ in. from the edge.

(3e) Prevention of Condensation—In cold weather apply Red Top Insulation to exterior studs *(furring) (rafters)*, etc. before temporary heat is applied.

Note: *Because Red Top Lath does not permit passage of moisture, heating before lining the exterior cold walls, etc. results in a condensation of moisture from the warm, moist air on the inside of the sheathing and framing members. This originally forms as frost, which melts and must be absorbed gradually by the sheathing and frame, since it cannot pass the Red Top Lath barrier to be carried off by the air. Red Top Lath applied before heating insulates the warm, moist air from the cold exterior walls and eliminates this possibility of condensation.*

(4) Supplementary Provisions

Note: *Provide for the following in other specification divisions.*

(4a) Construction—Follow the recommendations of the Building Code Committee of the U. S. Department of Commerce and the National Lumber Manufacturers Association.

(4b) Furring—Fur all exterior masonry walls to receive Red Top Lath with *(1x2-in.) (specify)* furring strips, accurately shimmed to a true, level plane, set 16 in. on centers. Substantially secured to the masonry.

(4c) Grounds—Furnish and erect, substantially secured to framing members through the Red Top Lath, full ⅜-in. grounds on exterior frame walls and full ½-in. grounds elsewhere.

Note: *Full ½-in. thickness of plaster should be used over Red Top Lath. Where stock window and door frames are used, they provide for ⅞-in. thickness for lath and plaster; therefore on exterior frame walls, which are usually of less area due to window and door openings, a ⅜-in. thickness may be used. If special frames are detailed, provide for full ½-in. thickness of plaster over the lath.*

(4d) Plastering—

(4d1) Caution—Do not wet Red Top Lath before applying plaster.

(4d2) Cornerite—Apply metal lath "cornerite" strips over Red Top Lath at all re-entrant angles and all corners not protected with corner beads.

(4d3) Plaster—Use gypsum cement or gypsum wood fiber plasters.

(4d4) Thickness—Full ⅜ in. thick on exterior frame wall, elsewhere full ½ in. thick, flush with grounds.

(4d5) Application—Apply in three (3) coats in accordance with the plaster manufacturer's specification. Surfaces shall be rodded to a true plane. All corners and angles shall be plumb and true. Wherever necessary and particularly on ceilings, provide plaster screeds to insure an even and uniform plaster thickness.

Note: *The maintaining of a uniform and sufficient plaster thickness over a fibrous or board plaster base such as Red Top Lath, and especially on ceilings, cannot be too strongly stressed if permanent, satisfactory results are to be expected. Too frequently a weak, thin plaster coat, inadequate to withstand the usual strains of building settlement, shrinkage and vibration, results in plaster cracks which react on even the best of plaster bases.*

(4d6) Ventilation—Provide adequate ventilation for the proper drying of the plaster work.

Note: *Due to the moistureproof characteristics of Red Top Lath, all moisture emanating from the plastering operation must be carried off by the air coming in contact with the exposed surface. Particular attention to proper ventilation is necessary.*

RED TOP INSULATION AS INTERIOR FINISH MASTER SPECIFICATIONS

Note: *Use as an unplastered interior wall and ceiling finish, in its natural state (unfinished), stained or painted. Unfinished or finished with stains, it has a decided value as an interior lining for sound absorption in halls, gymnasiums, churches, schools, etc. When used for acoustical correction, it should not be painted.*

Note: *Notes are explanatory or advisory only and should not be included in the specifications.*

Note: *Select and include only those clauses which apply to the particular work. Words in bracketed italics are selective.*

(1) Work Included

Note: *Here list and locate definitely the wall and ceiling areas to be covered. If two thicknesses are required, list separately and the respective locations or areas covered.*

(2) Material

(2a) Wall *(and ceiling)* finish shall be *(Red Top Insulation Boards) (and) (Red Top Insulating Lath)* as made by the UNITED STATES GYPSUM COMPANY, 300 West Adams Street, Chicago.

Note: *Specify "Red Top Insulation Boards" where exposed with natural, stained or painted finish. Specify Red Top Insulating Lath where tile effect is desired.*

(2b) Size shall be *(½ in.) (and) (1 in.)* thick by 4 ft. by 6, 7, 8, 9, 10 or 12 ft. long or units cut in panels of symmetrically disposed sizes to conform with the detail drawings.

Note: *Use clause above for natural, stained or painted finish. Select the thickness required for insulation value.*

(2c) Size shall be *(½ in.) (and) (1 in.)* thick by 18x48 in., standard Red Top Insulating Lath.

(3) Application

(3a) General—

(3a1) Red Top Boards—Continuity of insulation is imperative. Apply boards with the length parallel with the framing members. Where possible, boards shall be of sufficient length to completely span between sills and plates or other structural members. Where end joints are necessary, these shall only be made centered over 2x4-in. headers cut in between framing members. Side joints shall center over framing members.

(3a2) Red Top Lath—Do not moisten lath before application. Apply lath, rough or textured side exposed and tongue up, with the length at right angles to the framing *(or furring)* members. End joints shall center over framing members. Stagger end joints in successive courses on all walls and ceilings; likewise stagger end joints at juncture of walls and ceilings.

(3b) Spacing—

(3b1) For Red Top Boards—Boards shall be spaced ¼ in. apart at all edges. Bring the boards in close contact with window and door frames and trim.

(3b2) For Red Top Lath—Tongue and groove joints shall be brought in moderate contact. Units shall be spaced ⅛ in. apart at ends.

(3c) Finishing Joints of Red Top Boards—

(3c1) Battens—Form Red Top Insulation battens of widths detailed with edges neatly sandpapered *(square) (round) (beveled)*. Fit battens neatly at all intersections or at points in contact with other trim. Secure battens with finishing nails as specified in (3e).

(3d) Nails—Use 2-in. finishing nails for intermediate nailings on boards (not edges) and on lath.

Use 6d or 8d common nails at edges of boards (not lath).

(3e) Nailing—

(3e1) For Red Top Boards—Finishing nails shall be driven at an angle with heads neatly set below the surface. At all edges, space 6d or 8d common nails 6 in. apart on centers and ½ in. from the edge. On intermediate framing members, space finishing nails 9 in. apart on centers. First nail the boards to intermediate studs and then nail the edges.

(3e2) For Red Top Lath—Space finishing nails 5½ in. apart on centers set ½ in. from the edges. First nail to intermediate framing *(or furring)* members and then at ends. Secure long edges at angles of walls and ceilings, spacing nails 5½ in. on centers and not more than ½ in. from the edge. Nails shall be driven at an angle and heads neatly set below the surface.

(4) Supplementary Specifications

Note: *Provide for the following in other specification divisions.*

Note: *Red Top Insulation is not a nailing base.*

(4a) Construction—Follow the recommendations of the Building Code Committee of the U. S. Department of Commerce and the National Lumber Manufacturers Association.

(4b) Furring—Fur all exterior masonry walls to receive Red Top Lath with *(1x2-in.) (specify)* furring strips, accurately shimmed to a true, level plane, set 16 in. on centers. Substantially secured to the masonry.

(4c) Finish—

Note: *Red Top boards or lath may be left natural, or finished with stain or paint.*

(4c1) Natural—When a harder surface is desired, colorless sizing, *such as water size, may be applied.*

(4c2) Stain—Red Top Insulation takes water, alcohol or other types of stain admirably, either in single tones, panels or stencil design.

Note: *Where used as acoustical correction, use stain only. Paint fills the pores and materially reduces the acoustical efficiency.*

(4c3) Paint—Size thoroughly with water, glue or oil size. Apply paint in accordance with the manufacturer's directions.

RED TOP INSULATION OVER ROOF DECKS MASTER SPECIFICATIONS

Note: *Use over wood, concrete, steel and similar roof decks.*

Note: *Notes are explanatory or advisory only and should not be included in the specifications.*

Note: *Select and include only those clauses which apply to the particular work. Words or clauses within brackets in italics are selective.*

(1) Work Included

Note: *Here list and locate definitely the roof areas to be covered. If more than one thickness is used, list separately and the respective locations or areas covered.*

(2) Material

Roof insulation shall be Red Top Roof Insulation as made by UNITED STATES GYPSUM COMPANY, 300 West Adams Street, Chicago. Insulation shall be *(specify)* thick boards, 2x5 ft. in area.

(3) Application

(3a) Condition of Deck—Deck shall be smooth, dry and swept clean.

(3b) General—Red Top Insulation shall be dry when applied. Lay only as much insulation as can be covered and protected by the finished roof covering in a single day. Where work is stopped, protect the edges of insulation with overlapping mopped strips of roofing felt, leaving the felt strips as a permanent seal. Apply Red Top units with edges in moderate contact. Cut units to fit snugly against all parapets or similar vertical surfaces. Do not force Red Top Roof Insulation into place. Break joints between alternate rows *(and between alternate superimposed courses or thicknesses)*.

(3c) Application over Wood Decks—

(3c1) Felt—Apply *(one) (two)* layer *(s)* of dry, saturated roofing felt over the roof boards. Lap the felt at least 1½ in. at joints. *(Felt shall extend 6 in. up on walls and all vertical surfaces and shall finally be turned over and mopped to top of insulation.)*

Note: *Felt protects against dripping of pitch or asphalt through deck. Include last bracketed italicized clause only where there is excessive humidity inside the structure. Depending on humidity conditions use one or two layers.*

(3c2) Laying—Apply the Red Top units over the felt. (Where more than one thickness of insulation is used on a single area, nail the first layer in place only sufficiently to maintain its alignment and lay the successive layers directly over those first laid.)

Note: *Include or omit last bracketed italicized clause above as required.*

(3c3) Nailing—Insulation shall be secured to deck with roofing nails sufficiently long to penetrate through the insulation and provide firm hold in deck. Space nails approximately 12 in. apart on centers and not more than 2 in. from edges of the unit. Carry one row of nails longitudinally through the center of each unit.

(3d) Application over Concrete or Tile Decks—

(3d1) Felt—Apply *(one) (two)* layer *(s)* of saturated roofing felt over the roof deck, thoroughly stuck in hot *(pitch) (asphalt)*. Felt shall extend 6 in. up on walls and all vertical surfaces and shall finally be turned over and mopped to top of insulation.

Note: *Include this clause where interior of structure is subject to high humidity conditions as in paper, textile mills, etc., or on applications made during winter months where decks do not have opportunity to thoroughly cure and dry out before insulation is applied.*

(3d2) Priming—Prime deck thoroughly before mopping of asphalt.

Note: *Include this clause if insulation is laid in asphalt.*

(3d3) Laying—Mop deck thoroughly with *(composition of hot pitch and tar) (hot asphalt)* using not less than 35 lbs. per square. Apply the Red Top units while the mopping is still hot. Firmly bed the insulation in the binder over the entire surface. *(Where more than one thickness of insulation is used on a single area: mop the surface of the first layer and apply the successive layers while the binder is still hot. Press successive layers firmly into position.)*

Note: *Include or omit last bracketed italicized clause above as required.*

(3e) Application Over Steel Decks—

(3e1) Laying—Mop deck thoroughly with hot asphalt using not less than 35 lbs. per square.

Note: *Pitch should not be used over steel decks.*

Apply the Red Top units while the mopping is still hot. Firmly bed the insulation in the binder over the entire surface. *(Where more than one thickness of insulation is used on a single area: mop the surface of the first layer and apply the second layer while the binder is still hot. Press successive layers firmly into position.)*

Note: *Include or omit last bracketed italicized clause above as required.*

(3f) Application Under Steel Decks—

Note: *Some steel decks are so designed and assembled as to permit the placing of an insulating board on the under side of the deck to act as interior ceiling finish, as well as for insulating efficiency and the absorption of sound within the structure.*

This is accomplished by placing the board in the flanges of the supporting members of the roof deck, wedging it under the stiffening angles.

The chief requirements of an insulating board for this purpose is that it be stiff enough not to sag between supports; moisture resistant enough not to require painting or other protection; a comparatively high sound absorption efficiency; high insulating efficiency; a light color with good light reflection value, combined with attractive surface appearance. All of the requirements are readily met with Red Top Insulation.

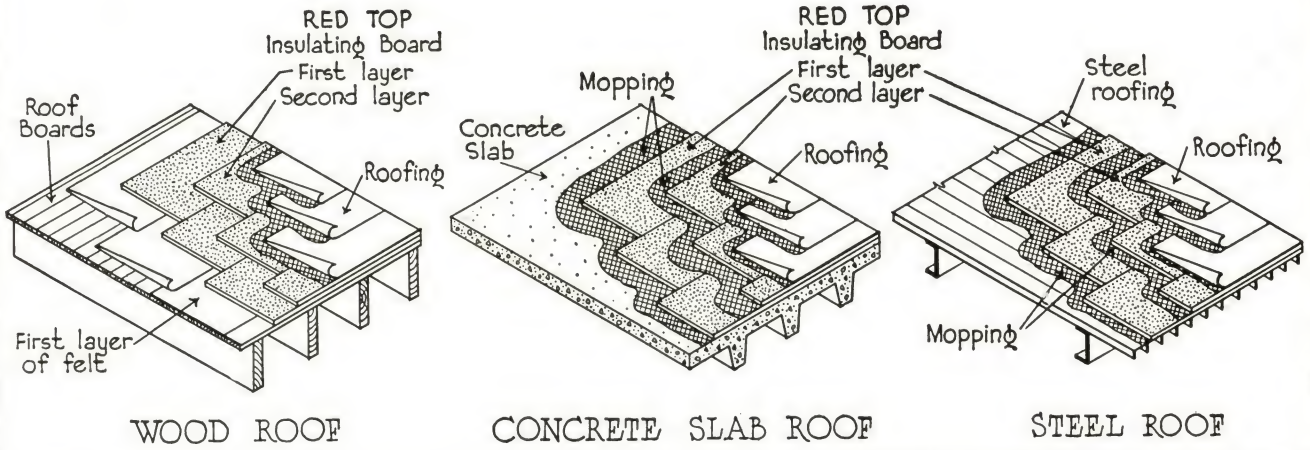
Application details depend upon the design of each particular roof deck. In general, Red Top Insulation is cut to fit and pieces are of a special size. A clearance of one-quarter inch is to be left at all edges. End joints should come over framing members for sealing purposes. It is fastened into position by the wedging together of the steel deck.

Complete specifications adapted to the specific deck construction will be furnished on application.

(4) Finished Roofing

Finished roofing shall be applied over insulation in accordance with the manufacturer's specification, using at least 35 lbs. of *(pitch) (asphalt)* per square under the first layers.

DETAILS OF RED TOP DECK INSULATION



RED TOP INSULATION AS EXTERIOR FINISH SPECIFICATIONS

Note: *While generally speaking of limited architectural adaptability, Red Top Insulation Board as exterior finish has many applications, especially when its moistureproof insulation value is considered.*

It is particularly adapted to the lighter, less permanent construction where cost is a prime factor, and especially for buildings of but one story, such as small dwellings, garages, summer cottages, portable temporary schools, etc. It is an ideal exterior finish for such temporary construction buildings as offices and tool and material storehouses.

(1) Construction Provisions

Follow the recommendations of the Building Code Committee of the U. S. Department of Commerce and the National Lumber Manufacturers Association.

(2) Application, Etc.

The specifications for Red Top Sheathing apply likewise to Red Top Exterior Finish.

(3) Painting

Size thoroughly with a dependable water, glue or oil size. Finish with two (2) coats of any good exterior house paint applied in accordance with the manufacturer's directions.

Note: *The painting of Red Top Insulation surfaces should be done before the application of the joint battens, trim, etc.*

(4) Joint Battens, Trim, Etc.

Cover all joints between the Red Top boards and all edges with wood batten strips or exterior wood trim, secured through the insulation to the framing members.

THERMOFILL
THE DRY FILL INSULATION

Description

Thermofill is a flaky gypsum material which gives a high degree of heat, cold and sound insulation when employed in the walls, ceilings, floors and roofs of residences, apartments and commercial buildings.

The material is light in weight; clean and easy to handle; and is packed in 50-lb. paper sacks.

Method of Installation

Ease of installation is one of the many desirable features of Thermofill, the Dry Fill Insulation, and a feature that makes the use of the material practical in buildings already built, as well as in new construction.

Thermofill is installed simply by pouring (dry) into the space that is to be insulated. The economy of this application is at once apparent.

In residences already built, or in new residences, a large reduction of heat loss in winter and a more comfortable interior in summer can be secured by pouring Thermofill (dry) between the floor joists in the attic, directly upon the ceilings of the top floor rooms.

Complete details for Thermofill insulation in other locations will be sent upon request.

Advantages

Thermofill provides an extremely high degree of heat and cold insulation because of the form and composition of the material. Gypsum is an excellent natural insulator, and this quality is increased many fold due to the myriads of confined air cells assured by the fluffy nature of the material and the method of installation. When installed in the walls and between floors and ceilings, Thermofill prevents air circulation and the resulting passage of heat and sound.

Because it is made of gypsum, Thermofill does not burn and it thus provides valuable protection to inflammable wood framework.

Thermofill, because of its mineral nature, cannot decompose and it will not harbor vermin.

Because of its low initial cost and the saving in labor due to simplicity of application, Thermofill offers the builder a most economical as well as a most effective insulator.

THERMAL CONDUCTIVITY OF THERMOFILL

Density per cu. ft., lb.	B.t.u. per sq. ft. per hour per 1° F. per in. thick	Authority
19.8	.35	Bureau of Standards

Conductivity slightly higher when used in walls.

EFFICIENCY OF TYPICAL CONSTRUCTION, UNINSULATED AND INSULATED

Walls	Uninsulated	Insulated with 3⅝-in. Thermofill
Clapboard, paper, sheathing, stud, lath and plaster	0.227	0.094
Brick veneer, paper, sheathing, stud, lath and plaster	0.165	0.082
Stucco, paper, sheathing, stud, lath and plaster.	0.257	0.099
Ceilings		
Lath and plaster—no floor	0.502	....
Lath and plaster—single floor	0.234	....
Lath and plaster—no floor—(insulated with 2 in. of Thermofill)	....	0.127
Lath and plaster—no floor—(insulated with 3 in. of Thermofill)	....	0.092
Lath and plaster—no floor—(insulated with 4 in. of Thermofill)	....	0.073

Covering Capacity

The covering capacity is indicated in the following table:

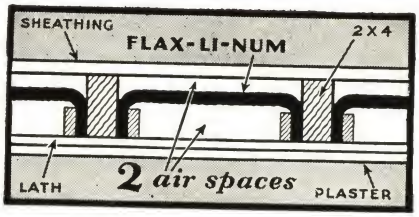
Position of use	Per 50-lb. bag		Per ton	
	Sq. ft. 1-in. thick	Cu. ft.	Sq. ft. 1-in. thick	Cu. ft.
Walls	25	2	1000	83
Ceilings and floors	30	2½	1200	100

Thermofill is made in one weight only and is packed in 50-lb. paper bags with complete directions printed on back.

FLAX-LI-NUM

Description

Flax-li-num, an excellent insulation material of the semi-rigid type, is stocked at all U.S.G. plant-warehouses. It is made by compressing pure flax fiber into a uniform sheet. The sheets are flanged to fit between the studs midway between the walls, providing a double air space.



Method of Application

On walls the ½-in. Flax-li-num, which is 16½ in. wide and is flanged 1¼ in. on each side, is placed between the studs set on 16-in. centers, and wood laths are nailed over the flanges to prevent air infiltration.

Government tests have shown that an insulation material applied in this manner has 50 per cent more insulation value because of the double air space and the additional resistance surfaces provided.

On the ceilings 1-in. Flax-li-num is nailed to the bottom of the joists, and the ceiling is then furred out and lathed and plastered.

Advantages

Flax-li-num has several important advantages over other insulators of the semi-rigid type.

Permanence—The pure flax fiber does not deteriorate from moisture, any more than does linen, which is also made from flax; it contains no glue binder, pulp paper, or other deteriorating substance.

Uniformity—Its insulation is uniform throughout.

Distasteful to Vermin—It is not consumed by rats or vermin.

Tough—It is so tough that the carpenters' hammers will not tear it and cause heat leakage.

Easy to Install—It does not have to be measured and cut; one man can apply it in advance of the stripping; there is no waste, as small pieces can be used for calking.

Sizes

The ½-in. Flax-li-num is 16½ in. wide, flanged 1¼ in. on each side and is 8, 9, and 10 ft. long. The 1-in. Flax-li-num Flat Sheets are 48 in. x 4½ ft. The ½-in. Flat Sheets are 48 in. x 4½ ft. and 48 in. x 9 ft. Sheets are also made ¼ and ¾ in. thick.

EFFICIENCY OF TYPICAL CONSTRUCTION

Walls	Heat Transmission B.t.u.'s per hr. per sq. ft.	
	Uninsulated	Insulated with ½-in. Flax-li-num
Clapboard, Wood Sheathing, Wood Lath and Plaster	.227	.131
Brick Veneer, Wood Sheathing, Wood Lath and Plaster	.165	.107
Stucco, Wood Sheathing, Wood Lath and Plaster	.257	.140
Ceilings	**Uninsulated**	**Insulated with 1-in. Flax-li-num—Furred**
Wood Lath and Plaster	.502	.142

TRUSCON STEEL COMPANY

Manufacturers of a Complete Line of Steel Building Products

YOUNGSTOWN, OHIO

Offices and Warehouses in Principal Cities—For list see our pages on Steel Windows

Product

FERROCLAD INSULATION.

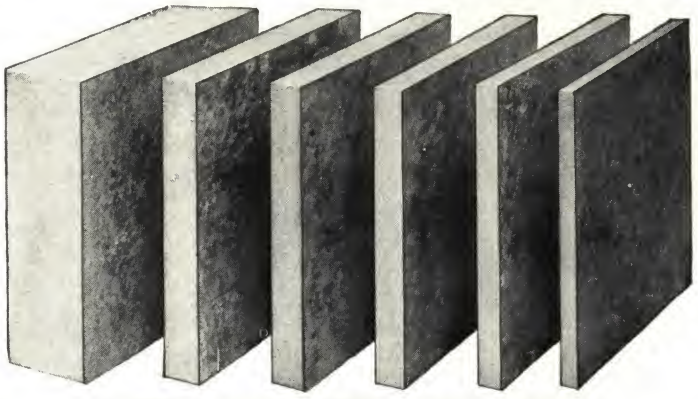
For other Truscon products, see pages in this edition on Concrete Reinforcing Steel, Steel Joists, Steeldeck Roofs, Steel Windows, Steel Doors, Channelplate and Teegrid Floors, Safety-Tread Steel, Standardized Buildings and Metal Lath, as listed in Manufacturers' Index.

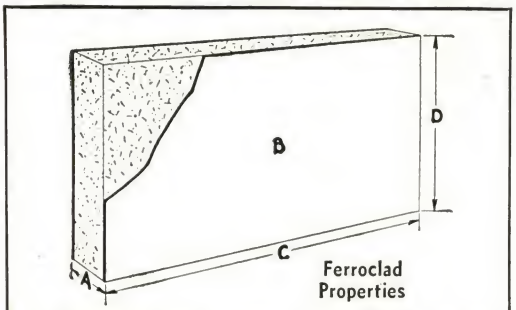
General

The development of Ferroclad Insulation represents a decided advance in the use of commercial insulation and opens a wide field of application. The heat, cold and sound retarding value and low structural strength of insulation board is reinforced with a tough steel covering that protects the insulation, adds remarkable rigidity, firesafety and strength and presents a smooth impervious surface which is suitable for various finishes.

FERROCLAD INSULATION

(Patent applied for)





Ferroclad Properties

A—Insulation, any commercial type, ¼ in. to any desired thickness.
B—Steel covering, 24 to 20-gauge, black, galvanized or furniture steel in any combination.
C—Length of sheets, any length up to the maximum of 120 in.
D—Width of sheets, any width up to the maximum of 42 in.

Load tables for any specified combination of insulation and gauge of steel will be supplied upon request.

Description of Ferroclad Insulation

Ferroclad Insulation is an entirely new product, consisting of insulating material of any standard make, and any desired thickness, with outer layers of steel tightly and permanently joined to the insulation as a unit. The steel may be of any desired thickness, from 24 to 20-gauge, and may be either black, galvanized or furniture steel. Non-ferrous metals also can be supplied when specified.

Although steel sheets have been used to protect insulation before, Ferroclad Insulation is one of the first successful products to offer them in unit combination. The steel reinforces the insulation, adds greatly to the structural strength of the sheet because of the fact that the two materials are firmly bonded together, and actually increases the insulation value. Its convenient design and sizes make it adaptable for a wide variety of uses.

Ferroclad Insulation Features

Structural Strength—Far greater than the normal strength of the two materials used separately. The total strength depends upon the kind of insulation and the thickness of the steel sheets used.

Permanent Bond—Tests have proved that the bond between the steel and the insulation is positive and permanent. Very high temperatures have no effect upon the bond, thus offering a high degree fire safety.

Heat and Cold Insulating—Any desired degree of insulation may be secured, and any commercial insulation may be used, in any thickness.

Sound Deadening—Very effective in resisting passage of sound. The rigid, smooth surface reflects a considerable portion of the sound waves and the fibrous insulation absorbs much of the balance, depending upon the thickness.

Firesafe—The steel covering offers a positive barrier to the passage of fire and the insulation, being naturally fire-retardant and sealed between the steel, will withstand high temperatures for a considerable time.

Moistureproof—There is no possibility for water to enter through the steel, and the ends may be treated with a special waterproofing compound when conditions require.

Sanitary—Ferroclad Insulation is absolutely sanitary and rodent-proof. The surface is easy to clean and it may be painted or given a coat of baked-on enamel.

Airtight—Sheets of Ferroclad permit no air infiltration.

Economical—Low cost due to efficient manufacture and to the fact that only the required insulation and gauge of metal are used.

Easily Cut, Drilled and Formed—No special experience is necessary in working. It can be cut, drilled and sawed in the field. Light nails can be driven through the panels without difficulty.

100% Salvage—When used for such purposes as roofs, ceilings, partitions and sidewalls, the panels of Ferroclad Insulation may be taken down and re-used without damage.

Interior or Exterior Application—Ferroclad Insulation is equally efficient when used for interior or exterior work. The weather-resisting qualities make it ideal for direct exposure to the elements, while the compactness, soundproofness, firesafety and light weight offer decided advantages for interior uses.

Wide Range of Uses—There are so many possible applications for Ferroclad Insulation that its uses appear almost without limit. Truscon engineers will be glad to assist in developing any special applications.

A Few Uses for Ferroclad Insulation

Utilizing Insulating Properties—

Dryers
Milk cooling cabinets
Shipping containers
Incubators
Insulated truck body panels
Roofdeck
Auto floor boards
Insulated doors
Spandrels
Railroad cars
Auto busses
Soda fountains
Walls
Small buildings

Utilizing Sound Deadening Properties—

Partitions
Ventilating ducts
Metal furniture
Machine housings
Ceilings
Interior walls
Doors

ARBORITE ALL-WOOD INSULATING BOARD

MANUFACTURED BY
THE WOOD-FIBRE BOARD CORPORATION
SALES AND GENERAL OFFICE
51 East 42nd Street
NEW YORK, N. Y.
MILLS: BRUNSWICK, ME.

PRODUCTS

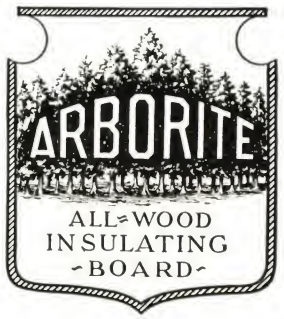
Arborite Standard Insulating Building Board.
Arborite Standard Insulating Lath.
Arborite Special Low Density Roof Insulation.
Also Arborite Special Low Density Board for refrigerator cabinet, room and car insulation, sound deadening and other industrial uses; Arborite Tile for acoustical correction.

Specifications and analysis on request.

GENERAL INFORMATION AND PHYSICAL CHARACTERISTICS OF ARBORITE STANDARD BUILDING BOARD AND INSULATING LATH

Raw Materials

Arborite is manufactured solely from high grade peeled pulpwood, *spruce* and kindred species, by a purely mechanical process without the addition of chemicals or waste materials. The finished product, therefore, retains essentially the nature and permanence of sound lumber.



Method of Manufacture

By mechanical grinding the long tough fibres of the pulpwood are first segregated and floated to the felting machines, where they are formed and woven into sheet form on a single cylinder ensuring a homogeneous sheet, and eliminating any splitting tendencies. The Arborite Sheet is then submitted to a fixed pressure between plates and passed through the dryer under constant atmospheric conditions most conducive to proper seasoning. Cutting into standard and special sizes completes the process, the Arborite being then wrapped and stored for shipment.

Weight and Thermal Conductivity

High grade raw materials and improved methods of manufacture are responsible for the exceptionally low density of Arborite.

The density of Arborite averages only 14.4 lb. per cu. ft., which is equivalent to a weight of only 600 lb. per 1000 sq. ft. of full ½-in. thickness. That density of a material is a comparative indicator of its insulating value is a widely accepted principle, expressed briefly by the U. S. Bureau of Standards as follows: "In general, the lighter the material per unit total volume the better its insulating value per inch of thickness."

Thus the 15% to 30% advantage in weight, which is characteristic of Arborite, assures a very distinct advantage in resistance to heat transfer.

Strength

Tests conducted at Columbia University, under the requirements of the Boroughs of New York City, demonstrated that Arborite, applied as sheathing in buildings, offers greater resistance to distortion than horizontal wood sheathing, and that the tensile strength of Arborite averaged 216 lb. per sq. in. on five tests. Tests at other laboratories throughout the country have substantiated these results, the ratio of strength to weight for Arborite having been placed at the exceptionally high figure of 75%.

Moisture Resistance

Previous to being felted into a solid homogeneous sheet, the individual fibres of Arborite are thoroughly coated with a waterproofing film, insuring high moisture resistance throughout the finished sheet.

Durability

Bark, rot and all impurities are removed before or during the process of manufacture and there remains in the finished Arborite only sound live wood fibre, which offers no attraction to, and will not harbor, vermin or rodents. Odors will not penetrate, or be retained by Arborite, which is essentially one of the soundest, cleanest and most durable forms of rigid insulation.

Plaster Bond

Tests at Columbia University, New York, N. Y., showed an average bond value between Arborite and gypsum plaster of 2140 lb. per sq. ft.

Uniform Quality

Uniformity of raw material, and continuous testing at all critical points in the process by a trained laboratory staff, make possible the maintenance of high quality Arborite within exceptionally close tolerances.

Appearance

Arborite, with its naturally light cream color and delicately rippled finish, assures good light reflection, affords a very pleasing effect for interiors without additional treatment, and lends itself readily to all forms of decoration.

Thickness and Size

Arborite Building Board is supplied in standard ½-in. thickness, standard width of 4 ft., and standard lengths of 6, 7, 8, 9, 10, 11 and 12 ft.

Arborite Insulating Lath is supplied in standard ½-in. thickness, standard width of 18 in., and standard length of 48 in., with the long edges shiplapped to prevent heat losses due to open joints.

Special thicknesses, consisting of ½-in. thicknesses firmly stapled or glued together, and special widths and lengths up to 8x20 ft. can be supplied on request.

Specifications for Application of Arborite All-Wood Insulating Board and Lath

Arborite Board for Sheathing under Stucco, Brick or Stone Veneer, Wood Siding and Shingles

Material—All exterior sheathing shall be Arborite All-Wood Insulating Board ½ in. [¾ in.] [1 in.] thick, as manufactured by THE WOOD-FIBRE BOARD CORPORATION, Brunswick, Maine.

Framing—Studs, joists, sills and plates shall be framed as in ordinary frame construction, and shall be placed accurately on 12 or 16-in. centres. Where end joints of Arborite are necessary use 2x4-in. headers, cut in between the studs, to provide nailing base for all four edges.

Application—Arborite All-Wood Insulating Board shall be applied vertically to the framework, and set in place so as to allow ample bearing for nailing all edges. Always space adjoining sheets of Arborite ¼ in. apart at sides, top and bottom. Around window and door frames bring Arborite to moderate contact with the frames. *Never force Arborite into place.* Nail an extra strip of Arborite to back of frames to prevent leakage of hot or cold air.

Nailing—Use 1½-in. standard galvanized roofing nails with ⅜-in. heads for ½-in. Arborite Sheathing, and 2-in. nails for 1-in. Arborite Sheathing. Nail Arborite first to intermediate studs, starting at the top, and space nails 6 in. apart; then nail around all four edges spacing nails 4 in. apart and at least ⅜ in. from the edges. Nails shall be driven so that the heads will lie slightly below the surface of the Arborite.

Application of Stucco—Nail wood furring strips vertically through the Arborite into each stud. Apply a metal lath suitable for a 16-in. span in accordance with the specifications of the Associated Metal Lath Manufacturers. If desired, self-furring metal lath may be used and applied direct to Arborite Sheathing. Apply stucco in accordance with manufacturer's specifications.

Application of Brick or Stone Veneer—Anchors shall be spaced to suit the brick or stone courses, and nailed through Arborite into the studs. Brick or stone shall be laid in the usual manner, leaving at least ½-in. space between the Arborite and the stone or brick.

Application of Wood Siding—All types of wood siding shall be applied directly over Arborite, butting all joints on studs. Nail through Arborite into studs, using nails ½ or 1 in. longer than usual, to allow for the thickness of Arborite.

Application of Shingles—Nail 1x2-in. wood furring strips over Arborite at right angles to studs. Space strips as many inches apart as shingles are to be exposed to the weather. Nail shingles to the furring strips, using cut iron nails, preferably zinc dipped, or copper nails.

Arborite Lath as Plaster Base

Material—All plaster base shall be Arborite Insulating Lath, 18x48x½ in. [¾ in.] [1 in.] thick with shiplap edges, as manufactured by THE WOOD-FIBRE BOARD CORPORATION, Brunswick, Maine.

Framing—Studs, joists and rafters shall be true and set accurately on 12 or 16-in. centres.

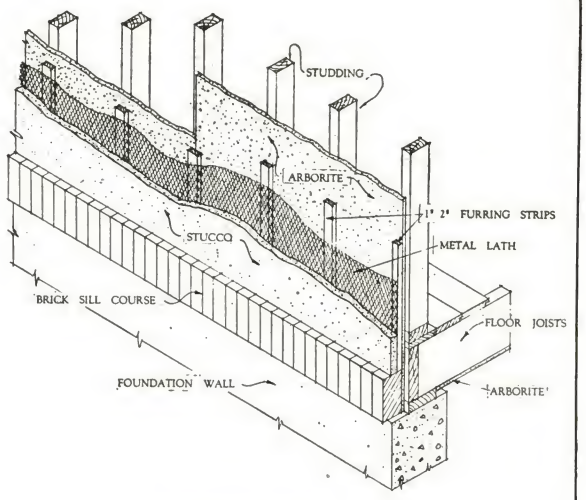
Application—Arborite Insulating Lath shall be applied with the long edges at right angles to the framing, and the vertical joints on each course shall be staggered with the joints of the preceding course. Space sheets ¼ in. apart at all vertical joints and centre these joints on the framing. Bring the shiplapped joints of Arborite to moderate contact, and also around window and door frames bring the Arborite to moderate contact with the frames. *Never force Arborite into place.* It is not necessary to dampen Arborite Lath before applying.

For details of application see next page.

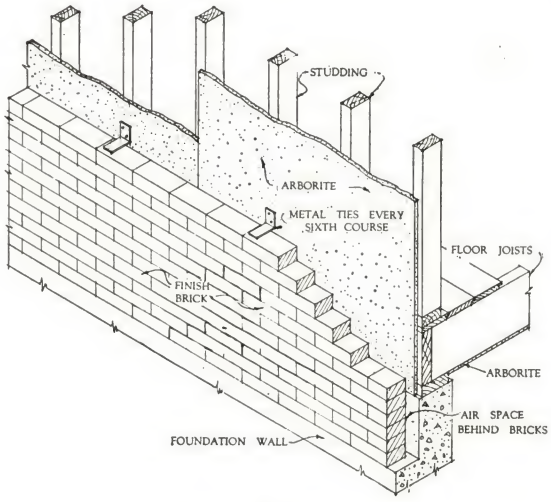
Nailing—Arborite Insulating Lath shall be nailed securely to frame, using 4d common box or blued nails for ½-in. lath and 8d common or blued nails for 1-in. lath. Space nails 5½ in. apart, at least ½ in. from shiplapped edges and ⅜ in. from the ends. Nail first to intermediate studs, then nail the ends.

Preparation for Plastering—At all internal vertical angles and at all corners between ceiling and walls use 8-in. strips of painted metal lath or galvanized wire lath bent at right angles to form two 4-in. legs, and nail or staple lightly at outer edges. Across the corners of all door and window frames staple lightly 8-in. squares of the same material. Use metal corner beads at all external angles. It is not necessary to wet Arborite before plastering.

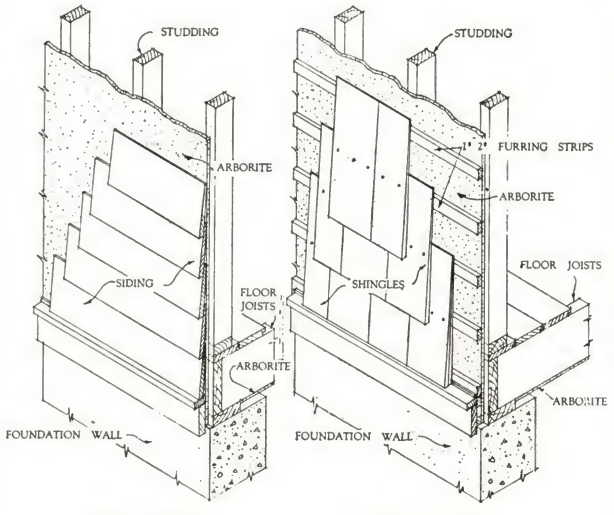
Plastering—Use quick setting gypsum plaster, applied according to manufacturer's specifications. Use 2 or 3 coats having a total thickness of not less than ⅜ in. The brown coat shall be thoroughly dry before applying the finish coat. Use the darby, long enough to span two studs or joists, in the direction of the studding or joists.



STUCCO ON FRAME



BRICK VENEER ON FRAME



WITH SIDING WITH SHINGLES

ARBORITE INSULATING SHEATHING
FOR VARIOUS TYPES OF WALLS

All rooms shall be well ventilated to allow the plaster to dry. Moisture will not pass through Arborite, and can only be carried off by adequate ventilation. In cold weather, care must be taken to prevent the freshly applied plaster from freezing.

Arborite Board for Interior Finish with or without Paint, Stain or Kalsomine

Material—All interior finish shall be Arborite All-Wood Insulating Board ½ in. [¾ in.] [1 in.] thick, as manufactured by THE WOOD-FIBRE BOARD CORPORATION, Brunswick, Maine (left natural, or treated with paint, stain or kalsomine).

Framing, Application and Nailing—(Follow same framing, application and nailing specifications as detailed on previous page for Arborite as sheathing.) Where special paneling effects or chair rails are specified, 2x4-in. headers should be cut in between the framing for nailing base. Where nailheads are not to be covered with wood battens or Arborite Strips, use 1½-in. finishing nails driven at an angle and cover up nailholes by rubbing surface lightly with another small piece of Arborite. Wood battens, where used, should be at least 2 in. wide, or Arborite Strips should be 3 in. wide with edges beveled or slightly rounded with sandpaper.

Finish—Where the natural finish of Arborite is to be used without further treatment, apply panel strips as specified, after allowing paint or stain on the strips to dry thoroughly. Where surface of Arborite is to be treated with oil paint, first apply evenly one coat of any good glue sizing or priming, and allow to dry thoroughly before painting. Apply paint in usual manner. Where stains or kalsomine are used, apply direct to Arborite without preparation, according to manufacturer's specifications.

Arborite All-Wood Insulating Board lends itself perfectly to any form of interior decoration, and detailed instructions for the application of special finishes may be had on application to the manufacturer or sales agent.

Arborite Board for Insulation of Attics and Floors

Material—Insulation of attic and floors shall be Arborite All-Wood Insulating Board, as manufactured by THE WOOD-FIBRE BOARD CORPORATION, Brunswick, Maine.

Framing—Studs, joists and rafters shall be framed as in ordinary frame construction, and shall be placed accurately on 12 or 16-in. centres. Where end joints of Arborite are necessary use 2x4-in. headers, cut in between the framing, to provide nailing base.

Floor Insulation—Apply Arborite over rough floor and under finish floor, bringing sheets to moderate contact with only sufficient nails to hold in place while laying finish floor. (Arborite Insulating Lath with plaster may be used on ceilings to provide additional insulation, or to replace floor insulation.)

Attic Insulation—Walls and ceiling of attic shall be finished with Arborite as per specifications detailed above for Interior Finish or with Arborite Insulating Lath and Plaster (see specifications above). All corner joints of Arborite in attic shall be brought to moderate contact, and all spaces where air leakage might occur along the eaves shall be blocked off with Arborite.

Arborite Board for Insulation of Sloping or Pitched Roofs

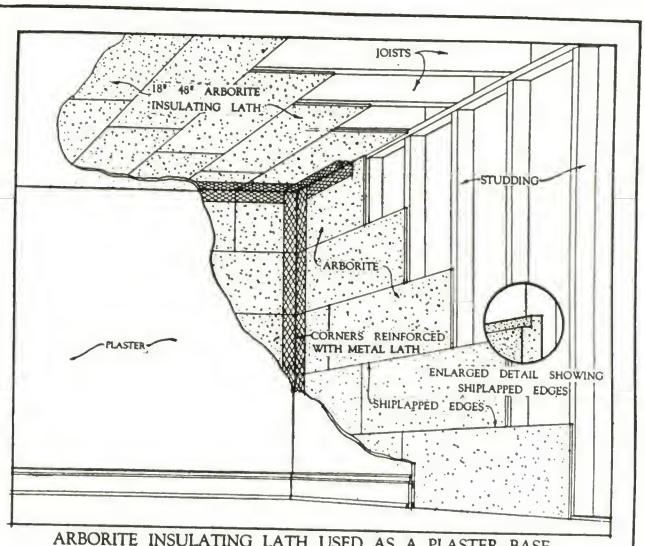
Material—Insulation for roofs shall be Arborite All-Wood Insulating Board, as manufactured by THE WOOD-FIBRE BOARD CORPORATION, Brunswick, Maine.

Framing—Rafters shall be placed accurately on 16-in. centres, and 2x4-in. headers cut in where end joints of Arborite occur.

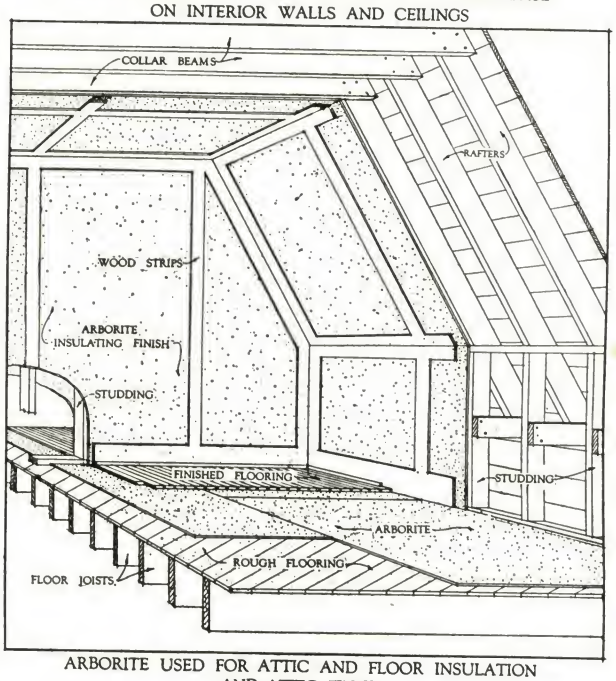
Application—Apply Arborite lengthwise to the rafters, allowing ample bearing for nailing all edges. Space adjoining sheets of Arborite ¼ in. apart. At all vertical projections, and at meeting of roof insulation and wall sheathing Arborite shall be brought to moderate contact. *Never force Arborite into place.*

Nailing—Use 1½-in. standard galvanized roofing nails with ⅜-in. heads, and nail Arborite first to intermediate studs, then around edges, spacing nails 6 in. apart.

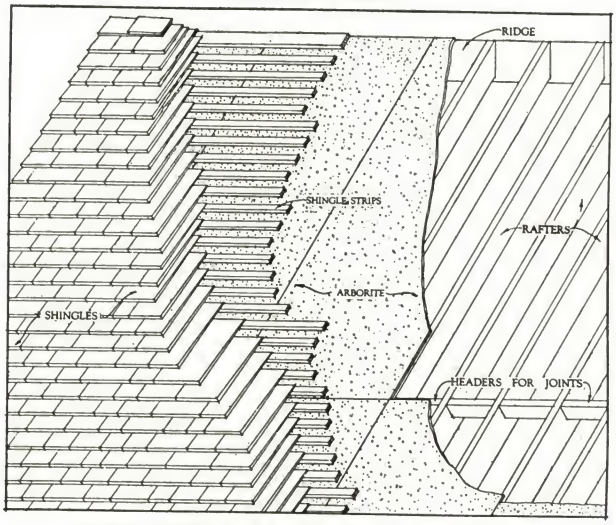
Application of Roofing—Waterproof paper need not be used. Nail 1x3-in. furring strips or ordinary ⅞-in. roof boarding through the Arborite to the rafters, spaced as necessary for the roofing to be used. Apply shingles or roofing to the furring strips or roof boarding in usual manner.



ARBORITE INSULATING LATH USED AS A PLASTER BASE ON INTERIOR WALLS AND CEILINGS



ARBORITE USED FOR ATTIC AND FLOOR INSULATION AND ATTIC FINISH



ARBORITE USED FOR INSULATING A FRAME ROOF

ARBORITE USED AS PLASTER BASE ATTIC FINISH, ROOF AND FLOOR INSULATION

ARBORITE SPECIAL LOW DENSITY ROOF INSULATION

Description—Arborite Special Low Density Roof Insulation, a most recent development in the field of rigid insulating materials, is manufactured in the same manner and from the same high grade material as Arborite Standard Building Board. A slight sacrifice in strength has made possible the production of this board of markedly lower density and consequent increased efficiency as an insulator, possessing characteristics which solve in the most economical manner problems of heat losses and condensation.

Density and Strength—The density of Arborite Special Low Density Insulation is 11.2 lb. per cu. ft., a distinct decrease in weight over many fibre insulating boards produced commercially. The strength is slightly less than that of Arborite Standard Building Board, and is more than sufficient for use as roof and industrial insulation.

Conductivity—Heat transmission is common to all materials in varying degrees. The transmission for any one material is expressed by its coefficient of conductivity, or the number of British thermal units transmitted through the material per hour, per square foot, per inch of thickness, per degree difference in temperature.

Hot plate tests conducted by Prof. G. B. Wilkes, Massachusetts Institute of Technology, determined the coefficient of conductivity for Arborite Special Low Density Insulation to be 0.26 B.t.u. per hr. per sq. ft. per inch thick per degree F., the best value ever determined for any rigid type of insulation. Coefficients of conductivity generally assigned to the more common building materials are as follows:

Concrete	8.30	Wood (yellow pine or fir)	1.00
Brick	5.00	Rigid insulation (fibre)	0.33
Plaster	2.32	Corkboard	0.30
Arborite Special Low Density Insulation			0.26

Thickness and Size—Arborite Special Low Density Roof Insulation is a homogeneous board and is made in two thicknesses: ½ and ¾ in.

It can also be supplied in stapled or laminated form in thicknesses up to 3 in.; standard widths and lengths of sheets are 24x47 and 24x60 in.

Moisture resistance, durability and other physical characteristics of Arborite Special Low Density Insulation correspond exactly to those of Arborite Standard Building Board previously described.

Specifications for Application on Steel, Concrete, Tile or Wood Deck Roofs

Material—Insulation for roof decks shall be Arborite Special Low Density Roof Insulation [24x47 in.] [24x60 in.] by .... inches thick, as sold by THE WOOD-FIBRE BOARD CORPORATION, Brunswick, Maine.

Preparation of Decks—***Steel, Concrete or Tile***—Decks must be dry and swept clean, and, in the case of concrete, well seasoned. If asphalt is used, concrete and tile decks must be primed in the usual manner.

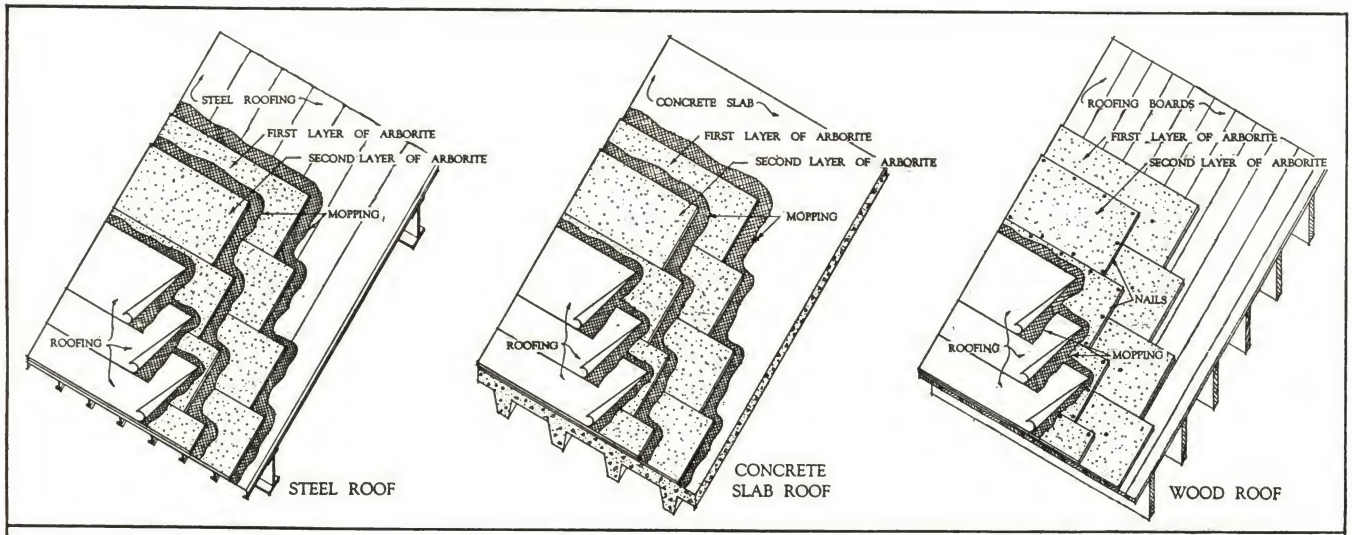
Wood—Material must be seasoned, matched and dressed lumber, well nailed with nails driven flush, or seasoned dressed lumber laid on edge and well nailed, presenting a smooth surface swept clean.

Application of Arborite Special Low Density Insulation—***General***—Arborite Special Low Density Insulation must be thoroughly dry before applying. Adjoining edges of Arborite should be brought to moderate contact, and sheets shall be cut to fit snugly against parapet walls or other vertical projections. *Never force Arborite into place.* Stagger all transverse joints. Do not lay more Arborite Insulation than can be fully protected by roofing in any one day.

Steel, Concrete or Tile Decks—Mop deck with a heavy uniform coat of asphalt (hot roofing pitch may be substituted where deck is tile or concrete), using not less than 30 lb. per square. While asphalt or pitch is still hot, apply Arborite Insulation firmly into place, making sure that all edges are well pressed in. If more than one layer of Arborite is specified, mop the top surface of each layer uniformly with hot pitch or asphalt and embed the succeeding layer thoroughly while mopping is still hot, with joints broken in relation to the preceding layer.

Wood Decks—Where only one layer of Arborite is specified cover the wood deck with a sheet of rosin sized paper or dry felt to prevent pitch dripping through the roof deck. Nail the Arborite directly to the wood deck using 1½-in. standard galvanized roofing nails with ⅜-in. head. Nail first at random in the centre of the board, then on approximately 12-in centres around the edges, and not less than ⅜ in. from the edges. If more than one layer of Arborite is specified, only sufficient nails to hold in place need be used in the first layer. All joints of second or succeeding layers must be broken in relation to the preceding layer, and nails of sufficient length to enter the wood deck at least 1 in., driven flush, shall be used. Nail final layer at random in centre of board, and on approximately 12-in. centres around the edges.

Applications of Roofing—Apply roofing according to architect's and manufacturer's specifications.



ARBORITE ROOF INSULATION ON VARIOUS TYPES OF CONSTRUCTION

THE PHILIP CAREY COMPANY

Manufacturers of Heat Insulation

LOCKLAND, CINCINNATI, OHIO

BRANCHES AND DISTRIBUTERS IN PRINCIPAL CITIES

FACTORIES: LOCKLAND, OHIO, AND PLYMOUTH MEETING, PA.

Products

PIPE COVERING, BOILER INSULATION and REFRACTORY CEMENTS.

Also Miscellaneous Asbestos Products of all kinds.

For Built-up Roofing and other Carey Products, see Manufacturers' Index.

Carey PRODUCTS

TRADE-MARK

Carey 85% Magnesia Covering (High Pressure Steam)

Consists of, approximately, 85% basis hydrated carbonate of magnesia and, approximately, 15% asbestos fiber. Furnished in sections 3 ft. long, canvas covered, with metal bands, for sizes up to and including 10 in.; for larger sizes, segmental blocks are furnished. It is particularly adapted for use on high pressure steam pipes.

Standard size of blocks, 6x36 in. and 12x36 in.; thickness ⅞ to 4 in., inclusive.

Technical Bulletin No. 104, furnished on request, contains full data on heat transmission and efficiencies of Carey 85% Magnesia Pipe Covering in various thicknesses and for various pipe sizes.

Carey Impervo Covering (To Prevent Sweating)

Composed of layers of high grade insulating felt and constructed in 2 layers, each layer having a lining of waterproof felt and a jacket of waterproof felt.

Furnished in standard sections 36 in. long, finished with canvas jacket and bands for applying for all pipe sizes. Specifically designed for use on cold water and ice water lines to prevent sweating and to maintain the low temperature of the liquid.

It should always be applied in double layers to break all seams and joints to prevent air reaching the pipe.

Carey Carocel Covering (Heating Systems)

Consists of alternate layers of fine corrugated and flat sheets of asbestos paper. Furnished in standard 36-in. long sections, canvas jacketed with bands for applying for all pipe sizes. Specifically designed to give maximum insulating value on low and medium temperature steam pipes. Better adapted than any other type of covering for temperatures ranging from hot water up to 35 lb. steam pressure. This covering is very firm with smooth cylindrical surface, making it very desirable for exposed heating system pipes. It has *8 layers* of corrugations per inch of thickness.

Technical Bulletin No. 102, furnished on request, shows comparative heat insulation values of Carocel and other insulations.

Carey Protecto Covering (To Prevent Freezing)

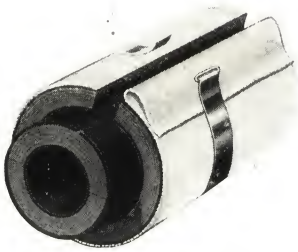
Consists of an inner layer of hair felt and an outer layer of wool felt. Furnished in sections 36 in. long, finished with canvas jacket with bands for applying for all pipe sizes.

The insulating properties of these materials are well known and Protecto furnishes a combination resulting in high insulating value and neat appearance which is so often lacking when hair felt only is used. Specifically designed to protect cold water and compressed air pipes from freezing.

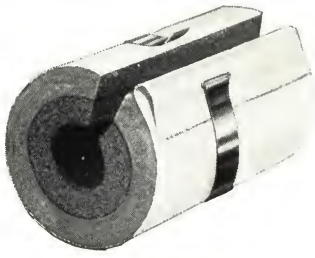
Specifications for Insulating Power Plants

Boilers—Cover all exposed boiler tops, combustion chambers and drums with Carey 85% Magnesia Blocks 2 in. thick, firmly wired on and finished with a ½-in. coat of Carey No. 100 Hard Finish Asbestos Cement, troweled smooth.

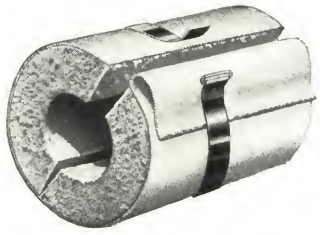
On connections from boiler to smokestack, apply V-rib expanded metal lath to provide an air space of, approximately,



Carey Impervo



Carey Protecto



Carey 85% Magnesia



Carey Carocel

MONETARY LOSSES RESULTING FROM HORIZONTAL BARE STEAM PIPE

Gage Press.	Hot Water			10 Lbs.			80 Lbs.			120 Lbs.			160 Lbs			200 Lbs.		
Temp.	180° F.			239.4° F.			324.0° F.			350.0° F.			370.7° F.			387.9° F.		
Pipe size	Dollars loss	Pounds coal	B.T.U. per lineal ft. per ° F. diff. per hr.	Dollars loss	Pounds coal	B.T.U. per lineal ft. per ° F. diff. per hr.	Dollars loss	Pounds coal	B.T.U. per lineal ft. per ° F. diff. per hr.	Dollars loss	Pounds coal	B.T.U. per lineal ft. per ° F. diff. per hr.	Dollars loss	Pounds coal	B.T.U. per lineal ft. per ° F. diff. per hr.	Dollars loss	Pounds coal	B.T.U. per lineal ft per ° F. diff. per hr.
1″	1.91	763	.878	3.26	1305	.973	5.72	2290	1.138	6.25	2601	1.178	7.27	2910	1.242	8.07	3230	1.280
2″	3.24	1297	1.491	5.36	2142	1.600	9.78	3910	1.943	11.37	4549	2.052	12.75	5100	2.145	14.00	5600	2.220
3″	4.56	1824	2.100	8.24	3292	2.460	13.88	5550	2.760	16.14	6450	2.910	18.04	7210	3.030	19.84	7945	3.150
4″	5.78	2305	2.650	9.87	3950	2.950	17.70	7075	3.520	25.50	8200	3.700	22.85	9145	3.842	25.15	10060	3.981
6″	8.20	3280	3.775	14.21	5680	4.240	25.30	10110	5.024	29.30	11720	5.295	32.80	13120	5.522	36.00	14420	5.715
8″	11.00	4398	5.050	18.25	7300	5.450	32.60	13030	6.455	37.65	15050	6.840	42.40	16940	7.125	46.05	18420	7.300
10″	12.68	5065	5.925	22.05	8820	6.584	40.20	16100	8.010	46.70	18690	8.440	52.30	20910	8.805	57.75	23100	9.150
12″	15.00	6000	6.995	26.44	10580	7.890	47.40	18950	9.425	55.40	22120	10.00	61.76	24700	10.40	70.00	28010	11.14
14″	16.60	6635	7.625	28.90	11560	8.620	52.00	20800	10.34	60.50	24200	10.92	67.50	27000	11.36	74.10	29650	11.76
16″	18.82	7525	8.650	32.80	13120	9.790	58.76	23500	11.70	68.40	27320	12.34	76.10	30410	12.80	84.25	33700	13.35

Note: In these tables, coal has been figured at $4.00 per ton of 2000 lb.; 13,000 B.t.u. per lb. of coal; labor, boiler room expense, etc., taken at $1.00 per ton, making total value of coal fired at $5.00 per ton. Boiler efficiency taken at 70%. Air temperature 70° F. Experimental data obtained at the Mellon Institute.

¾ in. Then apply Carey 85% Magnesia Blocks, 2 in. thick firmly laced in place and covered with hexagonal wire mesh, stretched tight and finished with a ½-in. coat of Carey No. 100 Hard Finish Asbestos Cement.

Apply a thin coating of Carey B. T. U. Cement over entire exposed brick boiler wall surface. Use from 45 to 50 lb. of cement per 100 sq. ft. of surface. Then apply a 2-in. coat of Carey 85% Magnesia Cement reinforced with wire mesh fastened to brickwork and finish with a coat of Carey No. 100 Hard Finish Asbestos Cement.

High Pressure Steam Piping—Cover all high pressure saturated steam pipes, 4-in. diam. and larger, with double standard thick 85% Magnesia Pipe Covering. Cover all high pressure steam pipes under 4-in. diam. and all high pressure drip pipes with 2-in. Carey 85% Magnesia Pipe Covering.

For superheated steam pipes use combination of the first layer Carey Hi-Temp Covering and outer layer Carey 85% Magnesia Covering as recommended in detail in Bulletin 101—High Temperature Heat Insulation.

Exhaust Steam Piping—Cover all exhaust pipes and mains within buildings with 1 layer of 1½-in. Carocel Asbestos Sectional Pipe Covering.

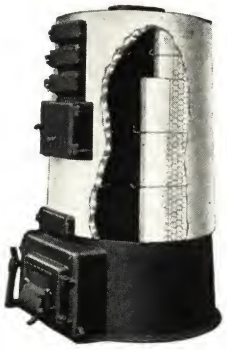
Feed Water Piping—Cover all feed water pipes with 1 layer of 1-in. Carocel Asbestos Sectional Pipe Covering.

Fittings—Cover all high pressure and exhaust steam fittings, valves and flanges with Carey 85% Magnesia Blocks and 85% Magnesia Cement, or all 85% Magnesia Cement, to a thickness corresponding to covering on adjacent pipe. Trowel smooth and finish with canvas jacket pasted on.

Finish—Over all pipe covering, apply a 16-lb. asbestos paper and an extra 8-oz. canvas jacket, tightly stretched and sewed on, approximately, 3 stitches to the inch. All canvas surfaces are to be sized and finished with 2 coats of lead and oil paint of color to be selected by architect.

Heaters, Receivers, Tanks, Traps, etc.—Cover all such appurtenances with Carey 85% Magnesia Blocks and Carey No. 100 Hard Finish Asbestos Cement to a minimum thickness of 1½ in., or with 1-in. Carocel Blocks and ½-in. Carey No. 100 Hard Finish Asbestos Cement. Wire blocks securely in place, cover with 2-in. hexagonal wire mesh, stretched tight, and apply Carey No. 100 Hard Finish Asbestos Cement, troweled smooth.

Finish with canvas jacket smoothly pasted on. Canvas jacket shall be of same weight as used on 85% Magnesia Pipe Coverings.



Method of Insulating Boilers, Heaters, Tanks, etc.

Specifications for Insulating Heating Systems

Boilers, Heaters, etc.—Cover all such appurtenances with Carey 85% Magnesia Blocks and Carey No. 100 Hard Finish Asbestos Cement to a minimum thickness of 1½ in., or with 1-in. thick Carocel Blocks and ½ in. thickness of Carey No. 100 Hard Finish Asbestos Cement. Wire blocks securely in place, cover with 2-in. hexagonal wire mesh, stretched tight, and finish with Carey No. 100 Hard Finish Asbestos Cement, troweled smooth.

Heating Pipes—Cover all mains, risers and returns (except horizontal radiator connections) with 1-in. thick Carocel Asbestos Sectional Pipe Covering.

Fittings—Cover all fittings and valves (except radiator valves) with asbestos cement approximately 1 in. thick, troweled smooth, and finish with canvas jacket smoothly pasted on. The canvas shall be the same weight as that used on the pipe covering.

Finish—All exposed canvas jackets shall be sized and painted with 2 coats of lead and oil paint of color selected by the architect. Pipe covering bands shall be applied on 18-in. centers.

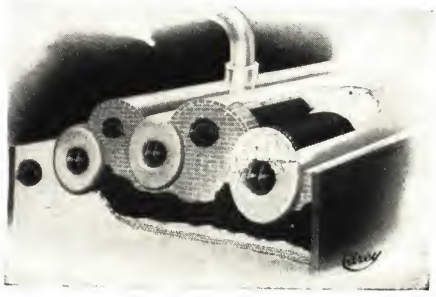
Specifications for Insulating Plumbing Systems

Hot Water Piping—Cover all hot water mains and piping with Carocel Asbestos Sectional Pipe Covering 1 in. thick.

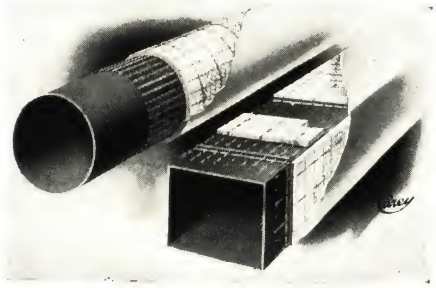
Cold Water Piping—Cover all cold water pipes within buildings, whether exposed or concealed, with Impervo Pipe Covering, in 2 layers, applied by the broken joint method, each layer being ½ in. thick. Cover all cold water pipes in entrances, areaways, unheated rooms or otherwise exposed to freezing, with Protecto Pipe Covering 1 in. thick.

Ice Water Piping—Cover all ice water pipes, whether exposed or concealed, with Impervo Pipe Covering, in 2 layers, applied by the broken joint method, each layer being ¾ in. thick.

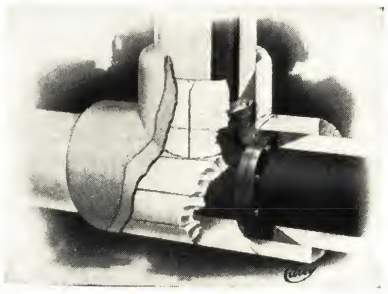
Finish—Same as for heating system.



Method of Insulating Boiler Tops, Ends and Walls



Methods of Insulating Boiler Breechings



Method of Insulating Fittings, Flanges, etc.

Carey Asbestos Cements

Besides a complete line of pipe covering and insulating material we offer the architect and engineer several grades of cements for insulating irregular surfaces, fittings, heating boilers, etc., also for filling in cracks between block insulation, and for finishing block insulation with a smooth surface. The cements are furnished in dry form in bags.

Carey No. 303 Asbestos Cement is the popular standard and requires no special knowledge or skill for application.

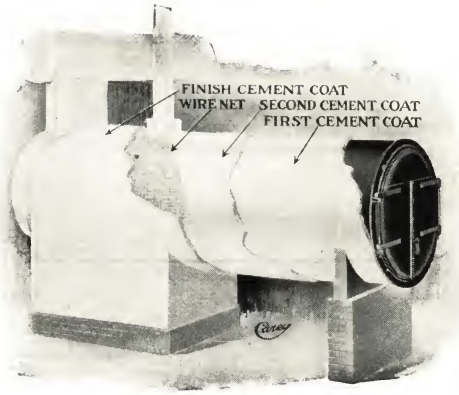
No. 707 contains longer fibre and has excellent insulating qualities.

No. 100 is a hard finish cement for final coating of boilers, tanks, etc.

To apply, mix with water to about the consistency of mortar and apply with a trowel in successive coatings approximately ½ in. thick, each coating being allowed to thoroughly dry before the next one is applied.

Covering Capacities—Covering capacities are approximately as follows:

Carey No. 303—16 to 18 sq. ft., 1 in. thick, per 100 lb.
Carey No. 100— 22 sq. ft., 1 in. thick, per 100 lb.
Carey No. 707—22 to 24 sq. ft., 1 in. thick, per 100 lb.



Application of Carey Asbestos Cements to Boiler Surfaces

JOHNS-MANVILLE

EXECUTIVE OFFICES

292 Madison Avenue, NEW YORK, N. Y.

For Branch Offices, see Section on Wall Tile

Products

JOHNS-MANVILLE INSULATIONS.

Also Packings for all purposes; Refractory Cements; Waterproofing and Dampproofing; Asbestos Ebony; Asbestos and Asphalt Roll-Roofing; Rotproof Roofs; Asbestos products of all kinds.

For the following Johns-Manville products, see Manufacturers' Index: Acoustical Treatment and Sound Isolation; Shingles; Built-up Roofing; Home Insulation; Insulating Board and Insulating Lath; Tile Flooring; Transite, Flat and Corrugated; Wall Tile.

JOHNS-MANVILLE INSULATIONS

General Information

An effort has been made to present to those engaged in writing insulation specifications or to those interested in any way in this subject, information which by virtue of its arrangement will lend itself to maximum economy of time and accuracy of reference.

The materials offered in these specifications have been suggested because of their recognized efficiency, durability and economy for the service for which they are indicated. We have endeavored where possible to include alternates, leaving the final selection of the material to be specified to those who, because of their intimacy with the problem at hand, are best able to make the proper decision.

I. HEAT INSULATIONS

Improved Asbestocel

Temperature up to 300° F. In sectional pipe insulation it ranges in thickness from two to four plies, each ply being a full quarter inch thick. Improved Asbestocel is also furnished in sheets and blocks ranging from two to eight plies in thickness, and in flexible rolls one-ply thick.

85% Magnesia

Temperature up to 600° F. Furnished in sectional pipe insulation and blocks and in various thicknesses.

Superex

Temperature 600° to 1600° F. Furnished in sectional pipe insulation and blocks in various thicknesses. Superex is a high temperature insulation used singly but more often in combination with 85% Magnesia or Asbesto-Sponge Felted Insulation.

Asbesto-Sponge Felted

Temperature up to 700° F. Furnished in sectional pipe insulation, sheets, and blocks in various thicknesses. Asbesto-Sponge Felted is of laminated construction and will withstand severe mechanical abuse.

Vitribestos

Temperature up to 700° F. Furnished in flat or curved sheets. A vitrified aircell sheet recommended for the lining of steel stacks to prevent corrosion.

Sil-O-Cel Natural Brick

Temperature up to 1600° F. Furnished in standard firebrick and special brick sizes.

Sil-O-Cel C-22 Brick

Temperature up to 2000° F. Furnished in standard firebrick and special brick sizes.

Super Fire-Felt

Temperature up to 700° F. Furnished in sheets and blocks in various thicknesses.

Asbestos Millboard No. 101-S

A strong, fireproof and heat resisting sheet used for many purposes. Recommended in these specifications for finishing the insulation of boiler tube doors.

Economy Range Boiler Cover

Made in one, two or three layers of one-inch felt, covered with muslin and quilted.

Keystone Range Boiler Cover

Made in one thickness only. It consists of a lining of asbestos felt, a layer of insulating felt and a jacket of 8-oz. canvas with lacing hooks attached.

Underground Conduit System

Temperature up to 700° F. A complete system for the insulation of all underground heating pipes, consisting of a terra cotta underdrain, vitrified tile conduit, pipe supports and rollers, and Johns-Manville Waterproof Asbestos Conduit Filling.

II. COLD INSULATIONS

Anti-Sweat

Temperatures 32° to 75° F. Furnished in sectional pipe insulation. Anti-Sweat is a double-layer broken joint insulation. The inner section has a lining and a jacket of waterproof felts; the outer layer is similarly waterproofed by a single layer of felt as a lining and two waterproof felts as a jacket. Anti-Sweat is used for cold water and ice water insulation.

Wool-Felt

Temperature 40° to 200° F. Furnished in sectional pipe insulation, asbestos paper or waterproof felt lines. Wool Felt is a single-layer cold or hot water pipe insulation.

Double-layer Wool-Felt is also made as an alternate to Anti-Sweat but with only a single waterproof felt used as a lining.

Built-up Hair Felt

Applied in two, three or four layer construction. Built-Up Hair Felt Insulation is used for protection against freezing of pipes in exterior walls or exposed places.

Ice Water Thickness Cork

Temperature 25° to 50° F. Furnished in sectional pipe insulation.

Brine Thickness Cork

Temperature 0° to 25° F. Furnished in sectional pipe insulation.

Heavy Brine Thickness Cork

Temperature below zero to 0° F. Furnished in sectional pipe insulation.

Rubbercork

Rubbercork is a plastic insulation for cold pipe fittings that is applied after the sectional cork pipe insulation is in place.

Built-up Brine and Ammonia

Temperature below zero to plus 50° F. A built-up waterproof hair felt. Recommended for brine and ammonia lines, to withstand vibration and shock.

Rock Cork

Temperature below zero to plus 100° F. Furnished in large size sheets (18x36 in.), generally applied in two-layer construction. J-M Rock Cork is suitable for all types of refrigerated construction and equipment.

Rock Cork Lagging

Temperature below zero to plus 100° F. An insulation for cylindrical tanks and other surfaces, furnished in various thicknesses.

Granulated Rock Cork

Temperature below zero to plus 100° F. Granulated Rock Cork is a loose filler type of insulation recommended for all types of refrigerated construction and equipment.

III. CEMENTS AND MISCELLANEOUS MATERIALS

Note: As the principal use of cements is for finishing block and sheet insulation, and as they are not used for insulating purposes alone except where sheets or blocks are impractical, it is suggested that our Engineering Department be consulted in connection with the selection of the proper cement for any unusual condition.

Sil-O-Cel C-3 Concrete

Temperature up to 1800° F. An insulating concrete. It may be cast monolithic in forms for the insulation of tube doors, baffles, dampers, etc.

Insulkote

Insulkote is a durable, plastic waterproof coating for finishing insulated surfaces exposed to weather conditions.

Double Coated Flexstone Weatherproof Jacket

A weatherproof jacket made from asbestos waterproofing felts, used to weatherproof insulated pipes exposed to moisture conditions.

SHORT FORM SPECIFICATIONS FOR FURNISHING AND APPLYING JOHNS-MANVILLE INSULATIONS

Heating and Ventilating Section

General Paragraphs

(Where applicable, the specification writer shall copy the general paragraphs. The general paragraphs shall be followed by the specifications relating to the specific equipment to be insulated.)

(1) Materials and Workmanship

All insulating materials shall be those furnished by Johns-Manville and all work executed under this contract shall be performed by them or their approved contractor, in strict accordance with their Detailed Specifications.

(2) Application

All Double Standard thick 85% Magnesia and all other insulation 3 in. thick and over, excepting insulating brick, shall be applied in two layers with all joints broken. All block and sheet insulation, unless otherwise noted, shall be finished with ½-in. thick hard finish Asbestos Cement reinforced with hexagonal mesh galvanized wire.

(3) Canvas

All insulation on pipes, fittings, valves and flanges located indoors and exposed to view (or in tunnels or accessible pipe chambers) shall be finished as follows:

Piping and screw fittings *(state weight—usually 4, 6 or 8 oz.)* ounce canvas sewed on over resin-sized paper.

Flanges, flanged fittings and valves *(state weight—usually 4, 6 or 8 oz.)* ounce canvas pasted on.

(4) Painting

All insulation which has been re-canvased shall be painted with one coat of glue sizing and two coats of first quality lead and oil paint of color selected. This work shall be done by *(state whether to be done by "this contractor" or if "as specified under" state where specified).*

(5) Fireproof Reinforced Asbestos Jacket

All insulation on piping in main pipe shaft or other locations indicated on plans, where a combustible finished insulation would constitute a fire hazard, shall be finished with a Fireproof Reinforced Asbestos Jacket.

Equipment Specifications

(The specification writer shall copy from these specifications the ones pertaining to the particular equipment to be insulated.) See also foregoing general paragraphs.

(6) Boiler Insulation

(A) Hot Air Furnace Insulation—The casing shall be insulated with Asbestos Cement to a total thickness of 1 in. applied in two coats, reinforced with 2-in. hexagonal mesh galvanized wire and finished hard and smooth.

Note: *The above specification is designed for small dwellings and for the general run of fuel such as coal, oil, natural gas, etc. However, where manufactured gas is used as fuel, the furnace should be insulated with 85% Magnesia Blocks and Asbestos Cement to a total thickness of not less than 1½ in.*

(B) Round Boiler Insulation—The boiler shall be insulated with Asbestos Cement to a total thickness of 1 in. applied in two coats reinforced with 2-in. hexagonal mesh galvanized wire and finished hard and smooth.

Note: *The above specification is designed for small dwellings and for the general run of fuel such as coal, oil, natural gas, etc. However, where manufactured gas is used as fuel, boiler should be insulated with 85% Magnesia Blocks and Asbestos Cement to a total thickness of not less than 1½ in.*

(C) Sectional Boiler Insulation—The boiler shall be insulated with 1½ in. thick 85% Magnesia Blocks.

***Note:** This specification should be used where highest type of insulation is desired.*

Alternate: The boiler shall be insulated with 4-ply Improved Asbestocel Blocks.

***Note:** This alternate may be used where it is necessary to consider initial cost but must not be used where surface temperature exceeds 300° F.*

(D) Fire-Tube Boiler Insulation—*(I) Boiler Shell*— The exposed steam and water surfaces of boiler shall be insulated with *(state thickness, see Note)* thick 85% Magnesia Block Insulation.

***Note:** Steam pressures up to 99 lbs., use 1½-in. thickness. Steam pressures from 100 to 199 lbs. use 2-in. thickness.*

(II) Boiler Walls or Settings—The outer 4½ in. of brick shall be a veneer of Sil-O-Cel C-22 brick.

(E) Water Tube Boiler Insulation—*(I) Drums and Drum Heads*—The exposed steam and water surfaces of boiler including drums and drum heads shall be insulated with *(state thickness, see Note)* thick 85% Magnesia Block Insulation.

***Note:** Steam pressures up to 99 lbs. use 1½-in. thickness. Steam pressures from 100 to 199 lbs. use 2-in. thickness. Steam pressures 200 lbs. and over, use 2½-in. thickness.*

(II) Boiler Wall or Setting Insulation—(a) Solid Fire Brick Walls—The exposed surfaces of boiler setting shall be insulated with 3-in. thick Superex-85% Magnesia Combination Block Insulation on portions opposite the furnace and 1½-in. thick 85% Magnesia Blocks on the remainder of the setting. The insulation shall be finished with ⅜-in. thick Transite Asbestos Wood Casing.

***Note:** This specification should be used where highest type of insulation is desired.*

Alternate: The insulation shall consist of a 4½-in. thick veneer course of Sil-O-Cel C-22 Brick.

***Note:** This alternate may be used where it is necessary to consider initial cost.*

(b) Air-Cooled Walls—

***Note:** Air-Cooled boiler walls should be insulated. Recommendations vary with type of wall used. Details and recommendations may be obtained upon request.*

(c) Water-Cooled Walls—

***Note:** Recommendations vary with type of wall used. Details and recommendations may be obtained upon request.*

(III) Boiler Tube Door Insulation—The tube doors shall be lined with 2-in. thick Super Fire-Felt Sheets and finished with ¼-in. thick No. 101-S Asbestos Millboard.

***Note:** This specification may be used regardless of whether the boiler tube door has been hung or not.*

Alternate: The inner recessed portion of the tube doors shall be completely filled with Sil-O-Cel C-3 Concrete. Reinforcement shall be provided for the Concrete.

***Note:** Inasmuch as this material is tamped in place, the foregoing alternate can be used only before the door is hung and when it can be laid in a horizontal position.*

(7) Smoke Flue and Up-take Insulation

(A) External Insulation—The smoke flue, including uptake, shall be insulated with 2-in. thick *(state type of insulation, see Note)* Block Insulation applied over an air space.

***Note:** Temperatures up to 600° F. use 2-in. thick 85% Magnesia. Temperatures 600° to 1000° F. use 2-in. thick Superex.*

(B) Internal Insulation—The smoke flue and up-take shall be lined with 2-in. thick Superex Block Insulation held securely in place and finished with ½-in. thick No. 319 Cement. On the inside surface to be insulated, suitable angle supports shall be furnished by *(state by whom—usually the Steel Contractor)* as specified under *(state where specified).*

***Note:** This specification should not be used over 1000° F. as this represents the temperature limit of the wire reinforcement.*

(8) Steel Stack Insulation

(A) Internal Insulation—The stack shall be lined with Sil-O-Cel Natural Brick 2½ in. thick, and finished with No. 319 Cement ½ in. thick.

Angle rings shall be placed in the stack by *(state by whom—usually the Steel Contractor)* as specified under *(state where specified).*

(They shall be placed on 37-in. centers vertically, with the outstanding leg punched with ¼-in. holes on 12-in. centers.)

(B) External Insulation—The stack shall be insulated on the outside with 2-in. thick *(state insulation to be used, see Note).*

Angle rings shall be placed on the stack by *(state by whom—usually the Steel Contractor)* as specified under *(state where specified).*

(They shall be placed on 37-in. centers vertically, with the outstanding leg punched with ¼-in. holes on 12-in. centers.)

***Note:** Temperatures up to 600° F. use 85% Magnesia Blocks. Temperatures 600° to 1000° F. use Superex Blocks.*

(9) Brick Stack Insulation

The stack shall be insulated on the outside with 2-in. thick 85% Magnesia Blocks. Bolts shall be set in the brick work by *(state by whom)* as specified under *(state where specified).* (They shall be set in vertical rows 36½ in. on center and shall be spaced 12 in. apart.)

(10) Ceiling Insulation

The ceiling of the boiler and engine rooms shall be insulated with 2-in. thick 85% Magnesia Blocks finished with *(state finish, see Note).*

***Note:** The above insulation may be finished with hard finish Asbestos Cement or Transite Asbestos Wood. Specify type of finish desired. Supports for the insulation are required. These shall be provided by others. Refer to detail specification for this work.*

(11) Domestic Hot Water Range Boiler Insulation

The hot water range boiler shall be insulated with Johns-Manville *(state type, see Note)* Range Boiler Cover. The Range Boiler Cover shall be applied in a neat and workmanlike manner with all joints butted and tightly laced.

***Note:** Where hot water is heated by a coal-fired heater or an ordinary intermittent gas heater, "Keystone" type should be specified. Where water is heated by a gas heater controlled by a thermostat, "1-ply Economy" type should be specified. Where water is heated by electricity, "2-ply Economy" type should be specified.*

(12) Hot Water Heater and Hot Water Storage Tank Insulation

The hot water heater and hot water storage tank shall be insulated with 1½-in. thick 85% Magnesia Block Insulation.

***Note:** This specification should be used where highest type of insulation is desired.*

Alternate: The hot water heater and hot water storage tank shall be insulated with Asbestos Cement applied in two coats to a total thickness of 1-in., reinforced with 2-in. hexagonal galvanized mesh wire and finished hard and smooth.

***Note:** This alternate is designed for small dwellings and for the general run of fuel such as coal, oil, natural gas, etc. However, where manufactured gas is used as a fuel, this alternate specification should not be used.*

(13) Feed Water Heater Insulation

The feed water heater shall be insulated with 1½-in. thick 85% Magnesia Block Insulation.

(14) Hot Air Heater, Ducts and Heater Casing Insulation

All heater casings, fan housings and warm air ducts and flues shall be insulated with 1½-in. thick 85% Magnesia Blocks.

***Note:** This specification should be used where highest type of insulation is desired.*

Alternate: All heater casings, fan housings and warm air ducts and flues shall be insulated with 4-ply Improved Asbestocel Sheets.

***Note:** This alternate may be used for all ordinary conditions.*

(15) Steam Pump Insulation

The steam and hot water cylinders and chests of all pumps shall be insulated with 2-in. thick 85% Magnesia Blocks filled out with Asbestos Cement. On heads and chests, this insulation shall be made removable and replaceable.

A suitable Russia iron jacket to be furnished by *(state by whom—usually the owner)* shall be used to finish the insulation.

(16) Auxiliary Turbine Insulation

The casings of auxiliary turbine shall be insulated with 2-in. thick 85% Magnesia Blocks filled out with Asbestos Cement.

(17) Main Turbine Insulation

(Specification furnished on request.)

(18) Hot Air Pipe Insulation

All hot air piping shall be insulated with two layers of 1-ply Asbestocel in flexible roll form, wired on, and all joints sealed with a 3-in. wide strip of Asbestos Paper pasted on.

Note: *This specification is designed for a small dwelling and for the general run of fuels such as coal, oil, natural gas, etc. However, where manufactured gas is used as the fuel, three layers of 1-ply Asbestocel is recommended.*

(19) Hot Water Pipe Insulation

All hot water piping shall be insulated with Standard Thick 85% Magnesia Pipe Insulation.

Note: *This specification should be used where highest type of insulation is required.*

Alternate: All hot water piping shall be insulated with 4-ply Improved Asbestocel Pipe Insulation.

Note: *This alternate may be used where it is necessary to consider initial cost.*

Alternate: All hot water piping shall be insulated with 3-ply Improved Asbestocel Pipe Insulation.

Note: *This alternate is designed for a small dwelling and for the general run of fuels such as coal, oil, natural gas, etc. However, it should not be used where manufactured gas is used as the fuel.*

(20) Steam Pipe Insulation—Indoors

Temperature up to 600° F.

All steam piping shall be insulated with 85% Magnesia Pipe Insulation according to the following table:

Pressure or condition	Temperature range	Thickness		
		Pipes larger than 4 in.	Pipes 2 in. to 4 in.	Pipes smaller than 2 in.
Up to 24 lbs.....	212° to 265° F.	Std.	Std.	Std.
25 lbs. to 99 lbs...	266° to 337° F.	1½ in.	Std.	Std.
100 lbs. to 200 lbs..	338° to 388° F.	2 in.	1½ in.	Std.
Low superheat	389° to 499° F.	Dbl. std.	2 in.	1½ in.
Superheat	500° to 599° F.	3 in.	Dbl. std.	2 in.

Note: *Asbestos-Sponge Felted Insulation may be specified for the above service where extra mechanical strength is desired. The thicknesses may be taken from the above table; Standard Thick in table to be specified as 1 in., Double Standard as 2½ in.*

Alternate: All steam piping shall be insulated with 4-ply Improved Asbestocel.

Note: *This alternate may be used where it is necessary to consider initial cost but must not be used on piping carrying steam over 300° F.*

(21) Steam Pipe Insulation—Indoors

Temperature 600° to 800° F.

All steam pipes, 600° to 800° F., shall be insulated with Superex-85% Magnesia Combination Insulation according to the following table:

Condition	Temperature range	Thickness		
		Pipes larger than 4 in.	Pipes 2 in. to 4 in.	Pipes smaller than 2 in.
Superheat ..	600° to 699° F.	3½ in.	3 in.	2 in. (see Note A)
Superheat ..	700° to 800° F.	4 in.	3½ in.	2 in. (see Note A)

Note A: *On pipes smaller than 2 in., the entire insulation shall consist of one layer of Superex. On pipes 2 in. and larger, the insulation shall consist of an inner layer of Superex, approximately 1½ in. thick, and an outer layer of 85% Magnesia, either 1½ in. or 2 in. thick, to make up the total thickness as specified.*

Note B: *Asbesto-Sponge Felted Insulation may be specified for the above service where extra mechanical strength is desired. In this case, for temperatures up to 700° F., Asbesto-Sponge Felted Insulation shall be specified for the entire total thickness; and for temperatures, 700° to 800° F., Asbesto-Sponge Felted Insulation shall be specified only for the outer layer, in place of the 85% Magnesia Insulation.*

(22) Heating Returns and Radiator Branch Insulation

All heating returns, runouts and concealed radiator branches shall be insulated with 3-ply Improved Asbestocel.

(23) Fittings and Valve Insulation

All fittings smaller than 4 in. shall be insulated with hard finish Asbestos Cement to a thickness equal to that of the adjacent insulation. All bodies of fittings and valves, 4 in. and larger, shall be insulated with block insulation of the same material and to a total thickness equal to the adjacent pipe insulation.

(24) Flange Insulation

(A) Permanent Type—All flanges shall be insulated with block insulation of the same material and to the same total thickness as adjacent pipe insulation, extending over the adjacent pipe insulation at least 2 in. The space between the flange insulation and the pipe insulation shall be filled with Asbestos Cement.

All flanges on piping smaller than 4 in. shall be insulated with hard finish Asbestos Cement to the same thickness as the adjacent pipe insulation.

(B) Removable and Replaceable Type—All flanges shall be insulated with block insulation, removable and replaceable, and Contractor shall submit sample to the *(state to whom—Architect or Consulting Engineer)* for approval. The flange insulation shall be of the same total thickness as the adjacent pipe insulation, extending over the adjacent pipe insulation at least 2 in. The space between the flange insulation and the pipe insulation shall be filled with Asbestos Cement.

(25) Overhead Outdoor Insulation

All hot piping, or surfaces, located outdoors and above ground, shall be insulated with the same materials as specified for indoor lines, or surfaces, but shall be ½ in. greater in thickness.

Insulation on piping shall be protected from the weather by means of a Double-coated Flexstone Weatherproof Jacket. Insulation on fittings and surfaces other than piping shall be weatherproofed by the application of ¼-in. thick Insulkote applied over ¼-in. thick Asbestos Cement.

Note: *Asbesto-Sponge Felted Insulation with an Integral Weatherproof Jacket may be used for the above service where extra mechanical strength of the insulation is necessary. The thickness specified should be the same as would be required for 85% Magnesia under the same conditions.*

(26) Underground Pipe Insulation Within Building

All underground steam and hot water lines within buildings, such as unexcavated spaces or pipe trenches, shall be insulated with Asbesto-Sponge Felted Insulation with Integral Waterproof Jacket to a thickness not less than that specified for the same line in the building.

(27) Underground Pipe Insulation Outdoors

All steam and hot water lines running underground outside of building shall be installed in Johns-Manville System of Underground Insulation in strict accordance with manufacturers' specifications.

Alternate: All underground heating pipes to garages, etc., shall be insulated with 1½-in. thick Asbesto-Sponge Felted Pipe Insulation with Integral Weatherproof Jacket, wired on, and sealed with lap cement. The insulation shall be further waterproofed by a Double-coated Flexstone Weatherproof Jacket wired on. The pipe shall be surrounded with enough broken stone to provide proper drainage.

Note: *This alternate is designed for small dwellings where short runs of steam or hot water piping go to a service building.*

(28) Cold Water Service Pipe Insulation

All cold water service piping shall be insulated with 1-in. thick double-layer Anti-Sweat Insulation applied with all joints broken. Fittings and valves and flanges in this piping shall be insulated with hair felt and hard finish Asbestos Cement to a total thickness of 1 in.

Note: *The foregoing specification should be used where the highest type of insulation and waterproofing is desired.*

Alternate: All cold water service piping shall be insulated with 1-in. thick waterproof felt-lined double-layer Wool Felt

Pipe Insulation applied with all joints broken. Fittings and valves and flanges in this piping are to be insulated with hair felt and hard finish Asbestos Cement to a total thickness of 1 in.

Note: *This alternate may be used where first cost is an important factor. Double-layer Wool Felt, however, does not have the waterproofing properties of Anti-Sweat. It should not be used under conditions of high humidity.*

Alternate: All cold water service piping shall be insulated with 1-in. thick waterproof felt-lined Wool Felt Pipe Insulation. Fittings and valves and flanges in this piping are to be insulated with hair felt and hard finish Asbestos Cement to a total thickness of 1 in.

Note: *This alternate is designed for small dwellings, or where cost does not permit the use of a better type of insulation.*

SHORT FORM SPECIFICATIONS FOR FURNISHING AND APPLYING JOHNS-MANVILLE INSULATIONS

Plumbing and Refrigeration Section

General Paragraphs

(Where applicable, the specification writer shall copy the general paragraphs. The general paragraphs shall be followed by the specifications relating to the specific equipment to be insulated.)

(29) Materials and Workmanship

(See Paragraph 1.)

(30) Application

All block and sheet insulation, unless otherwise noted, shall be finished hard and smooth with ½-in. thick hard finish Asbestos Cement reinforced with hexagonal mesh galvanized wire.

(31) Canvas

(See Paragraph 3.)

(32) Painting

(See Paragraph 4.)

(33) Fireproof Reinforced Asbestos Jacket

(See Paragraph 5.)

Equipment Specifications

(The specification writer shall copy from these specifications the ones pertaining to the particular equipment to be insulated.) See also foregoing general paragraphs.

(34) Hot Water Heater and Storage Tank Insulation

(See Paragraph 12.)

(35) Domestic Hot Water Range Boiler Insulation

(See Paragraph 11.)

(36) Hot Water Pipe Insulation

(See Paragraph 19.)

(37) Cold Water Pipe Insulation

(See Paragraph 28.)

(38) Iced or Drinking Water Pipe Insulation

All piping carrying cooled drinking water shall be insulated with Ice Water Thickness Cork Insulation of 1½-in. thick double-layer Anti-Sweat applied with all joints broken. Fittings and valves on pipes insulated with Anti-Sweat shall be insulated with hair felt and waterproof membrane to a total thickness equal to the adjacent pipe insulation. If Cork Insulation is used, fittings and valves shall be insulated with Rubbercork to a thickness ½ in. greater than the adjacent pipe insulation.

(39) Insulation of Cold Pipes Exposed to Freezing

Wherever cold water, soil, or waste pipes are exposed to freezing and is so designated on the plans, they shall be insulated with three (or more) layers of Built-up Hair Felt Insulation. Fittings and valves shall be insulated in the same manner as the adjacent piping. (Recommendations may be obtained upon request.)

Note: *Where pipes are in exposed locations and likely to be subjected to freezing, care should be taken to indicate these locations upon the plans.*

(40) Insulation for Pipes Carrying Liquids or Gases at Low Temperatures

All pipes carrying brine, ammonia or other liquids or gases at low temperatures, shall be insulated with Cork or Built-up Brine and Ammonia Insulation according to the following table:

Temperature range	Thickness	
	Cork	Built-up brine and ammonia
24° to 15° F.	Brine	2-layer
14° to 0° F.	Brine	3-layer
Minus 1° to minus 10° F.	Heavy brine	3-layer
Minus 11° to minus 20° F.	Heavy brine	4-layer

On cork insulated pipes, the fittings, valves and flanges shall be insulated with Moulded Cork Insulation to a thickness equal to that of the adjacent pipe insulation. On pipes covered with Built-up Brine and Ammonia Insulation, the fittings, valves and flanges shall be insulated in the same manner as the adjacent piping.

(41) Cylindrical Tank Lagging for Cold Liquids

All cylindrical tanks such as Brine Coolers, Accumulators, Cold Water Storage Tanks, etc., shall be lagged with J-M Rock Cork, cemented to the tank with hot asphaltic cement and finished with plastic asphalt.

Thicknesses shall be according to the following table:

Temperature range	Thickness
15° to 24° F.	12 in.
25° to 39° F.	10 in.
40° to 50° F.	6 in.
Above 50° F.	3 in.

(42) Cold Room and Equipment Insulation

All floors, walls and ceiling areas in cold rooms, and all surfaces of cold equipment, shall be insulated with J-M Rock Cork applied in one or more layers, breaking all joints. Thicknesses shall be according to the following table:

Temperature range	Thickness	Number of layers
Minus 25° to minus 16° F.	8 in.	2 or 3
Minus 15° to minus 1° F.	7 in.	2 or 3
0° to plus 14° F.	6 in.	2 or 3
15° to 24° F.	5 in.	2
25° to 39° F.	4 in.	2
40° to 50° F.	3 in.	1
Above 50° F.	2 in.	1

Note: *Where the dead load on the insulation is excessive, consult nearest Johns-Manville office for detailed specifications.*

Alternate: All types of construction and equipment requiring a loose filler type of insulation, shall be insulated with J-M Granulated Rock Cork, packed to a density of 14 lb. per cu. ft. Thicknesses shall be according to the following table:

Temperature range	Thickness
15° to 24° F.	12 in.
25° to 39° F.	10 in.
40° to 50° F.	6 in.
Above 50° F.	3 in.

Note: *Provision for proper waterproofing should always be made in the application of this material.*

KEASBEY & MATTISON COMPANY

"Makers of the Best in Asbestos"

AMBLER, PA.

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BUFFALO, N. Y., E. J. Eddy, Inc. BIRMINGHAM, ALA., Dixie Asbestos Co. LOS ANGELES, CAL., Farrington Engineering Co. PORTLAND, ORE., Gillen-Cole Co. ST. LOUIS, MO., L. Mundet & Son, Inc. KANSAS CITY, MO., Standard Asbestos Mfg. & Insulating Co. and L. Mundet & Son, Inc.

Products

K&M Ambler ASBESTOS PRODUCTS

PIPE COVERING and BLOCKS:

"Featherweight" 85% Magnesia Sectional Covering and Blocks; Ambler High Temperature Covering and Blocks; Ambler Asbestos Aircell Covering for low pressure steam.

AMBLER INSULATING and FINISHING CEMENTS:

Asbestos Insulating Cement.
85% Magnesia Insulating Cement.
Hard Finishing Cement.

Ambler Asbestos Aircell Board; Ambler Asbestos Paper and Millboard; Ambler Asbestos Corrugated Aircell Paper.

Ambler Asbestos Textiles: Cloth; Selvage Edge Tape; Braided Sleeving or Tubing; Yarns; Threads; Fireproof Theatre Curtains and Screens; Clothing.

Ambler Asbestos Packings and Gaskets: Wick and Rope; Braided Packings; Valve Stem Packing; Ring Packing; Air Pump Packing; Manhole and Handhole Gaskets; Woven Sheet Packing; Compressed Sheet Packing.

Contract Work

K & M is equipped through its various branches to supply and install on contract basis a complete insulation job.

Company's Source of Asbestos

As KEASBEY & MATTISON COMPANY controls its source of crude asbestos, owning the Bell Asbestos Mines at Thetford Mines, P. Q., Canada, one of the world's most productive mines of high grade Chrysotile Asbestos, this company is assured of a constant supply of long-fibred asbestos so necessary in making a thoroughly efficient insulation.

K & M "Featherweight" 85% Magnesia Sectional Coverings and Blocks

KEASBEY & MATTISON COMPANY were the original makers of 85% Magnesia Covering, so called because it is composed of about 85% basic carbonate of magnesia and 15% of asbestos fibre. The magnesia is bound together with the carded long-fibred asbestos, giving it the necessary structural strength. K & M "Featherweight" 85% Magnesia is very light in weight, fireproof and extremely durable. It will not injure piping and has the highest insulation value. Impartial expert engineering tests showing its superiority will gladly be sent upon request.

K & M "Featherweight" 85% Magnesia Sectional Coverings are canvas-jacketed and 36 in. long per section. They are made in all standard and double standard thicknesses, 1½ ins. thick, 2 ins. thick and 3-in. broken joint construction, and also in combination with Ambler High Temperature Insulation.

K & M "Featherweight" 85% Magnesia is also made in sectional blocks for covering boilers and similar hot surfaces. Blocks are easy to apply and remove, and are very effective in saving heat by preventing radiation from all heated surfaces.

Thicknesses range from ½ to 3 ins.



85% Magnesia is also available as a cement in plastic form for troweling. Furnished in bags of 60 lb. each. Coverage, approximately 40 sq. ft., 1 in. thick.

Ambler High Temperature Sectional Covering and Blocks

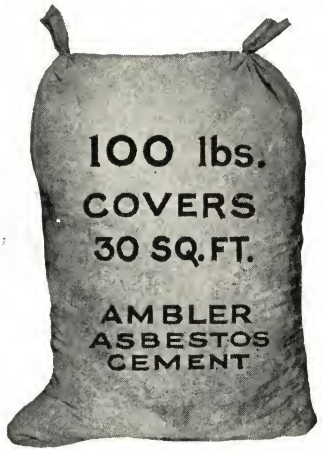


Recommended for temperatures in excess of 700° F.

These coverings have a high insulating value and will withstand temperatures up to 1500° F. Furnished in same moulded shapes and thicknesses as 85% Magnesia Coverings and Blocks.

Ambler High Temperature Insulating Cement

Has a covering capacity of 35 sq. ft. 1 in. thick per bag. Furnished in 100-lb. bags.



Ambler Asbestos Cement

For use on low pressure boilers and other heating equipment. Composed of a finely divided insulating material with an asbestos fibre binder. Surpassed only by 85% Magnesia Cement.

Catalogues

Ambler has just prepared separate catalogues on its heat insulation and textile products, the latter including packings and gaskets demanded for various types of engineering practice. Copies of either or both will be sent to any engineer requesting them.

ARMSTRONG CORK & INSULATION COMPANY

Manufacturers of and Contractors for Cold Storage and Cold Pipe Insulation

935 Concord Street, LANCASTER, PA.

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*BALTIMORE, MD., John R. Livezey, 526-530 St. Paul Street
*LOS ANGELES, CAL., Gay Engineering Corp., 2650 Santa Fe Avenue
*NEW ORLEANS, LA., H. T. Steffee, 928-930 Tchoupitoulas Street
*PHILADELPHIA, PA., John R. Livezey, Glenwood Avenue, West of 22nd Street
PORTLAND, ORE., Gillen-Cole Co., 15th and Overton Streets
*SAN FRANCISCO, CAL., Van Fleet-Freear Co., 557 Howard Street
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*These maintain ample warehouse stocks of Armstrong's Corkboard

Products

ARMSTRONG'S CORKBOARD for the insulation of cold storage, freezing and constant temperature rooms and tanks.

ARMSTRONG'S TYPE IK CORKBOARD for the insulation of equipment such as refrigerated cars and trucks, tank trucks, portable cabinets, boxes, and quick-frozen food cases.

ARMSTRONG'S CORK COVERING for brine, ammonia, refrigerated drinking water and all other low temperature pipe lines.

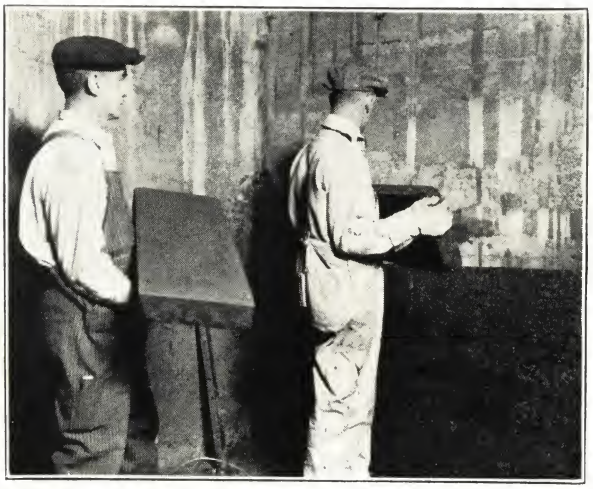
See Manufacturers' Index for Armstrong's Corkboard for insulation of walls and roofs of normally heated buildings; Armstrong's Vibracork for reducing vibration of moving machinery; Armstrong's Corkoustic for sound-quieting and acoustical treatment; Armstrong's Temlok for house and roof insulation.

Armstrong's Corkboard

Armstrong's Corkboard is generally recognized as the standard insulation for cold storage and constant temperature rooms of all kinds.

Advantages—Containing no foreign substances and consisting only of pure cork, the heat conductivity of Armstrong's Corkboard is low. It will not absorb moisture. It is easy to install, and when erected properly, Armstrong's Corkboard is proof against mold, rot, and vermin, and will not absorb or give off offensive odors or deteriorate in any way. Furthermore, Armstrong's Corkboard is slow burning and does not smolder or carry fire. It has been tested and approved by the National Board of Fire Underwriters.

Armstrong's Corkboard is giving excellent satisfaction in thousands of plants employing refrigeration, situated throughout the world.



Erecting Armstrong's Corkboard Against Concrete Walls in Portland Cement Mortar.



Cold Storage Room Insulated with 6 Inches of Armstrong's Corkboard, Fisherman's Cooperative Sales & Cold Storage Co., Detroit, Mich.

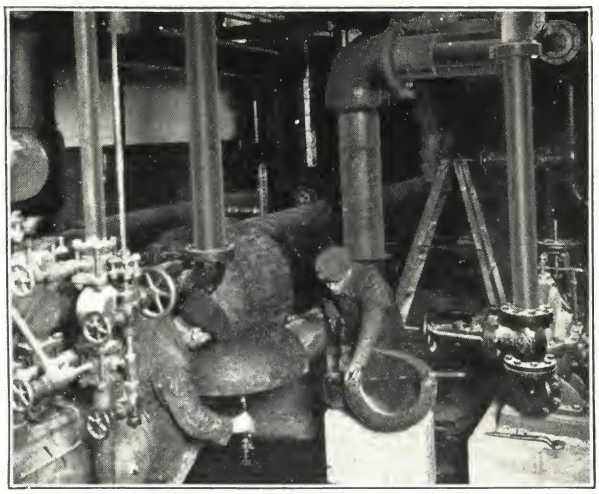
Specifications—An efficient barrier to heat flow to refrigerated areas necessitates the following:

(1) Insulation which is structurally strong, a non-supporter of combustion, moisture resisting, easy to apply, and low in conductivity.

(2) Application with the right kind of sundry material including the proper preparation of the wall and selection of the right kind of material for finishing the insulation.

(3) Application by experienced craftsmen.

Generally speaking, a dense wall structure such as monolithic concrete is preferred. A porous material such as hollow tile should be avoided. The walls should be sprayed with two coats of Armstrong's No. 3 Asphaltic Paint according to our standard specifications. Armstrong's Corkboard in the proper thickness should then be erected in Armstrong's special erection Asphalt, specially selected because of its ductility and holding qualities at low temperatures.



Applying Armstrong's Cork Covering and Lagging at the Plant of J. Butler & Co., Long Island City, N. Y.

Ordinarily, Armstrong's Corkboard on walls and ceilings can be finished with portland cement plaster applied directly to the exposed cork surface. However, for ceilings or for other conditions where considerable moisture is prevalent, Armstrong's Mastic Finish should be used.

For a finish not quite so impervious as mastic finish, but which will give a smoother surface, specify Armstrong's Plastic Emulsion, a plastic finish applied on the job in two coats, each 1/8-in. thick.

Partition Walls—Partition walls of Armstrong's Corkboard can be erected without the necessity of a concrete, brick, or tile supporting surface. If such a wall is built of an asphalt core it should have at least one surface plaster finish to give the wall rigidity. Some architects and engineers specify tee irons embodied in such walls to obtain the same result.

Thickness of Insulation to Be Used—The cost of refrigeration determines the economic thickness of insulation. Generally speaking, the following thicknesses should prove effective in the temperate zone:

Room temperature	Recommended thickness	Room temperature	Recommended thickness
45° F. and above	2 in.	5° F. to 20° F.	5 in.
35° F. to 45° F.	3 in.	− 5° F. to + 5° F.	6 in.
20° F. to 35° F.	4 in.	−20° F. to − 5° F.	8 in.

Erection Service—For best results insist on Armstrong's Corkboard erected by Armstrong's Construction Department, or authorized agents employing qualified mechanics.

Armstrong's Cork Covering

Armstrong's Cork Covering has been used for insulation of cold lines for approximately thirty years. Its worth has been proved. Coated inside and out with an asphalt mastic finish ironed on, Armstrong's Cork Covering is protected against deterioration due to moisture absorption and the dangers of frost. Armstrong's Cork Covering effects a saving of approximately 85% of the refrigeration which would be lost from bare pipes. Accuracy in manufacturing methods and good application insure a finished job that frequently will outlast the pipe. You should therefore insist on Armstrong's Cork Covering being applied by Armstrong's Construction Department, or our authorized agents.

Forms and Sizes—Armstrong's Cork Covering is supplied in molded covers for practically all standard, screwed and flanged fittings and in 36-in. split sections for straight pipe runs of the sizes ordinarily used. Armstrong's Cork Covering is made in three thicknesses:

(1) Special Thick Brine—For lines carrying refrigerant from 0° to —25° F.

(2) Brine Thickness—For lines carrying refrigerant between 0° F. and 35° F.

(3) Ice Water Thickness—For refrigerated drinking water lines and others where temperatures are above 35° F.

Armstrong's Cork Covering is also furnished in the form of lagging for the larger sizes of pipes and fittings, beveled to the proper radius; and in any thickness for the insulation of tanks and other cylindrical cold surfaces.

Samples and Literature—Our book, "Armstrong's Cork Covering," contains complete information and specifications of inestimable value to all users of refrigeration. A copy of this book and a sample of the covering will be sent on request without charge or obligation.

Drinking Water Systems

The refrigerated drinking water system has, in recent years, become firmly established not only as a modern convenience, but as a requisite of economy and efficiency in mills and factories, hotels, office buildings, and other public and semi-public buildings.

Armstrong's Cork Covering in ice water thickness is especially adapted for the insulation of the distributing lines and apparatus. It is neat in appearance, moisture-proof and fire retardant. Its high insulating efficiency insures a minimum use of refrigeration, and its durability is a guarantee of long life in service.

Booklet—A publication, "Refrigerated Drinking Water for Mills, Public Buildings, Hotels and Office Buildings," contains valuable data on water, power, and refrigeration requirements, approximate costs, etc. A copy will gladly be mailed on request.

Special Service

The application of refrigeration to various kinds of equipment, the cost of refrigeration under various circumstances, and other factors make this science so complicated that few architects and engineers can specialize enough to keep step with the progress in the industry. We employ experienced sales engineers whose function it is to keep advised on what is best for each type of installation. We strongly suggest, therefore, that in contemplating a specification you avail yourself of the recommendations and services of our sales engineers. With a thoroughly trained construction force the Armstrong Cork & Insulation Company is prepared to handle complete contracts of any size for the erection of its products

CORK INSULATION CO., INC.

Manufacturers, Engineers and Contractors
Cold Storage Construction

GENERAL OFFICES
154 Nassau Street, NEW YORK, N. Y.

BRANCH OFFICES
BOSTON, MASS. LOS ANGELES, CAL. SAN FRANCISCO, CAL. ST. LOUIS, MO.
*CHICAGO, ILL. PHILADELPHIA, PA. SEATTLE, WASH. ST. PAUL, MINN.
BALTIMORE, MD.

IN CANADA: Cork Insulation Co. (Canada) Ltd., MONTREAL, QUE., VANCOUVER, B. C.
*Represented by Corinco Insulation Co., Inc.

Products

CORINCO CORKBOARD for cold storage insulation.

CORINCO CORK PIPE COVERING for cold lines.

CORINCO CORK LAGGING for brine coolers, drinking water tanks, accumulators and cylindrical surfaces in general.

PANEL SYSTEM of MARINE INSULATION for refrigerated holds and cargo spaces of vessels.

For Corinco Acoustical Corkboard for acoustical correction; Corinco Corkboard for building insulation; and Corinco Machinery Isolation for absorption of machine vibration, see Manufacturers' Index.

The Company

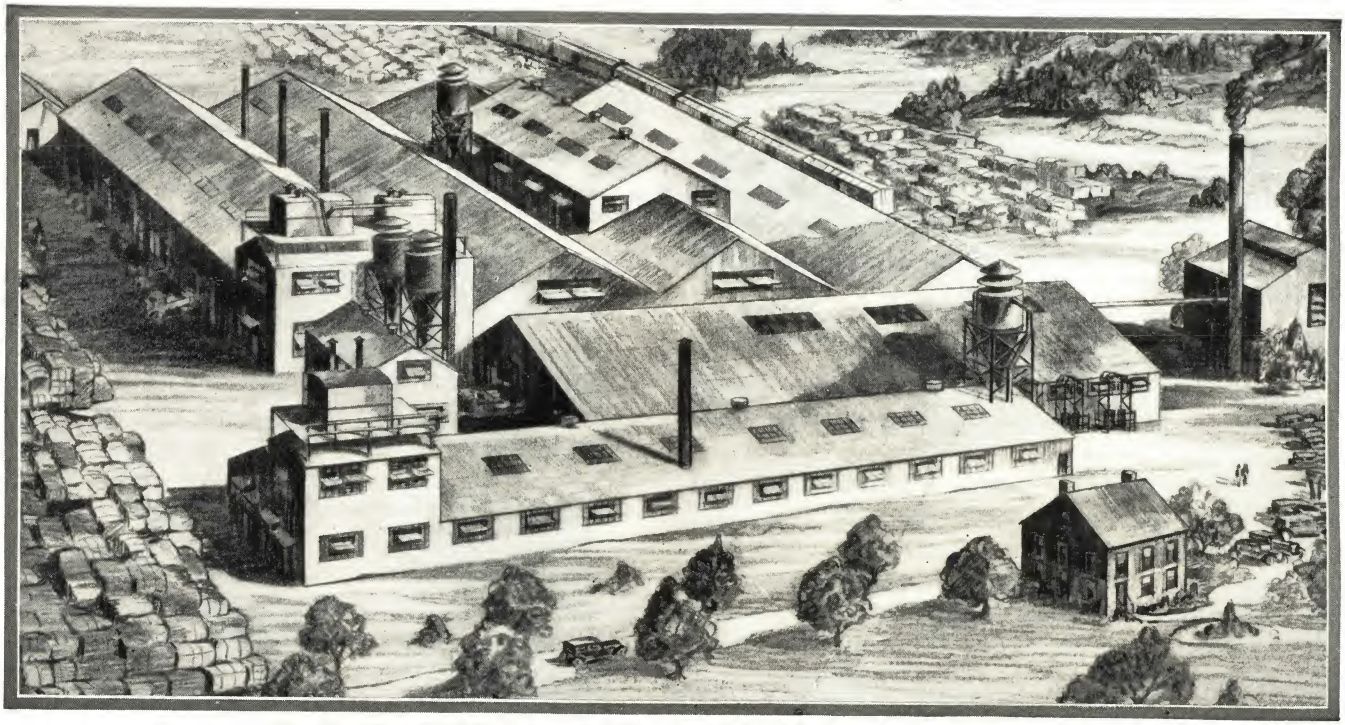
The CORK INSULATION CO., INC., was organized in 1924 to provide a complete insulation service for architects, owners and builders. The Company manufactures its own cork products in modern factories located at Wilmington, Delaware, and Algeciras, Spain. The management of the Company is composed of men who have had years of practical experience with cork, gained through the erection and operation of large cold storage, shipping and packing enterprises. Staff engineers of CORK INSULATION CO., INC., are specialists in refrigeration and insulation and are ready to assist architects without fee or obligation. Many noteworthy installations in United States, Canada and Mexico stand to their credit. A partial list of the firms they have served is given on the following pages.

Service Organization

The Company maintains ample branch and warehouse facilities throughout the country. In charge of each branch is an experienced engineer, who is qualified to advise on insulation design and erection. Working under each branch manager is an experienced erection superintendent and a trained crew of construction men who have been carefully taught how to handle cork in its various applications. The Company's service is complete, embracing manufacturing, engineering, and construction—enabling you to place a job in one pair of hands representing years of experience and large financial responsibility.

Catalogue

The Corinco Cork Products Catalogue, which explains in detail the Company's products, policies and progress, is profusely illustrated and will be of assistance to any architect interested in cold storage construction or acoustical correction. We will welcome the opportunity to send you a copy. Address the nearest office.



The New Factory of Cork Insulation Co., Inc., Located at Wilmington, Delaware

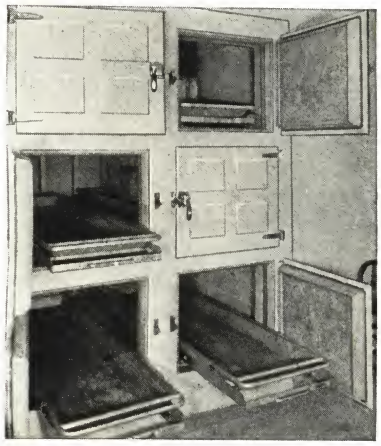
All machinery is of latest design, and the plant is a model of efficiency in its field. Corinco Cork Products represent the utmost in quality that modern manufacturing facilities, expert workmanship and experienced management can put into them.

CORINCO CORKBOARD

Advantages

The essential job that Corinco Corkboard performs is to prevent the transmission of heat.

Corinco Corkboard is made of pure granulated cork, which is compressed in moulds and baked until the natural gum melts and binds the mass together. No artificial binder is used.



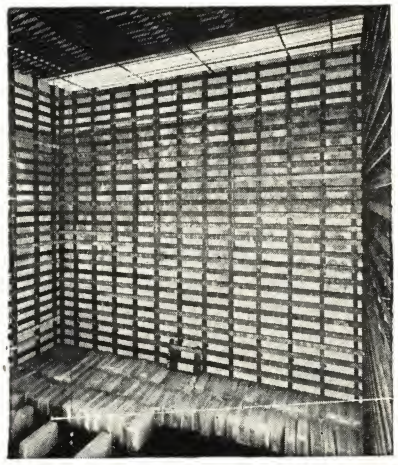
Storage Vaults in a Mortuary Insulated with Corkboard by C.I.C. Engineers

Corinco Corkboard meets every qualification for cold storage insulation: First, it is an excellent non-conductor of heat. Second, it resists moisture and properly erected will give service indefinitely. Third, it is sanitary, odorless and will not harbor germs. Fourth, it is compact and takes a minimum of space (a feature of great importance where rooms are small and costs per cubic foot high). Fifth, it is structurally strong and can be cut, sawed, or nailed like lumber. Sixth, it is slow-burning and takes a low insurance rate. Seventh, it is extremely light, so that it can be used in old construction without materially increasing floor loads. Eighth, it is reasonable in cost; highly profitable as an investment.

Importance of Modern Construction Methods

There is no single, established specification for the erection of cold storage insulation. Each installation must be considered as a separate problem and analyzed from the ground up.

The illustration in the center of the group shows the result of improperly erected insulation. Because the corkboard was not properly applied to the walls, moisture condensed between the wall structure and the cork, ice formed and cracked the insulation away. The ice gained its first foothold at the top of the wall, where uninsulated girders pierced the wall cork and permitted the unobstructed flow of heat. Thus a dew point was established, moisture condensed and froze and the insulation was forced from the wall. The ice thus caused by a local weakness spread widely enough to cause a general failure.



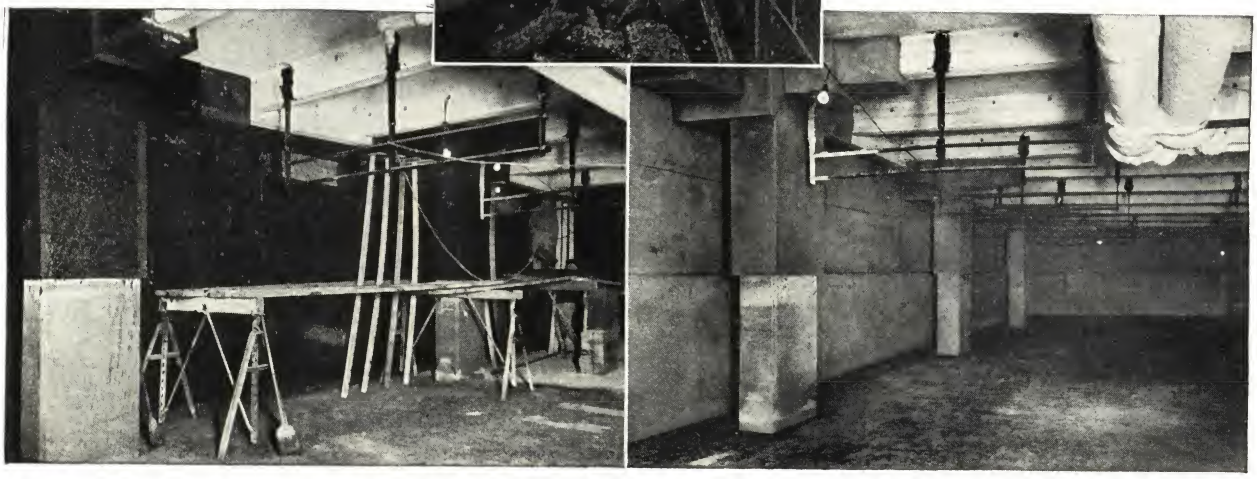
A Season Storage Room for Ice, Installed in the Hotel Agua Caliente, at Agua Caliente, Mexico, by C.I.C. Engineers

The illustration at the left of the group shows the first step in the work of reinsulating the warehouse after the job had been turned over to C.I.C. Note that in addition to insulating the walls, Corinco Corkboard has also been extended far enough along the girders to dissipate the flow of heat into the room.



The illustration at the right shows the completed job, finished with portland cement mortar. This entire warehouse was in use and carried on operations without interruption during the time that Cork Insulation Co., Inc., was erecting the new insulation.

This case is cited here as but one of many proving the importance of utilizing only the most modern construction methods where cold storage insulation is concerned.



CORINCO CORK PIPE COVERING AND LAGGING

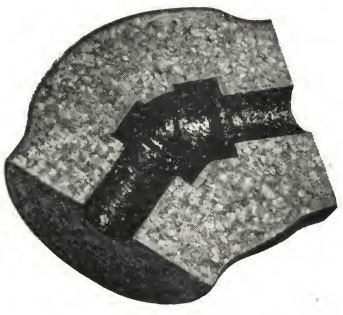
Corinco Cork Pipe Covering

Corinco Cork Pipe Covering, like Corinco Corkboard, is made of pure cork granules baked under compression to bring out the natural waterproof gum. It is made to fit all sizes of piping from ¼ in. up, and moulded jacket coverings are furnished for all types of fittings. Both the inside and outside surfaces of the covering are finished with a special airtight mastic ironed-on at the factory. With all cork covering sufficient Corinco Waterproof Cement for the joints, together with Corinco Seam Filler, copper clad steel wire and Corinco Cork Pipe Covering Paint are furnished for the proper application of this material.









The use of regular fitting covers cannot be too strongly recommended. Materials that are built up on the job almost always leave air-pockets in which frost will form. Frost will break away the cover and attack the entire insulation. Corinco Fittings Covers are made to exact dimensions and fit as tightly as the straight pipe covering.

Drinking Water Lines—The refrigerated drinking water system is now recognized as an essential safeguard to health, as well as an economy in money and labor, in all public and semipublic buildings. When the lines are covered with Corinco Cork Pipe Covering, water will be delivered to all points at the most palatable temperature (45° to 50°) with a minimum of refrigeration. The use of cork pipe covering is essential where the lines are to be run behind walls or through chases, as inferior insulating materials will quickly become water soaked, damaging walls and ceilings in addition to losing efficiency.

Thicknesses — Corinco Cork Pipe Covering is furnished in three thicknesses: Special Thick Brine (from 3 to 4 ins. thick) for temperatures below 0° F.; Brine (from 2 to 3 ins. thick) for temperatures 0° F. to 25° F.; Ice Water (1½ to 2 ins. thick) for temperatures 25° F. to 45° F. (Thickness of covering increases uniformly with pipe size.)

Corinco Cork Lag Covering

The insulation of cylindrical coolers, accumulators and tanks for brine, ice water, etc., requires the use of Corinco Cork Lag Covering. Lagging is furnished in various densities. It is built up on the surface to be insulated, as moulded covers for this purpose could not be manufactured practicably. For insulating the ends of tanks, discs of the required thickness of cork are made to order.

Both these discs and the lagging are coated inside and out with a special airtight mastic ironed-on at the factory.

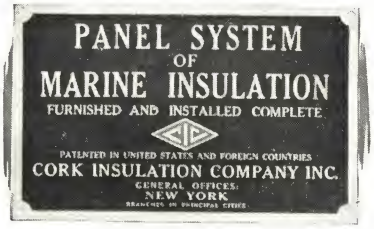
The many sizes and styles of this type of equipment make it necessary that we be furnished with a sketch giving accurate measurements so that the covering may be supplied in the proper lengths, widths and bevels.

Corinco Covering Price List

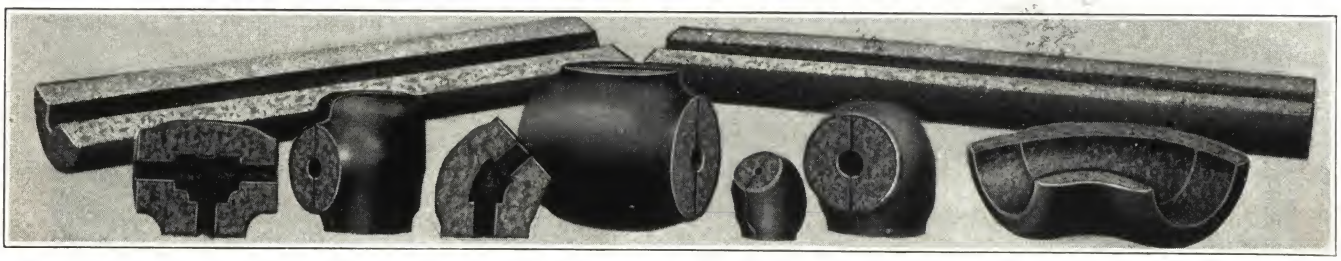
The Corinco Cork Pipe Covering Price List is fully illustrated and supplies full information for determining and ordering the required materials. Also gives complete shipping instructions. These booklets will be forwarded on request.

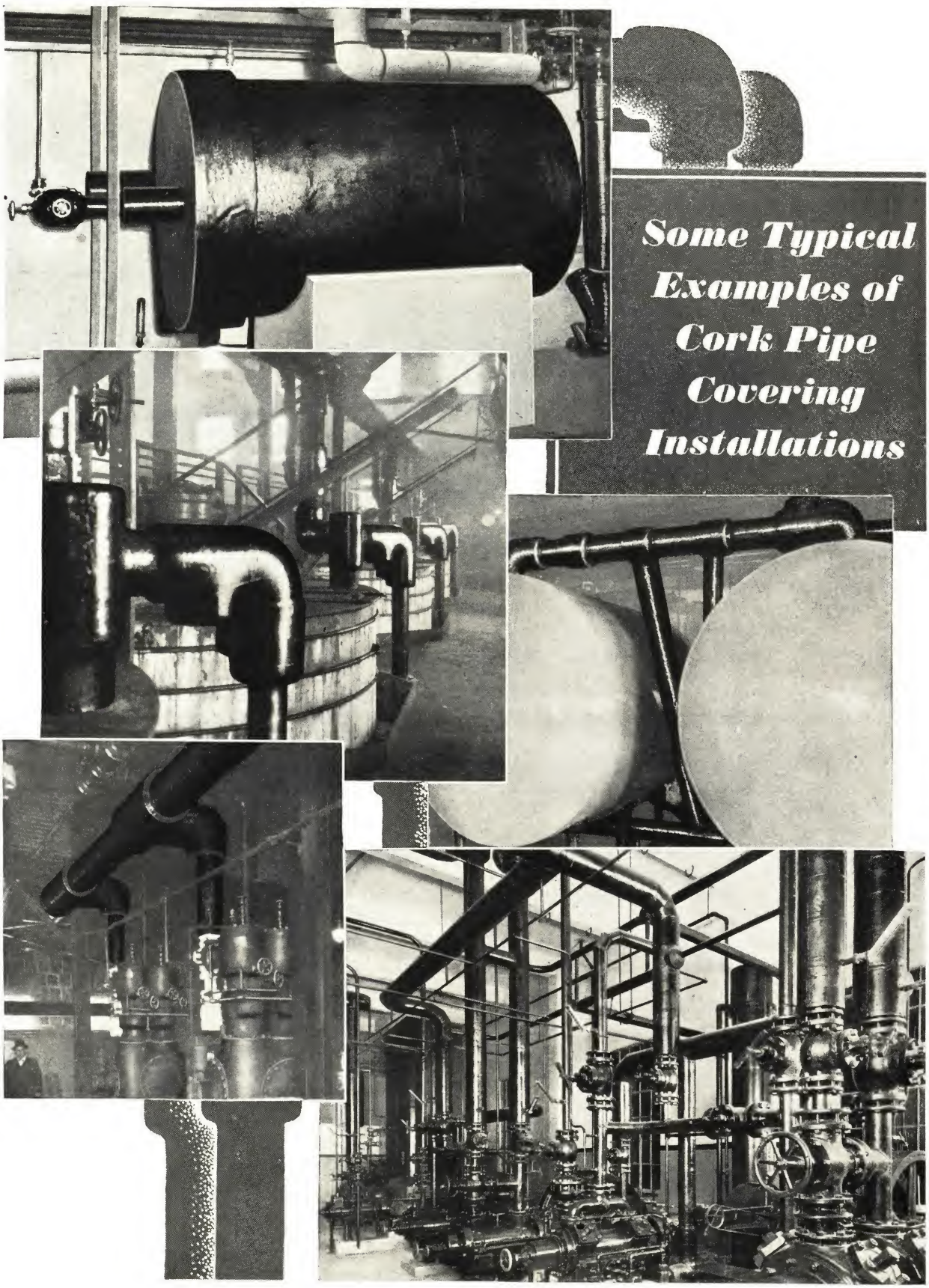
Panel System of Marine Insulation

This is a patented system for the insulation of cold storage spaces aboard ships. The system has been effectively

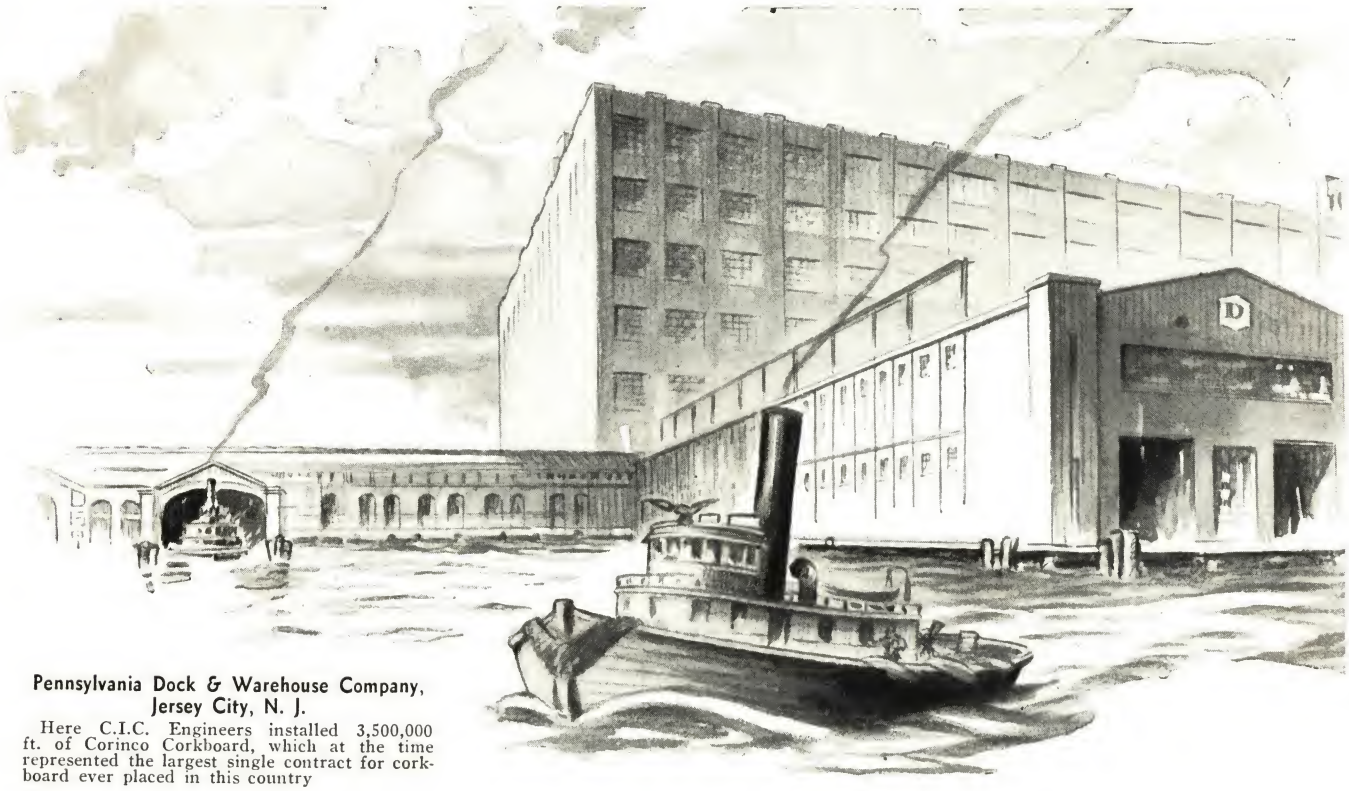


employed by ship owners of this country and abroad. Its advantages are ease of installation, ease of maintenance, efficiency and economy. Architects interested are invited to send for a catalogue fully illustrating and describing the system.





Corinco Cork Pipe Covering is in use in virtually every type of plant requiring cold pipe lines. Illustrated above are but a few of many similar applications. Corinco Cork Covering has merited the approval and preference of many architects, engineers, and users throughout the county. Corinco Covering is serving faithfully on notable installations everywhere. Ample stocks in a wide range of sizes are maintained at our factory and warehouses to insure prompt deliveries.



Pennsylvania Dock & Warehouse Company, Jersey City, N. J.

Here C.I.C. Engineers installed 3,500,000 ft. of Corinco Corkboard, which at the time represented the largest single contract for corkboard ever placed in this country

A Few Typical Firms Served by C.I.C.

Acme Dairy Co., Hamilton, Ont.
Agua Caliente Hotel, Agua Caliente, Mexico
Amboy Ice Co., Perth Amboy, N. J.
Angeles Co-operative Creamery, Port Angeles, Wash.
Apple Growers Cold Storage Co., Watsonville, Cal.
Augustine & Kyer, Seattle, Wash.
Avondale Farms, Bethlehem, Pa.
Baltimore & Ohio R. R., Philadelphia, Pa. (Pier 12)
Bellingham Community Hotel, Bellingham, Wash.
Beverly Hills Ice Cream Co., Beverly Hills, Cal.
Booth Bottling Co., Philadelphia, Pa.
Booth Fisheries, Schooner Commonwealth, Seattle, Wash.
Borden's Ice Cream Plant, Millville, N. J.
Borgensen Fur Company, Seattle, Wash.
Boston Ice Co., Dorchester, Mass.
Brandywine Sanitarium, Cedars, Del.
Burns & Co., Vancouver, B. C.
Calavo Growers Assn., Los Angeles, Cal.
California Bank, Los Angeles, Cal.
Canadian National S. S. Co. ("SS Challenger"), Montreal, Que.
Carbondale Machinery Co., Los Angeles, Cal.
Carl Ahlers, New York, N. Y.
Carrier Refrigeration Co., Los Angeles, Cal.
Central Ice & Cold Storage Co., Seattle, Wash.
Central Warehouse Co., St. Paul, Minn.
Cereal Products Refining Corp., San Francisco, Cal.
Chicago, Milwaukee, St. Paul & Pacific R. R., Spokane, Wash.
Consolidated Dairy Products, Seattle, Wash.
Continental Baking Co., Brooklyn, N. Y.
Cosgrave Brewery, Toronto, Ont.
Crozet Cold Storage Co., Crozet, Va.
Diamond Ice & Coal Co., Wilmington, Del.
D. M. McRea, Seattle, Wash.
DuPont Plant, DuPont, Wash.
Dyer Construction Co., Oakland, Cal.
Emmerson High School, Seattle, Wash.
English Tavern, Inc., Philadelphia, Pa.
Fish Wharf, Vancouver, B. C.
Fleischmann's Yeast Co., Sumner, Wash.
Fox Movietone Studios, Los Angeles, Cal.
Fruit Industries, Delano, Cal.
Fruit Industries, Ukiah, Cal.
Frye & Company, Monroe, Wash.
Gainers' Ltd., Vancouver, B. C.
Garfield High School, Seattle, Wash.
Geo. W. Wagner, Inc., Philadelphia, Pa.
Golden Arrow Farms, Inc., Renton Junction, Wash.
Golder Tailoring Co., Wilmington, Del.
Great Lakes Transit Corp., Buffalo, N. Y.
Gumbiner Theatre, Los Angeles, Cal.
Hain Ice Company, South Norwalk, Conn.
Hanover Poultry Co., Baltimore, Md.
Harbor Commission, San Francisco, Cal.
Helen Swope Tea Room, Seattle, Wash.
Hopkins & Co., New York, N. Y.
Hotel Meany, Seattle, Wash.
Integrity Trust Building, Philadelphia, Pa.
Jacob Branfman & Sons, New York, N. Y. (2 jobs)
James Madison High School, Seattle, Wash.



J. C. Burgdall, Boothwyn, Pa.
J. J. Joubert Ltd., Montreal, Que.
Jos. A. Martocello & Co., Stroudsburg, Pa.
Joseph Hahn & Son, New York, N. Y.
J. S. Fry & Sons (Canada) Ltd., Montreal, Que.
Klamath Falls Creamery, Klamath Falls, Ore.
Knudsen Creamery Co., Venice, Cal.
Laing Produce Storage Co., Ltd., Blockville, Ont.
Lange Milk Co., St. Louis, Mo.
Lawrence Warehouse Co., Oakland, Cal.
Malin Cheese Products Company, Malin, Ore.
March Field, Riverside, Cal.
Merchants Packing Co., Vernon, Cal.
Metro-Goldwyn-Mayer Studios, Los Angeles, Cal.
National City Packing Co., National City, Cal.
National Cold Storage Co., Brooklyn, N. Y.
Neshaminy Farms, Philadelphia, Pa.
Northwest Brewing Co., Tacoma, Wash.
Notre Dame Hospital, Montreal, Que.
Ontario Hospital, Whitby, Ont.
Pacific Coast Terminals, New Westminster, B. C.
Pacific Fruit & Produce Co., Lake Chelan, Wash.
Paramount Studios, Los Angeles, Cal.
Pennhurst State School, Pennhurst, Pa.
Pennsylvania Dock & Warehouse Co., Jersey City, N. J.
Perth Amboy National Bank, Perth Amboy, N. J.
Pierce County Hospital, Tacoma, Wash.
Plankinton Packing Co., Milwaukee, Wis.
Port of Seattle, Seattle, Wash.
Port of Tacoma, Tacoma, Wash.
Pyrites Company, Wilmington, Del.
Quebec Liquor Commission, Quebec, Que.
Red Wing Orchards Cold Storage Warehouse, Whitby, Ont.
Robert McClarey, Newport, Del.
Roosevelt Building, Los Angeles, Cal.
Row Construction Co., Pasadena, Cal.
R. S. Stern, Baltimore, Md.
Rubel Coal & Ice Co., Brooklyn, N. Y. (12 jobs)
Ruddy Manufacturing Co., Montreal, Que.
Sanitary Dairy Co., Aberdeen, Wash.
Sharpless-Hendler Ice Cream Co., Wilmington, Del.
Skagit County Dairy Assn., Burlington, Wash.
S. Rochkind, Baltimore, Md.
Standard Ice Co., Philadelphia, Pa.
State Teachers' College, Fredericksburg, Va.
Stroudsburg Ice & Cold Storage Co., Stroudsburg, Pa.
St. Edwards Seminary, Seattle, Wash.
St. James Market, Montreal, Que.
Sun Life Building, Montreal, Que.
Sunshine Ice Cream Co., Brooklyn, N. Y.
Supreme Coal & Ice Co., Brooklyn, N. Y.
Terminal Refrigerating & Warehousing Corp., Washington, D. C.
Trenton Cold Storage Co., Ltd., Trenton, Ont.
Trenton Dairy Co., Trenton, N. J.
Ukiah Industries, Inc., Ukiah, Cal.
University of California, Berkeley, Cal.
University of Delaware, Newark, Del.
U. S. Commissary, Barracks, Fort McDowell, Cal.
Utopian Fisheries (Steamer Donna Lane), Seattle, Wash.
Vancouver Harbor Commission, Vancouver, B. C.
Van de Kemp, Los Angeles, Cal.
Virginia Polytechnic Institute, Blacksburg, Va.
Wardman Corp., Washington, D. C.
Warrach Construction Company, Seattle, Wash.
Wenatchee Produce Co., Wenatchee, Wash.
Westminster Brewery Ltd., New Westminster, B. C.
White Spot Restaurant No. 2, Seattle, Wash.
Wilson & Company, Los Angeles, Cal.
Woodward Department Stores, Ltd., Vancouver, B. C.
Wm. F. Dougherty & Sons, Atlantic City, N. J.
W. W. Washburn, Jr., Neah Bay, Wash.

RAY PROOF CORPORATION

MANUFACTURERS AND CONTRACTORS

X-Ray Proofing and Light Proofing Materials—Design, Layouts, Construction, Installations

6905 Ridge Boulevard, BROOKLYN, N. Y.

FACILITIES

The facilities of our entire organization are available at all times to architects and builders, contractors, hospitals, owners, etc.

Methods for the proper and most efficient application of Ray Proof and Light Proof materials are offered to those whose responsibility it is to provide this vitally important and most necessary protection against X-ray exposure.

More serious thought is now given than ever before to this most important problem of X-ray Protection.

Therefore consult us before specifying.

RAY PROOF MATERIALS AND METHODS

See Details

Ray Proof Lead Insulated Partition Blocks

Manufactured of cinder concrete or gypsum with a non-pierced lead core of specified thickness through the center. These partition blocks have an interlocking lead lap of 1 in. on all bonding faces making an absolutely Ray Proof Partition. Made in all sizes and for corners. Installed by mason contractor with ordinary mortar and, when erected, partition is ready to receive plaster or any other wall finish desired.

Ray Proof Lead Insulated Furring Blocks

Identical with Ray Proof Partition Blocks construction, except that these blocks are 2 ins. thick, with non-pierced lead exposed on one surface which is set up against exterior or other walls that require the use of furring. Efficiently applied for Ray Proofing of floors, as shown in detail. When in place, wall or floor surface is ready to receive any finish desired.

Ray Proof Lead Lined Wall Lath

Manufactured of lead, of a specified thickness, and a fibrous or plaster receiving board bonded together so as to form units in standard sizes of 12x32 ins., 18x32 ins., 12x48 ins. or 18x48 ins. Other sizes made to suit any required condition. Fastened directly to wood partitions or furring by means of Ray Proof Nails. All edges of Ray Proof Wall Lath are butt jointed with lead sheet lapping on adjoining units making a positive Ray Proof Wall covering which may be plastered or finished as desired.

Ray Proof Furring and Partition Bars

Ray Proof Furring Bars, of any length desired, with lead backing, fastened to wall or ceiling on any centers desired. These bars are formed to receive ordinary sheet lead which is held in place by means of clips. Sheet lead is not pierced in any manner whatsoever. Metal lath fastened directly to Ray Proof Furring Bars in usual manner. Total measurement of furring to plaster finished surface is 1½ ins. A most efficient and economical space saving method for this type of Ray Proofing.

For Ray Proof Partition Bars same construction as for furring bars, except that installation is made as for stud partitions. Entire thickness of Ray Proof Bar partitions plastered two sides total 3 ins. Most adaptable for spaces where every inch counts.

Ray Proof Operator's Windows

An exceptional operator's window of positive Ray Proof qualities. Permits the operator full vision and sound penetration between control room and X-ray rooms. So designed as to permit voice travel through both sides of the Ray Proof Frame in a distinct manner. Ray Proof Glass used with these windows affords complete protection. See detail.

Ray Proof Doors

Our standard Ray Proof Doors for all purposes are of unsurpassed quality and construction. Manufactured with or without Ray Proof Glass Panels, or with Ray Proof Sound Penetration Glass Panels for control rooms. Any size or finish desired can be furnished, as specified. A furniture quality product.

Ray Proof Glass

Ray Proof Glass is specially manufactured and possesses protective qualities against the passage of X-rays. Ray Proof Glass is manufactured in various thicknesses to correspond with the equivalent protective values of the lead thicknesses specified. In ordering Ray Proof Glass always mention the thickness of lead being used.

Light Proof Shades

For the dark room, fluoroscopic room, etc., a perfect barrier to the strongest light is our Light Proof Shade. Rigidly constructed of either a metal or wood frame with shade material of a special everlasting fabric properly reinforced. Made for any size or type of window.

Light Proof and Ray Proof Ventilators

Fixed or mechanical ventilators of absolute Light Proof and Ray Proof construction may be specified for rooms or spaces requiring proper and adequate air changes. The demand for these ventilators is an indication of their value.

Sheet Lead Lining

Sheet lead lining for all types of special construction is executed in a most thorough manner by experts.

Other Specialties

Other products of our manufacture are:

- Ray Proof Nails
- Ray Proof Screens
- Ray Proof Portable Partitions
- Ray Proof Veneer Panels
- Ray Proof Film Safes
- Ray Proof Film Transfers
- Ray Proof Storage Facilities
- Ray Proof Ventilators
- Light Proof Windows—special design
- Light Proof Doors
- Light Proof Shutters
- Light Proof Ventilators—special design

Avail yourself of the service we offer and render for positive protective devices against the ever present dangers of X-ray exposure.

"Ray Proof Materials—The most positive protection—are the least costly."

A FEW RECENT INSTALLATIONS BY RAY PROOF CORPORATION

Building	Architect
Polyclinic Hospital, New York, N. Y.	Wm. S. Gregory
Kings County Hospital, Brooklyn, N. Y.	LeRoy P. Ward
Essex County Hospital, Verona, N. J.	Sutton & Sutton
Psychopathic Hospital, New York, N. Y.	C. B. Meyers
Brooklyn State Hospital, Creedmoor, N. Y.	State Architect
Lee County Hospital, Sanford, N. C.	Eric Flanagan
Randolph Hospital, Asheboro, N. C.	Eric Flanagan
Mt. Sinai Hospital, New York, N. Y.	Gehron & Ross
Windber Hospital, Windber, Pa.	Horace Trumbauer
Women's Hospital, Philadelphia, Pa.	Zantzinger, Borie & Medary
Evangelical Deaconess Hospital, Brooklyn, N. Y.	Almendinger & Schlendorf
Farmingdale Hospital, Farmingdale, N. Y.	W. J. Beardsley
Cedarcrest Sanitorium, Newington, Conn.	Cudworth & Thompson
Orange Memorial Hospital, Orange, N. J.	Crow, Lewis & Wick
French Hospital, New York, N. Y.	Crow, Lewis & Wick
Wyandotte General Hospital, Wyandotte, Mich.	Dalton J. V. Snyder
Bloomingdale Hospital	Grosvenor Atterbury
Board of Health, New York, N. Y.	
Department of Hospitals, New York, N. Y.	
U. S. Naval Hospitals	
U. S. Army Hospitals	

SPECIFICATIONS FOR RAY PROOF CONSTRUCTION

Ray Proof Lead Insulated Partitions

All interior partitions of the X-Ray Department and as shown on plans shall be built of 4-in. cinder concrete or gypsum Ray Proof interlocking blocks, each block having an unpierced sheet of lead through the centre and extending beyond the edges of the blocks 1 in. in such manner as to receive the lead lap of the next adjacent block, creating a positive lead seal and interlocking joints. Corner blocks are to be identical in construction and manufactured to extend at each corner providing the proper bond. Blocks are to be laid up with ordinary mortar and under the manufacturer's supervision. Partition blocks to be as manufactured by the Ray Proof Corporation, 6905 Ridge Boulevard, Brooklyn, N. Y.

Ray Proof Lead Insulated Furring Blocks and Floor Tile

Where indicated on plans, Ray Proof Lead Insulated Furring Blocks are to be installed, on walls and floors in accordance with the manufacturer's specifications. Furring blocks used should be as manufactured by Ray Proof Corporation, 6905 Ridge Boulevard, Brooklyn, N. Y., and under their supervision.

Ray Proof Lead Lined Doors

All doors for the X-Ray Department (designate rooms) shall have sheet lead of same thickness as specified for walls. Sheet lead shall be built between two cores of chestnut or white pine, bolted together with $\frac{3}{8}$-in. bolts spaced 10 ins. o.c. and 2 ins. from all edges. Sheet lead is to extend to outer edges of doors. Bolt heads and nuts for bolting lead and cores together shall be recessed into cores covered with lead over which veneer finish is secured.

All doors 3 ft. or less in width shall be $1\frac{3}{4}$ ins. thick. Doors over 3 ft. in width shall be $2\frac{1}{8}$ ins. thick unless otherwise indicated on the schedule.

All as manufactured by the Ray Proof Corporation, 6905 Ridge Boulevard, Brooklyn, N. Y.

Ray Proof Furring and Partition Bars

Ray Proof Furring Bars shall be used on (designate walls and partitions) and on ceilings of rooms (designate rooms). All Ray Proof Furring and Partition Bars shall be spaced 12 or 16 ins. on centers wherever used. These Ray Proof bars are fastened to walls and partitions in the usual manner and nailed at least every 12 ins.; fasten or suspend to ceilings with $\frac{3}{8}$-in. bolts 24 ins. on center in ceiling arch. When ceiling is suspended, wrought iron hangers, furnished by others and specified under miscellaneous work, shall be used for suspending bars.

Centering of Ray Proof Furring and Partition Bars shall be accurate in order to receive the lead sheets as specified under Ray Proof Specifications. Metal clips for fastening lead in place shall be furnished by Ray Proof contractor.

Metal lath for plastering shall be secured to Ray Proof Furring and Partition bars in the usual manner through holes provided in Furring Bars for this purpose. No lathing to be done until sheet lead is completely installed and inspected.

All as manufactured by the Ray Proof Corporation, 6905 Ridge Boulevard, Brooklyn, N. Y.

Sheet Lead Linings

Sheet lead (.. in.) thick shall be installed in place between Ray Proof Furring Bars in (designate rooms) and on ceilings of (designate rooms). Sheet lead shall extend from web to web of Ray Proof Furring Bars. Sheets of lead shall be as long as can be conveniently handled, care being taken that when sheets are joined together a lap of at least 1 in. shall be given. All sheet lead shall be secured to furring bars by means of clips provided by this contractor. No sheet lead shall be pierced in any way and shall be protected against such defects until certified by the architect.

All as manufactured by the Ray Proof Corporation, 6905 Ridge Boulevard, Brooklyn, N. Y.

Ray Proof Operator's Windows

Ray Proof Operator's Windows complete with Ray Proof glass for control rooms and where designated shall consist of a frame, lead insulated, in one unit with provision made to receive one piece of Ray Proof Glass 12 ins. wide by 18 ins. high. This frame to be so constructed as to permit sound to pass through window from each side of the glass in a clear and distinct manner, at the same time preventing X-rays from penetrating this opening in any way.

Ray Proof Glass is to have equivalent protective qualities as that of lead used in wall construction and so certified.

All as manufactured by the Ray Proof Corporation, 6905 Ridge Boulevard, Brooklyn, N. Y.

Light Proof Shades

Light Proof Shades on windows in dark room, fluoroscopic room, etc., shall be a self-contained unit consisting of a metal housing and frame in which the shade operates. Entire unit to be fastened at window opening, inserting felt strips between shade frame and point of fastening as shown on drawings.

Shade material is to be of imitation leather, reinforced every 24 ins. the length of shade with brass bar extending to edges.

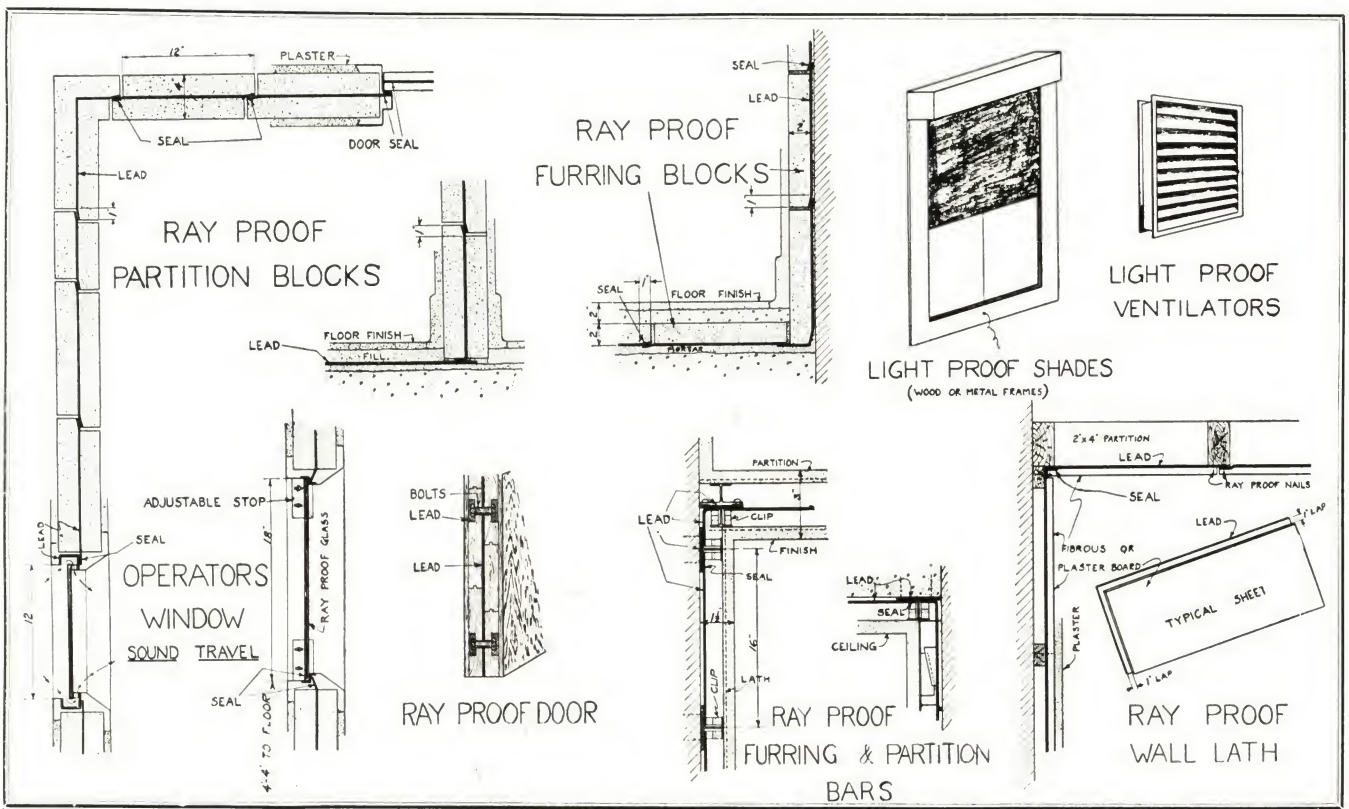
All as manufactured by the Ray Proof Corporation, 6905 Ridge Boulevard, Brooklyn, N. Y.

Ray Proof Lead Lined Wall Lath

Ray Proof Wall Lath on partitions and walls as designated shall be manufactured of lead sheets and a fibrous or plaster board, securely fastened together before installing. The lead sheets are to extend beyond the edge of the plaster receiving board $\frac{3}{4}$ in. with joints lapping and butting with each adjacent sheet. Ray Proof Lath is fastened to furring strips or studding in the usual manner using Ray Proof Nails. Lead used for this material to be (... in.) thick.

Light Proof Ventilators—Ray Proof Ventilators

Light Proof and Ray Proof Ventilators as manufactured by the Ray Proof Corporation, 6905 Ridge Boulevard, Brooklyn, N. Y., shall be placed in partitions and exterior walls of X-Ray Department as indicated on plans.



DETAILS OF RAY PROOF CONSTRUCTION

BAR-RAY PRODUCTS, INC.

X-Ray Protective Building Specialties

MAIN OFFICE AND PLANT

TELEPHONE
HUguenot 4-2882

209-213 Twenty-fifth Street, BROOKLYN, N. Y.

Products

BAR-RAY CONSTRUCTION UNITS and MATERIALS in standard and special forms for protection against penetration of X-rays; used in hospitals, X-ray laboratories and wherever enclosures for X-ray apparatus and radium are required.

Ventilators, shades, shade frames and other special devices to bar light-rays are made to meet your exact requirements.

General Description of Bar-Ray Products

Protection against X-ray is a necessity for all persons in proximity to any apparatus emitting X-rays. Heretofore protective construction has usually included the use of lead in complicated, cumbersome, uneconomical, and frequently inefficient forms.

With the use of our various types of Bar-Ray units and materials there is available to architects a standard, simplified and scientific method of accomplishing complete protection.

These materials include lead insulated partition blocks, lead insulated wainscot, prepared plaster, lead insulated lath, lead covered nails, lead operators' windows, lead insulated doors, X-ray protective glass and paint, and other special devices, each and all having protective properties which prevent transmission of X-rays and which provide all required means to completely enclose and isolate space containing X-ray apparatus. With the use of our materials and devices there is not the slightest chance of having any places in the X-ray room unprotected, as is so often the case with improvised methods and patchy construction.

We have a material and method to meet every conceivable requirement in a thoroughly scientific manner.

The finished construction is accomplished with a saving of space, time, expense, and with 100% efficiency.

Service

X-ray protection is our exclusive business in which our experts are recognized authorities. We offer the services of our staff in the solution of any problem of X-ray protection.

Our service offers sure protection against a real danger which is not of occasional or fortuitous character but which is present in every case and cannot be sidestepped.

We will provide drawings and specifications without charge for the use of our materials.

X-ray Protection Requirements

The U. S. Bureau of Standards and the International Congress of Radiology, in an official document remarks as follows:

The dangers of overexposure to X-rays and radium can only be avoided by the provision of adequate protection and suitable working conditions. It is the duty of those in charge of X-ray and radium departments to ensure such conditions for their personnel. The known effects to be guarded against are: (a) Injuries to the superficial tissues, (b) derangements of internal organs and changes in the blood.

An X-ray operator should on no account expose himself unnecessarily to a direct beam of X-rays.

An operator should place himself as remote as practicable from the X-ray tube.

The X-ray tube should be surrounded as completely as possible with protective material of adequate lead equivalent.

The following lead equivalents are recommended as adequate:

X-rays generated by peak voltages not exceeding	Minimum thickness of lead	
	Mm.	Equivalent in ins.
75 kv	1.0	1/32+
100 kv	1.5	3/64+
125 kv	2.0	5/64+
150 kv	2.5	3/32+
175 kv	3.0	7/64+
200 kv	4.0	5/32+
225 kv	5.0	13/64−

MATERIALS FOR BARRING X-RAYS

Bar-Ray Lead Insulated Partition Block

Composed of gypsum, cement or cinder concrete. Furnished in two sizes,—4x12x12 and 4x6x12 ins., in two layers, with an unpierced sheet of lead between layers of thickness specified. 1½ ins. of sheet lead is exposed on all four bearing sides to allow for overlapping of lead on adjoining blocks, door bucks, operator's windows and partition sash. No special shapes or sizes are required. Material on either side of sheet lead can easily be removed without damaging lead, to allow recess for battery of pipes, and can easily be cut to accommodate electric outlet boxes and conduit.

Laid by masons with same mortar as any other partition block.

The use of these blocks saves space, reduces number of operations necessary where sheet lead is used, and is more economical.

Specifications—Walls indicated on plans to be lead insulated, are to be built of [gypsum] or ..... blocks having an unpierced sheet of lead ..... thick through center. Lead shall be exposed not less than 1½ ins. on all four bearing sides and manufactured so that all of the material on either side of lead can be removed without damage to lead. These blocks shall be as manufactured by BAR-RAY PRODUCTS, INC., Brooklyn, N. Y.

Note: Specify height for lead insulated blocks and construction above.

Bar-Ray Lead Insulated Lath

This lath is 12x32 ins. made up with either a standard well-known make of fibrous board lath or with plaster board, backed with unpierced sheet lead of thickness specified. Lead projects 1 in. beyond edge of board on top and one side to allow overlapping of lead on adjoining lath.

Applied to wood studding or furring using special Bar-Ray Lead Covered Nails. Finish over lath may be plaster, or any other material specified.

Can be made in any size to meet special conditions.

This is the most economical method for providing protection on existing walls, as well as on new stud or masonry partitions.

Specifications—Walls [ceilings] indicated on plans to be lead insulated are to have lead insulated lath applied to a height of ..... ft. Lath shall be made up of [Fiber Board] [Plaster Board] not to exceed 12x32 ins. in size, backed with unpierced sheet of lead ..... in. thick; and shall be applied with special lead covered nails.

Lath and nails as manufactured by BAR-RAY PRODUCTS, INC., Brooklyn, N. Y. shall be used.

Note: Specify height of lath and construction above.

Specify furring on existing plastered walls, masonry partitions and ceilings, 16-in. centers to receive lath.

Electrician shall cover outside of all electric outlet boxes with lead of thickness specified for [walls] [ceilings].

Bar-Ray Lead Covered Nails

These nails are used with Bar-Ray Lead Lath, lead insulated wainscot, jambs, trim, base, cap, and for applying other wood members to walls having lead protection. Also used on all exposed lead work.

Bar-Ray Lead Insulated Wainscot

Made up of ⅜-in. 5-ply laminated white pine panel, backed with unpierced sheet lead of thickness specified. Panels are made up in sizes specified. Lead projects 1 in. beyond edge of wood panel at top and one side to allow overlap of lead on adjoining panel. Applied with Bar-Ray Lead Covered Nails. Joints are covered with any type of pilasters using nails or screws of proper length so that they do not enter sheet lead.

These panels can be made in any size, using any thickness of wood specified and any material. Mahogany, oak, walnut, etc.

Especially desirable where X-ray suite adjoins consulting, waiting or meeting rooms and on existing walls.

Specifications—Walls [ceilings] indicated on plans to be lead insulated shall have lead insulated wainscot applied to a height of .. ft. These are to be made up of ⅜-in. 5-ply laminated white pine panels (or other material) backed with unpierced sheet lead .... in. thick and fastened with lead covered nails. (Specify pilasters, etc.)

Lead insulated wainscot as manufactured by BAR-RAY PRODUCTS, INC., Brooklyn, N. Y., shall be used.

Notes in specifications for Bar-Ray Lath apply here.

Bar-Ray Prepared Plaster

A cement plaster in which barium sulphate is mechanically mixed according to formula which insures protection, equivalent to $\frac{1}{32}$ in. of lead for each ¾-in. thickness of plaster. Can be used economically on upper parts of walls where lead protection does not extend to ceiling, on ceilings below or above X-ray rooms where no lead is used in floors, or where lead mats only are used under X-ray equipment.

Can also be used as floor fill.

Applied and finished same as any other cement plaster.

Shipped, ready to use, with only the addition of water.

The danger of improper measuring and mixing of barium sulphate on the job, is removed by use of this material.

Specifications—Walls indicated on plan to have barium plaster, shall be plastered using prepared barium plaster, delivered to the job in bags, ready to use. Only the addition of water will be permitted.

Prepared Barium Plaster as manufactured by BAR-RAY PRODUCTS, INC., Brooklyn, N. Y., shall be used.

Note: In specifying this material for floor fill, designate thickness required.

Electrician shall cover outside of all outlet boxes with $\frac{1}{16}$-in. sheet lead.

Bar-Ray Lead Insulated Doors

These doors are flush type, made in any size, thickness, or finish and containing any thickness of lead specified, with or without Bar-Ray Glass Panel. A continuous sheet of lead is through center of door. No metal, other than lead, is used in the manufacture of these doors. Can also be equipped with a darkening panel.

Specifications—Doors indicated on plan to be lead insulated, shall be flush type of size, thickness and finish as noted and are to have a continuous sheet of lead through center of door .. ins. thick. No metal other than lead is to be used in its construction.

Doors shall be as manufactured by BAR-RAY PRODUCTS, INC., Brooklyn, N. Y.

Note: Specify Lead Insulation for door bucks. Metal bucks used in walls built of lead insulated blocks should not have anchors affixed.

Bar-Ray Lead Operator's Window Frames

These frames are made *entirely* of lead and are provided with glass mouldings of *lead*. A specially devised opening in bottom is provided, which permits the operator of the X-ray equipment to talk to the patient without exposure to X-rays. It is splayed on top, bottom and both sides, to give wide range of vision. Glass opening is 12 ins. wide, 16 ins. high.

Specifications—Operator's window frames indicated on plan are to be made *entirely* of lead and are to have a horizontal opening at bottom for voice transmission. Frames shall be splayed at top, bottom and both sides, to allow for a wide range of vision. They shall be delivered to the job complete with glass mouldings of lead, and installed by masons.

These frames shall be as manufactured by BAR-RAY PRODUCTS, INC., Brooklyn, N. Y.

Bar-Ray Glass

This glass is of special composition, offering the most efficient protection, greatest safety, and adaptability. Completely prevents passage of X-rays. Can be had in any thickness up to 18-21 mm.

Specifications—Bar-Ray glass shall be used in all lead insulated doors indicated on plan to have glass panels, and all operators' window frames.

This glass is to be of sufficient thickness to give protection equivalent to thickness of lead in doors, and in walls, where operators' window frames are set.

This glass shall be set in single thickness only. Superimposing glass to build up the required protection will not be permitted.

Note: Where operators' window frames are set in walls in which barium plaster is used for protection, glass shall give protection equivalent to not less than $\frac{1}{16}$-in. lead.

Bar-Ray Paint

This paint costs no more than ordinary paint and should be used in X-ray departments for additional protection.

Specifications—(Same as for paint on all other work.) Bar-Ray Paint shall be delivered to the job in sealed containers as shipped by the manufacturer. Only the addition of tinting color shall be permitted.

Special X-ray Protection Devices

We manufacture special devices and materials, such as lead insulated film transfer cabinets, dwarf partitions containing lead protection, as well as partitions for enclosing dressing cubicles, dividing partitions for X-ray rooms, and any other protective material or device to meet special requirements.

LEAD PROTECTION IN FLOORS

Suggestions for Specifying Lead Protection in Floors

Lead for floors should be laid in sheets, lapped not less than 2 ins. at joints.

Where lead is placed on concrete arch, screed coat should be provided and protecting coat of cement applied on top of lead before cinder fill is installed.

Where floor lead is to be used on one side of wall having lead insulated blocks, strip of lead, same thickness as specified for floors, is to be set under first course of blocks projecting not less than 3 ins. on side to have floor lead and to be flush on opposite side.

Where lead insulated lath or panel start above terrazzo or cement base and also where walls are to have barium plaster, lead should extend up wall to a point at least 3 ins. above top of base and 3 ins. beyond face of wall.

Note: Wire lath may be applied over lead, using Bar-Ray Nails.

Where lead protection is specified in floors above X-ray suite, it should extend 2 ft. beyond walls which have lead protection.

Strips of lead should be laid under partition on floor above, so lead protection will be continuous.

Where lead mats only are used under X-ray equipment, they should be not less than 4 ft. 6 ins. x 9 ft.

Electrician should cover outside of all outlet boxes in floor with sheet lead of same thickness as specified for the floor.

MATERIALS FOR BARRING LIGHT RAYS

Bar-Ray Ventilators

These ventilators are used in developing and fluoroscopic rooms, and other places where all light must be excluded. Can be installed in doors or walls. Stock size 24 ins. wide, 12 ins. high. Can be had in any size to meet special requirements. We also manufacture lead ventilators for use in walls and doors which have lead protection.

Specifications—Bar-Ray ventilators 24 ins. wide, 12 ins. high shall be used in all doors and walls, indicated on plan to have light tight ventilators.

Note: [Metal] [Wood] frames and mouldings shall be provided in walls, to receive ventilators.

Bar-Ray Shades and Frames

These shades and frames are made in any size, and can be applied to existing windows, or made to form part of window trim on new work.

Used in fluoroscopic, developing, photographic, eye examining, operating, lecture, film viewing rooms, and auditoriums, or wherever it is necessary to exclude all light.

Frames are metal or wood with housing at top for shade. Housing has removable cover for access to shade. Stiles and bottom rails are grooved to receive edge of shades which are imitation leather, reinforced at proper intervals in the length, with non-rusting rods and can be operated from center or side.

Shade is mounted on metal roller with special strong spring. All pulleys for operating shades are concealed. Cord fastener is applied to frame so that shade can be held in any desired position.

Specifications—Bar-Ray shades and [wood] [metal] frames shall be applied to all windows indicated on plan to have light-tight shades. Windows having mullions shall be provided with shade frames having mullions located directly opposite those in window frames and equipped with shades operating independently for each window. The (carpenter) shall apply these frames to the windows, using felt strips which shall be supplied by the manufacturer.

Note: We will supply complete plans, details aand specificaations for darkening windows which require special treatment, or where frames are to be concealed.

A Partial List of Bar-Ray Installations

Name and Location	Architect	Contractor
New York Hospital, Cornell Medical Center, New York, N. Y.	Coolidge, Shepley, Bulfinch & Abbott	Mark Eidlitz & Son
City Hospital, New York, N. Y.	Charles B. Meyers	Elaine Construction Co.
Newton Memorial Hospital, Newton, N. J.	Crow, Lewis & Wick	John Lowry
Equitable Life Insurance Building, New York, N. Y.	Starrett & Van Vleck	Thompson Starrett
Irvington Hospital, Irvington, N. J.	Sloan & Robertson	John Lowry
Medical Chambers, New York, N. Y.	Polhemus & Coffin	Turner Construction Co.
United Hospitals, Portchester, N. Y.	Hood, Godley & Fouilhoux	W. L. Crow Construction Co.
Metcalf Memorial, Orange, N. J.	Gibbs & Hill	Donaldson-Reynolds Co.
Lewis County Hospital, Lowville, N. Y.	A. F. Gilbert	Deline Construction Co.
Cornwall Hospital, Cornwall, N. Y.	York & Sawyer	Fountain & Choate
Memorial Hospital, New York, N. Y.	Y. N. Karekin	Y. N. Karekin
Northeastern Penitentiary, Lewisburg, Pa.	Alfred Hopkins & Associates	Great Lakes Construction Co.

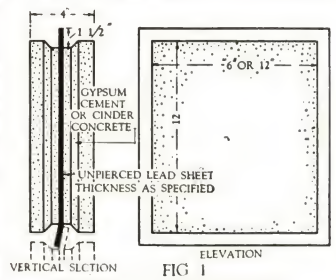


FIG 1
BAR-RAY LEAD INSULATED PARTITION BLOCK

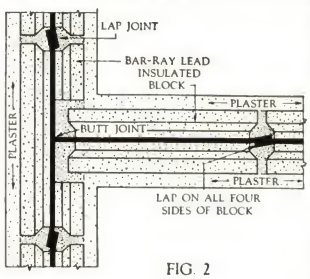


FIG. 2
INTERSECTION OF TWO PARTITIONS



FIG. 3
OBTUSE ANGLE IN PARTITION

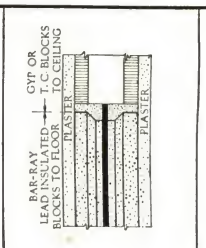
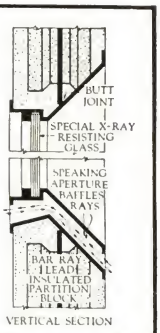


FIG. 4
USED PART HEIGHT OF PARTITION



VERTICAL SECTION

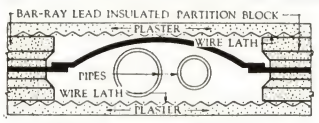


FIG. 5 DEEP PIPE CHASE

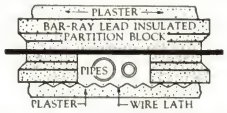


FIG 6 SHALLOW PIPE CHASE

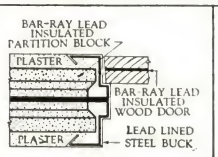


FIG. 7
LEAD LINED STEEL BUCK

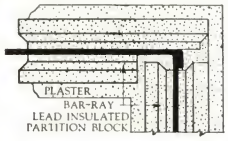


FIG. 8
RIGHT ANGLE IN PARTITION

BAR-RAY LEAD INSULATED PARTITION BLOCKS

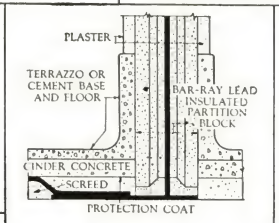
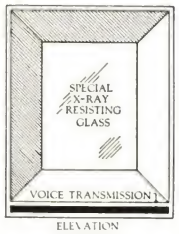


FIG. 9
AT TERRAZZO OR CEMENT FLOOR



ELEVATION
FIG. 10
BAR-RAY LEAD OPERATORS WINDOW

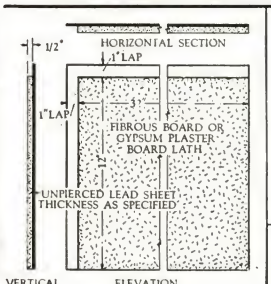


FIG 11. BAR-RAY LEAD INSULATED LATH

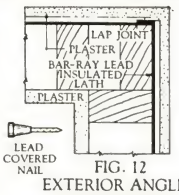


FIG. 12
EXTERIOR ANGLE IN PARTITION

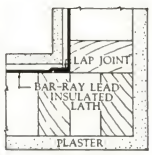


FIG. 13'
INTERIOR ANGLE IN PARTITION



FIG 14
LEAD LINED STEEL BUCK

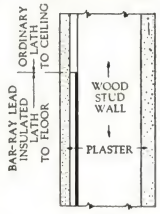


FIG. 15
USED PART HEIGHT OF PARTITION

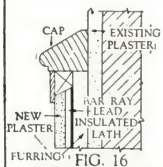


FIG. 16
WAINSCOT HEIGHT OVER EXISTING PLASTER

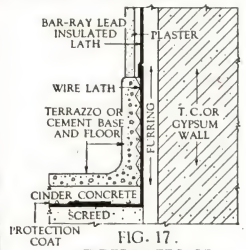


FIG. 17.
AT TERRAZZO OR CEMENT FLOOR

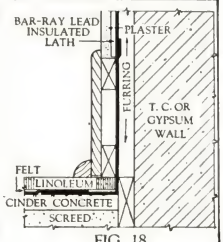


FIG. 18
AT LINOLEUM FLOOR

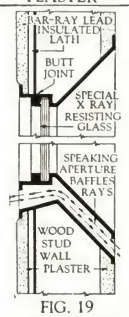


FIG. 19
OPERATORS WINDOW

BAR-RAY LEAD INSULATED LATH

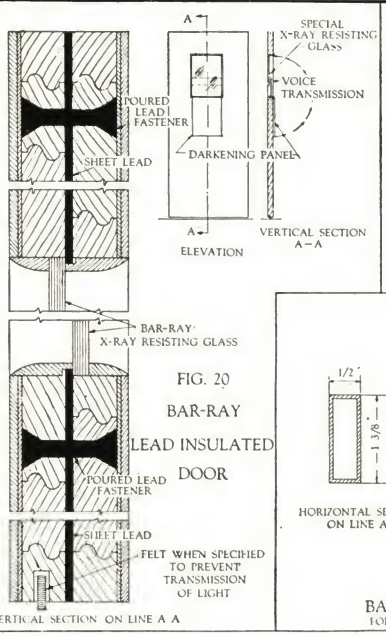


FIG. 20
BAR-RAY LEAD INSULATED DOOR

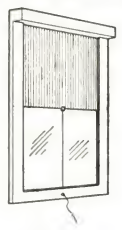


FIG. 21
BAR-RAY SHADE AND FRAME

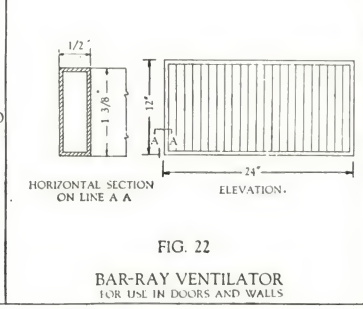


FIG. 22
BAR-RAY VENTILATOR
FOR USE IN DOORS AND WALLS

BAR RAY DOOR, SHADE, VENTILATOR

BAR-RAY X- RAY PROTECTIVE BUILDING SPECIALTIES

ARMSTRONG CORK & INSULATION COMPANY

Manufacturers of Armstrong's Vibracork

935 Concord Street, LANCASTER, PA.

BRANCHES

ALBANY, N. Y.
ATLANTA, GA.
BOSTON, MASS.
BUFFALO, N. Y.
CHARLOTTE, N. C.
CHICAGO, ILL.
CINCINNATI, OHIO
CLEVELAND, OHIO
DALLAS, TEX.
DENVER, COLO.
DETROIT, MICH.
GRAND RAPIDS, MICH.
HOUSTON, TEX.
JACKSONVILLE, FLA.
KANSAS CITY, MO.
LOUISVILLE, KY.
MILWAUKEE, WIS.
MINNEAPOLIS, MINN.
NEW YORK, N. Y.
OMAHA, NEB.
PITTSBURGH, PA.
ROCHESTER, N. Y.
ST. LOUIS, MO.
SYRACUSE, N. Y.
MONTREAL, QUE.
TORONTO, ONT.
WINNIPEG, MAN.
LONDON, ENG.

AGENTS

BALTIMORE, MD., John R. Livezey, 526-530 St. Paul Street
LOS ANGELES, CAL., Gay Engineering Corp., 2650 Santa Fe Avenue
NEW ORLEANS, LA., H. T. Steffee, 922-930 Tchoupitoulas Street
PHILADELPHIA, PA., John R. Livezey, Glenwood Avenue West of 22nd Street
PORTLAND, ORE., Gillen-Cole Co., 15th and Overton Streets
SAN FRANCISCO, CAL., Van Fleet-Freear Co., 557 Howard Street
WASHINGTON, D. C., John R. Livezey, 902 Woodward Building

Product

ARMSTRONG'S VIBRACORK.

See Manufacturers' Index for Armstrong's Corkboard for insulation of refrigerated structures and refrigerated equipment; Armstrong's Corkboard and Armstrong's Temlok for insulation of walls and roofs of normally heated buildings; Armstrong's Corkoustic for sound-quieting and acoustical treatment; Armstrong's Cork Covering for all cold lines.

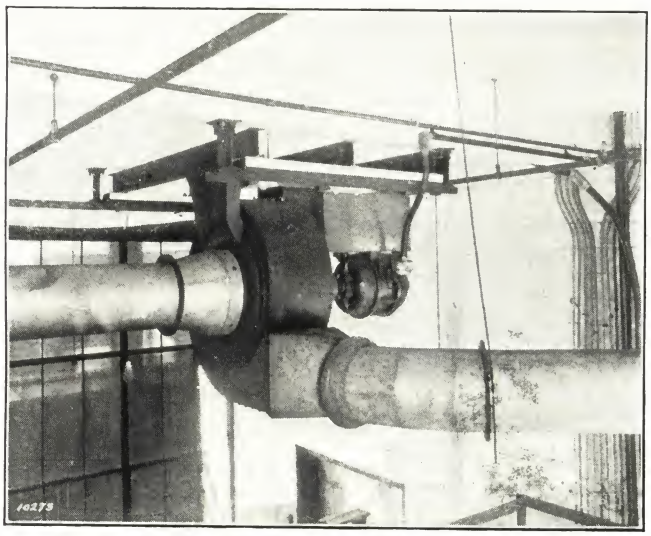
Armstrong's Vibracork

Deadening Noise and Vibration—Armstrong's Vibracork is made to deaden the noise and vibration incident to the operation of all types of machines. It provides an economical and thoroughly practical means of guarding against lowered efficiency, hastened depreciation, irritating noises, and the other natural results of vibration. It is a resilient board, is strong and durable and maintains its physical characteristics indefinitely if properly installed.

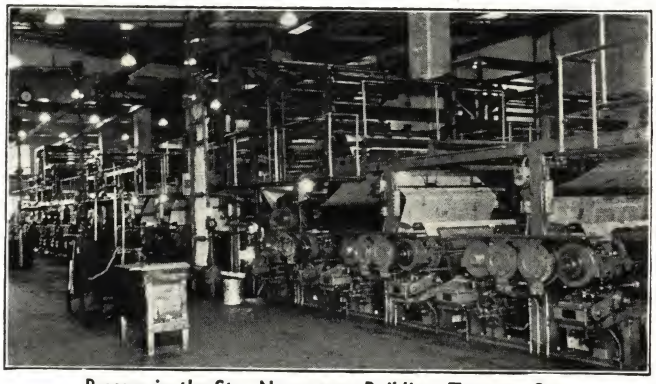
Size and Thicknesses—Armstrong's Vibracork is supplied in boards 12 in. wide and 36 in. long, in thicknesses ranging from 1 to 6 in. Other dimensions, less than 12x36 in., can be cut to order. The standard thicknesses are: 1, 1½, 2, 3, 4, 5, and 6 in.

Densities—Armstrong's Vibracork is made in three densities. This is possible because it is a *manufactured* product and its density is readily controlled and held uniform. The three densities in which Armstrong's Vibracork are made are designated as Light, Medium, and Heavy.

Resilience—The characteristic resilience of Armstrong's Vibracork is unique even among resilient materials. The thousands of minute air cells, which are part of the structure of cork, form a cushion which never loses its "life." Armstrong's Vibracork never hardens or "sets" if loaded within its proper limits.



Armstrong's Vibracork Eliminates Vibration of Blower Fans.
Practically any type of machine can be isolated with this cork material.



Presses in the Star Newspaper Building, Toronto, Ont.
Cushioned by 8000 sq. ft. of Armstrong's Vibracork, 1½-in. thickness.

Durability—Armstrong's Vibracork may be relied upon to serve the purpose for which it is intended as long as the machine is in operation, provided it has been properly used. It is not affected by moisture and is not subject to rot and decay. If applied properly, it will not disintegrate nor change its physical characteristics in any manner.

Methods of Application—Practically any type of machine may be isolated with Armstrong's Vibracork, although the method of application must, of course, vary to accommodate itself to the character of the setting.

There are two general methods of application, both subject to variations. In the first method, involving the "floating slab" principle, the foundation pit is finished with concrete and then lined on both bottom and sides with Armstrong's Vibracork of the proper thickness and density and set in hot asphalt. After a suitable waterproof paper applied in hot asphalt has been placed over the cork, concrete for the foundation proper is poured in. Weight of the foundation increases the static load and helps secure sufficient compression.

In the second method the Vibracork is applied between the machine bedplate and the floor or foundation to which it is fastened. Where the load of the machine is heavy enough in proportion to the area of the base, the Vibracork may be applied as a continuous layer.

Where Armstrong's Vibracork is used between the machine and the foundation, and is not protected through being applied in channel-irons, it should be covered with light telescoping metal pans, to protect it from abrasion, oil, and chemicals.

The engineers of the ARMSTRONG CORK & INSULATION COMPANY will, without obligation, give you the full benefit of the wide experience of the Company in isolating machines of practically all kinds. Inquiry may be addressed to your nearest branch office or agent, as shown above, or to the ARMSTRONG CORK & INSULATION COMPANY, Lancaster, Pa.

CORK INSULATION CO., INC.

Manufacturers of Corinco Cork Machinery Isolation

GENERAL OFFICES

154 Nassau Street, NEW YORK, N. Y.

BRANCH OFFICES

BOSTON, MASS
*CHICAGO, ILL.
LOS ANGELES, CAL.
PHILADELPHIA, PA.
SAN FRANCISCO, CAL.
SEATTLE, WASH.
BALTIMORE, MD.
ST. LOUIS, MO.
ST. PAUL, MINN.

IN CANADA: Cork Insulation Co. (Canada) Ltd., MONTREAL, QUE., VANCOUVER

*Represented by Corinco Insulation Co., Inc.

Product

CORINCO CORK MACHINERY ISOLATION for reducing noise and vibration of machinery of all kinds. Furnished in varying densities from 1.1 to 1.8. Standard sheets 12x36 ins., 1, 1½, 2 and 3-in. thicknesses.

For our pages on Acoustical Correction, Cold Storage Insulation, etc., see Manufacturers' Index.

The Company

For data on nature, size and reputation of organization, see Insulation pages.

Machinery Isolation

Tests conducted at Colgate, Northwestern, Michigan, and other universities have conclusively established excessive noise and vibration as a definite cause of accidents, decreased production and lowered efficiency; while at least one recent court decision has recognized machinery vibration as a basis for a damage suit.

The more immediate effects of vibration, however, show clearly the need for corrective measures. Increased wear on machinery, continual interference with delicate adjustments, or even damage to the building itself are among these local results.

The isolation of the machine from the structure of the building by some non-rigid material is naturally the answer. From tests and from experience, certain requisites for an isolation material become apparent.

First, it must be resilient. Second, it must have great strength in compression. Third, it must not harden or lose its resiliency under any loading. Fourth, it must be impervious to moisture and decay.

These requisites immediately pointed to the use of corkboard, which has been tried with signal success. Corinco Cork Machinery Isolation is now in successful use under conditions of every sort.

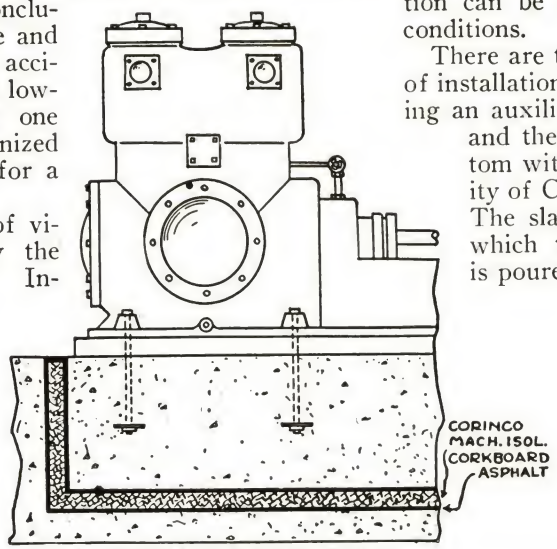
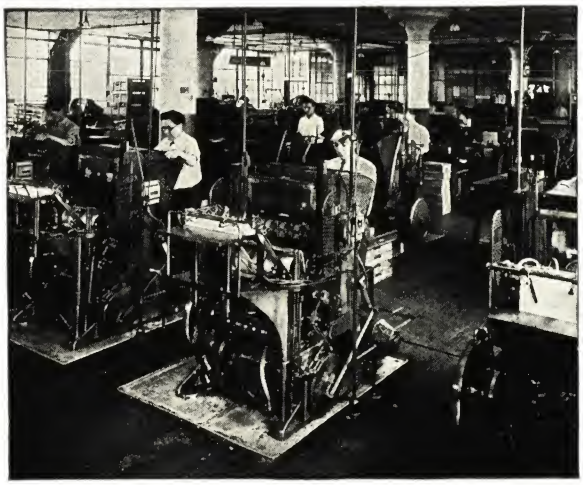


FIG. 3 ILLUSTRATING PIT ISOLATION OF HEAVY MACHINERY.



Compression Calculations Before Installation

It is possible to arrive by simple calculations at very accurate conclusions regarding the exact amount and location for Corinco Cork Machinery Isolation. The main point to be borne in mind is simply this: best results are obtained when the isolation is under slight compression, and the thicknesses and density of material required can be readily computed. C.I.C. Engineers will gladly make recommendations for the proper installation of this material.

Methods of Installation

Any sort of machine can be isolated with Corinco Cork Machinery Isolation, and the methods of installation can be varied readily to meet location conditions.

There are two generally successful methods of installation. The first consists of constructing an auxiliary foundation pit with concrete and then lining it on the sides and bottom with the proper thickness and density of Corinco Cork Machinery Isolation. The slabs are laid in hot asphalt, after which the concrete for the foundation is poured directly into the cork lined pit.

The second installation method consists of placing Corinco Cork Machinery Isolation between the machine bed plate and the floor. Where the weight of the machine is sufficiently great in proportion to the area of its base, a continuous slab of cork may be used. The proper application of this material depends entirely upon the machine to be isolated. Our engineers will be glad to furnish complete information. Catalogue sent on request.

Service

Engineering assistance, samples and prices will be cheerfully furnished by the nearest office of the CORK INSULATION CO., INC.

General Catalog

In our catalog, fully illustrated, complete information on this company's products and their uses is given. It will be sent on request.

THE KORFUND CO., INC.

Specialists in Soundproofing and Vibration Isolation

LONG ISLAND CITY, N. Y.

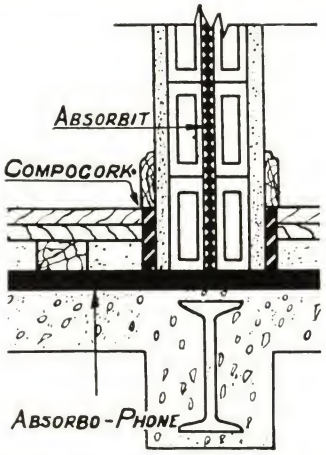
REPRESENTATIVES IN ALL PRINCIPAL CITIES

SOUNDPROOFING MATERIALS

Absorbit for Walls

Absorbit is inexpensive and simple to install. It comes in standard size, 48x24x¾ in. thick. It is easy to handle and can be readily cut with an ordinary handsaw. It is waterproof and verminproof, odorless, and will not disintegrate, crack, bind or buckle.

Absorbit consists of three layers of specially selected fibrous materials, impregnated with asphaltum and laminated together.



Absorbit Installed Between Two Hollow Tiles with Absorbo-Phone Beneath Finished Floor

Absorbit's three layers are so placed that they form staggered air spaces. The sides and edges of each sheet of Absorbit are sealed with asphaltum so that the staggered air spaces form dead air cells which are highly sound deadening.

Tests

Copies of tests made on Absorbit and Absorbo-Phone, proving their unusual sound insulating qualities, will be sent upon request.

Absorbo-Phone for Floors

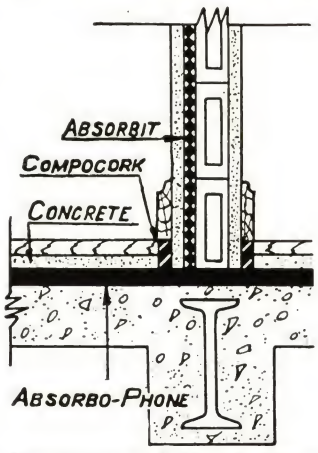
Absorbo-Phone is an unusually effective and inexpensive insulation for floors.

Absorbo-Phone is delivered in standard plates 25x36x1 in. Its construction consists of a frame of natural cork with a low density filler. A heavy coating of asphalt emulsion is spread over both sides of the plates and then covered with a high grade asphalt felt.

This unique combination and arrangement of materials makes it an efficient product, excellent in soundproof and waterproof qualities.

Absorbo-Phone is nonporous, highly resilient, of low density and a good nonconductor of noise. Absorbo-Phone is to all intents, everlasting and permanently guarantees a practically soundproof floor.

Any kind of finished floor can be placed upon Absorbo-Phone without reducing its insulating properties.



Absorbit Installed Beneath Plaster on One Side of Hollow Tile Wall and Absorbo-Phone Beneath the Finished Floor

MACHINERY ISOLATION

Korfund

Natural cork bound in steel frames for the isolation of all types of machine vibration.

Korfund Base Isolator

Plates of natural cork prepared with a surface binder of asphalt and asphalt felt are particularly adapted for the isolation of depressed foundations.

Korfund Side Isolator

A material utilizing all of the advantages of the great resiliency of low density compressed cork and the structural strength of natural cork, especially adapted for the side isolation of depressed foundations.

Korfund Vibro-Damper

An adjustable spring device for the isolation of machinery operating with heavy sudden impacts or high rotative speeds.

Korfund Kompo-Kork

Finely granulated compressed cork with linseed oil binder reinforced with burlap backing, both durable and pliable.

Korfund Instrument Isolator

Plates of India sponge rubber encased with a top and bottom layer of finely granulated compressed cork.

Engineering Service

THE KORFUND COMPANY, INC., maintains an engineering department equipped to make recommendations and design methods of isolation for every type of machinery from the lighter type of laboratory apparatus to the largest power plant machinery.

Literature

Isolation—A technical magazine.

Engineering Reports—Detailed methods of isolation of various types of machinery.

Special Bulletins—Complete data of the construction, loading, application, sizes and uses of each of the products listed.

THE COMPOUND AND PYRONO DOOR CO.

Manufacturers of Trimount Sound Insulating Wood Doors

ST. JOSEPH, MICH.

For the Sales Offices, see our other pages
For Key-Veenered and Pyrono Fireproof Doors, see Manufacturers' Index

TRIMOUNT SOUND INSULATING DOORS

The Trimount Sound Insulating Door can be veneered with any kind of wood, and in types similar to ordinary doors. It may have either raised or flat panels, and flush or raised mouldings. It will be noted from the illustrations that we manufacture two distinct types of sound-insulating doors; the Trimount "Special," a treatment of the sound retarding problem where the highest practicable sound retardation is desired and the expense warranted, and the Trimount "Regular," a comparatively inexpensive treatment, but highly efficient.

Trimount "Special"—(Below.) Built up of two separate doors held apart with a marginal frame providing a space filled with acoustic material flanked by air spaces, making a total thickness of 3 in. (furnished thicker if desired). Specially designed hardware is built into the door and by the operation of a heavy bronze lever handle, throws three bolts into beveled strike plates, drawing door tightly into its gaskets. These strike plates are installed at top and bottom and near center of the jamb. A double line of gaskets surrounds sides and top of the door opening, set into special stops as detailed. Outer stop is furnished with adjusters which have a slot permitting an in or out adjustment of the gasket in its relation to edge of the door. Edge of door is rabbeted with a contour which accommodates the inner line of gaskets and makes possible a wide area of contact between door and gasket. Two self-leveling felt strips set in galvanized steel channels seal bottom of door. By means of projecting plungers at hinge edge of door, they are automatically raised or lowered as the door is operated.

The salient features of the Trimount "Special" Door are: thickness, 3 in. double line of gasket; double bottom closer strips; 3-point contact hardware.

Trimount "Regular"—(Illustrated on following page.) Constructed on same principal as Trimount "Special," except that thickness is 2⅝ in. One-point contact hardware of turnbuckle type is used and a single line of stops and gaskets, also a single bottom closer strip. Latch set is furnished but applied by the carpenter erecting the door.

General Information for Ordering

Types—Trimount Sound Insulating Doors, either "Special" or "Regular," may be arranged for glazing with double or triple lines of glass, or may be fireproofed by the Pyrono Process. They may be hung in the usual manner in wood frames or in metal frames. If metal frames are used, self-threading screws are furnished for attaching stops, so that no tapping for screws is necessary.

What Is Furnished—The doors, special hardware, stops, with screws and stop adjusters, the gaskets, automatic bottom closer strips. Wood jambs, if required, can be furnished.

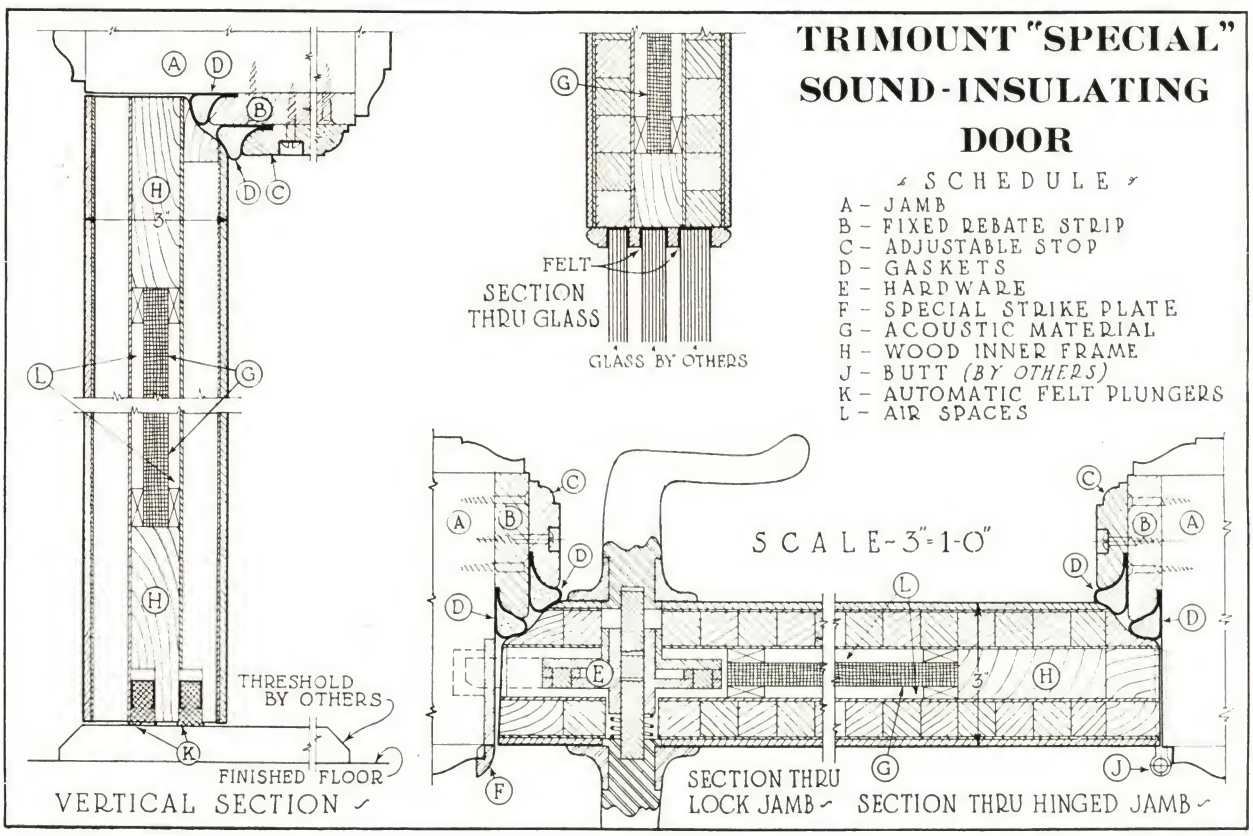
What We Apply—In Trimount "Special" Door, the 3-point contact hardware is built into the door. In Trimount "Regular" Door, the single contact latch and strike plate are furnished but not applied. If we furnish jambs, stops and gaskets are applied and door fitted. If jambs are not furnished by us, the carpenter hanging the door applies stops and gaskets. We apply bottom closer strips.

What We Do Not Furnish—Locks and hinges are not furnished. Any ordinary lock can be used, but provision must be made for the extra thickness of the door. (Locks can be furnished in combination with Trimount Regular latch sets if desired.) Any substantial hinges may be used, 5x5 in. for Trimount "Special" and 4½x4½ in for Trimount "Regular", but longer screws than usual are desirable on account of weight of door. Trimount "Special" flush doors weigh approximately 160 lbs. Trimount "Regular" flush doors weigh approximately 140 lbs.

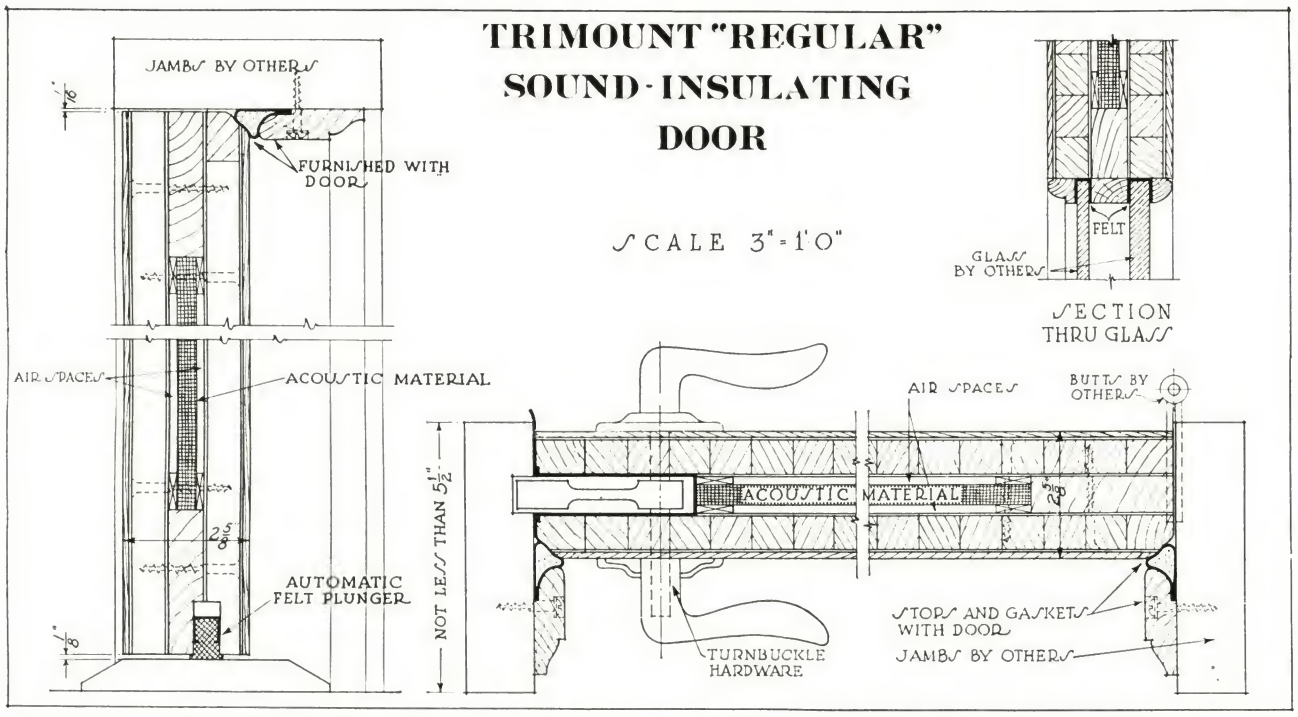
Time Required for Manufacture—Four weeks is the normal time desired for manufacture, but emergencies can be met as the need for closer co-operation arises.

How to Specify—Doors as indicated on the plans to be Trimount "Special" [Trimount "Regular"] Sound Insulating Doors, as manufactured by The Compound & Pyrono Door Co., of St. Joseph, Mich. Doors shall be furnished complete (with jambs if desired) with all special hardware, stops, gaskets and bottom closers, excepting butts and locks which are ordinarily furnished by others. Cylinder locks in combination with the Trimount "Regular" latch set can be provided if desired.

Information Required for Estimate—State definitely whether Trimount "Special" or Trimount "Regular" Sound Insulating Doors are desired; size of opening; design of doors (whether flush or paneled); single or pairs of doors; kind of wood for face veneer; swing of doors; width of jambs. If fireproofing is desired, it should be so stated. If glass openings are required, state size of openings. If jambs are required, or if cylinder locks in combination with Trimount "Regular" latch are desired, so state.

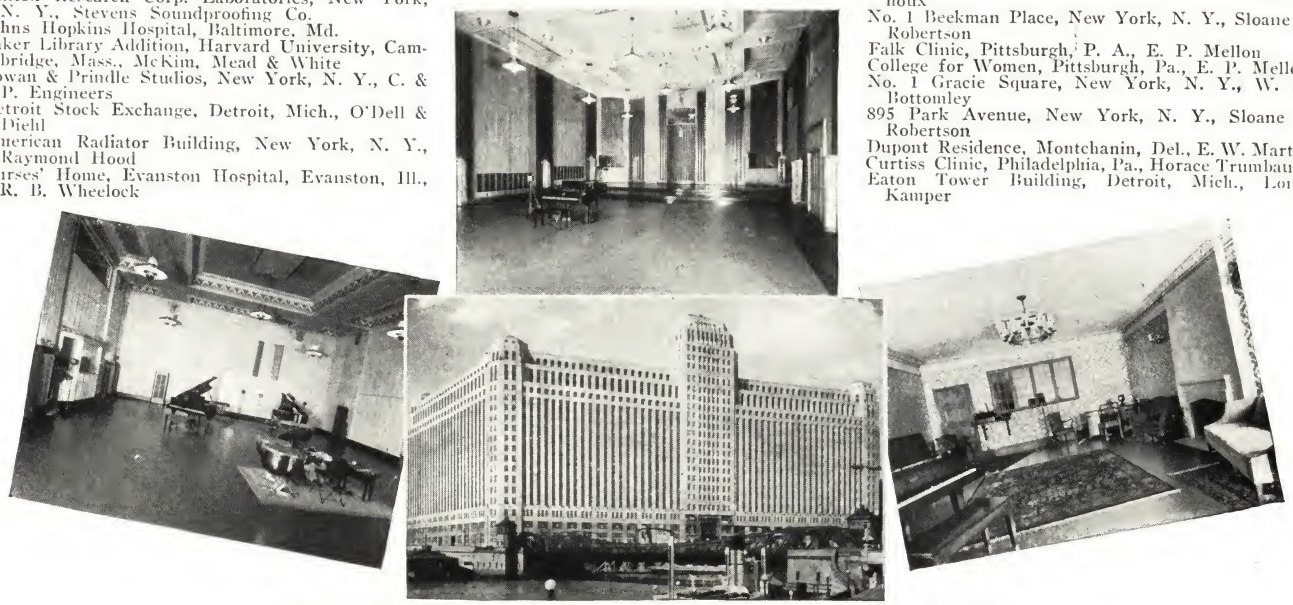


TRIMOUNT "REGULAR" SOUND-INSULATING DOOR



Some Recent Installations (and Architects) of Trimount Sound Insulating Doors

Crosley Radio Broadcasting Studios, Cincinnati, Ohio, Samuel Hannaford & Sons
National Broadcasting Co. Studios, New York, N. Y., N. B. C. Engineers
Columbia Broadcasting System Studios, Washington, D. C., C. B. S. Engineers
Ballistic & Chemical Laboratory, E. I. duPont deNemours, Carneys Point, N. J., Dupont Engineers
WGN Radio Broadcasting Studios, Chicago, Ill., Howells & Hood
WEEI Radio Broadcasting Studios, Boston, Mass., Bigelow, Wadsworth, Hubbard & Smith
Lying-In Hospital, Boston, Mass., Coolidge, Shepley, Bulfinch & Abbott
Lakeside Hospital, Cleveland, Ohio, Coolidge, Shepley, Bulfinch & Abbott
Illinois Bell Telephone Co., Rockford, Ill., Holabird & Root
Cooley School Addition, Detroit, Mich., Donaldson & Meier
Civic Opera Building, Chicago, Ill., Graham, Anderson, Probst & White
Eastman Kodak Co., Rochester, N. Y., Stevens Soundproofing Co.
New York University School of Music, New York, N. Y., James Gamble Rogers
Massachusetts General Hospital, Boston, Mass., Coolidge, Shepley, Bulfinch & Abbott
Fine Arts Building, Tulsa University, Tulsa, Okla., H. C. Hibbs
Doctor's Co-operative Building, Boston, Mass., Bigelow, Wadsworth, Hubbard & Smith
Concert Hall, Dupont Estate, Longwood Gardens, Pa., E. W. Martin
WBT Radio Broadcasting Studios, Charlotte, N. C., WBT Engineers
Music Building, University of North Carolina, Chapel Hill, N. C., Atwood & Nash
United Research Corp. Laboratories, New York, N. Y., Stevens Soundproofing Co.
Johns Hopkins Hospital, Baltimore, Md.
Baker Library Addition, Harvard University, Cambridge, Mass., McKim, Mead & White
Cowan & Prindle Studios, New York, N. Y., C. & P. Engineers
Detroit Stock Exchange, Detroit, Mich., O'Dell & Diehl
American Radiator Building, New York, N. Y., Raymond Hood
Nurses' Home, Evanston Hospital, Evanston, Ill., R. B. Wheelock
KMOX Broadcasting Studios, St. Louis, Mo., C. B. S. Engineers
Provident High School, Chicago, Ill., Miller & Wallace
Cadillac Motor Co., Engineering Building, Detroit, Mich., Albert Kahn
Franciscan Missionary of Mary, Providence, R. I., John F. Hogan
East Cleveland Junior High School, Cleveland, Ohio, Warner, McCormick & Mitchell
PN Unit, Children's Hospital, Boston, Mass., Coolidge, Shepley, Bulfinch & Abbott
St. Regis Hotel, New York, N. Y., Sloane & Robertson
Stevens Soundproofing Co. Office, Chicago, Ill., Stevens Soundproofing Co.
Junior High School, Blue Island, Ill., Doerr & Doerr
Washington County Hospital, Hagerstown, Md., A. J. Klinkhart
Deaconess Hospital, St. Louis, Mo., E. P. Barnet Co.
Billings Memorial Hospital, University of Chicago, Chicago, Ill., Coolidge and Hodgdon
Sterling Hall of Medicine, Yale University, New Haven, Conn., Chas. V. Klauder
Good Samaritan Hospital, Dayton, Ohio, Schenck & Williams
WABC Atlantic Broadcasting Station, Paterson, N. J., Clinton McKenzie
Wesley Hospital, Oklahoma City, Okla., Edward A. Gahl
Grace Hospital, Detroit, Mich., Albert Kahn
Lowrey School, Dearborn, Mich., H. J. Keough
Fairmount School, Dayton, Ohio, Walker & Norwick
County Court Building, Cleveland, Ohio, Warner & Mitchell
Bloomingdale Hospital, White Plains, N. Y., Grosvenor Atterbury
United Hospital, Portchester, N. Y., Raymond Hood, Godley & Fouilhoux
No. 1 Beekman Place, New York, N. Y., Sloane & Robertson
Falk Clinic, Pittsburgh, P. A., E. P. Mellon
College for Women, Pittsburgh, Pa., E. P. Mellon
No. 1 Gracie Square, New York, N. Y., W. L. Bottomley
895 Park Avenue, New York, N. Y., Sloane & Robertson
Dupont Residence, Montchanin, Del., E. W. Martin
Curtiss Clinic, Philadelphia, Pa., Horace Trumbauer
Eaton Tower Building, Detroit, Mich., Louis Kamper



National Broadcasting Co. Chicago Studios A, D and F in the Merchandise Mart
GRAHAM, ANDERSON, PROBST & WHITE, Architects
Studios completely equipped with Trimount Sound Insulating Doors

THE EVANSTON SOUND PROOF DOOR

IRVING HAMLIN, Patentee and Manufacturer

TELEPHONE
Greenleaf 1975

1500 Lincoln Street, EVANSTON, ILL.

Products

SPECIAL DOORS to RETARD TRANSMISSION of SOUND:

The Evanston Sound Proof Door—one door to an opening.

The Hamlin "Special" for radio broadcasting studios and the more exacting acoustical situations.

Hamlin's Combined Sound Proof and X-Ray Proof Door.

Hamlin's Double Doors—two of the above to an opening.

Hamlin Sound Proof Sliding Doors—where swinging doors are not desired.

The Hamlinized Folding Partitions—many of above to an opening.

EVANSTON SOUND PROOF DOOR

Construction—A sectional door, containing deadening quilt 7/8 in. thick. Held together by invisible means, without disfigurement of plugged screw holes. Looks like any other door except for its European form of handle—a rotating lever instead of knob.

Genuine hair felt is the deadening quilt, in two sheets, alternating with one thickness of sheet steel. This extends internally throughout almost the entire area of the door, under stiles and rails, to within 1 in. of the edges of the door, except for the small space occupied by the mechanism. This combination of steel and quilt is a scientifically approved device of many years standing in the sound-proofing and acoustical correction of existing common partition walls—the hard resonant steel serving to reflect back into the soft absorbent quilt a large part of the sounds that have penetrated the wood.

The function of the internal mechanism, operated by one-quarter rotation of the handle, is to hermetically seal the cracks between the door, the floor and the frame. It is of steel, strong and massive, with the pivotal connections riveted and not bolted. There are no springs to wear out and break.

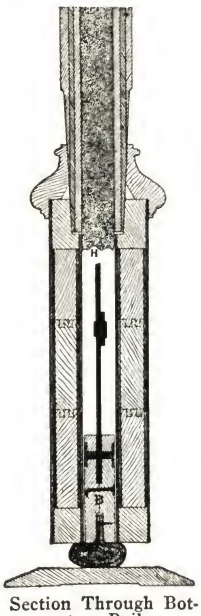
Ordinary doors shrink, swell and warp under varying degrees of steam heat and midsummer dampness. This door retains its virtue, no matter how much it may shrink or swell, as it is purposely trimmed so that its ultimate swelling will never be great enough for it to stick in the frame, while the special felt-mounted stops (1 in. thick) at all times fill the cracks, preventing drafts of air and passage of sound, dust, odors and light.

The threshold opening is sealed by a movable member, the other three openings by mere compression of the door against the felted stops. This movable "felt-board" is massive and strong, bearing upon its lower edge a generous roll of felt covered by strong canvas. When under compression it is 1½ in. wide by ½ in. thick. The illustration shows a raised threshold, but same is not necessary.

Made in any style of flush or sunken panels. Each section is a completely built-up 7/8-in. door in the core and veneer manner of the best Wisconsin door mills. Panel doors have 1/8-in. veneers, while flush doors are done in the cross-banded manner. The completely fabricated doors therefore in effect are 7-ply and 11-ply respectively, and 2⅝ in. thick. Your own jambs are usable and should measure at least 5½ in. across the face—flat, not rabbetted.

The sound proofing methods combined with ample and thorough application of sheet lead and rearrangement of handles, provide a perfectly acceptable noise proof and X-Ray proof treatment of X-Ray rooms in hospitals.

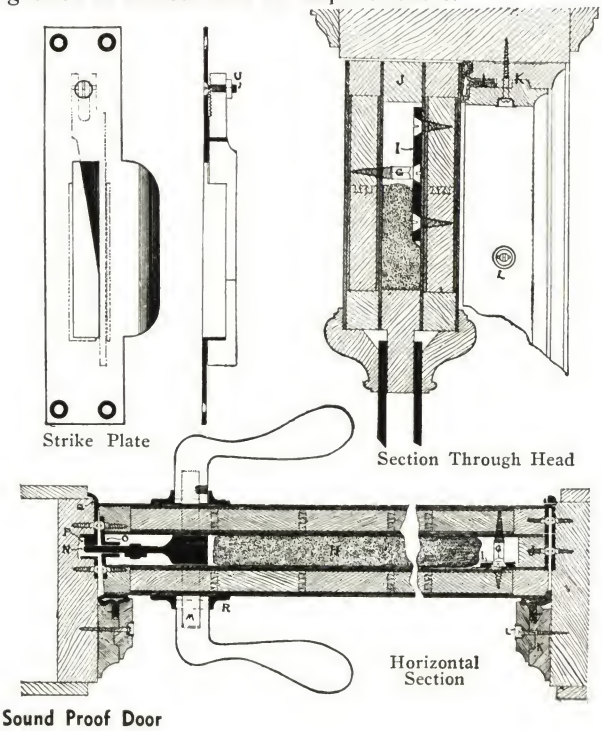
Double doors are furnished for openings up to 9 ft. wide. Sliding doors are offered, for use where a swinging door is undesirable or impracticable.



Section Through Bottom Rail



Vertical Section Showing Operating Mechanism



Strike Plate

Section Through Head

Horizontal Section

Details of the Evanston Sound Proof Door

The Hamlin "Special" Door is offered for use in the more exacting conditions in radio broadcasting, moving sound-pictures and testing rooms. It is of increased thickness and stiffness, and internally has two sheets of steel and three sheets of hair felt.

Metal covered fire resisting doors are furnished, constructed in the "kalamein" manner on the outside, while the interior can be provided with asbestos in addition to deadening quilt. Thus there is a quadruplex association of materials of differing densities — metal, wood, asbestos and quilting—the varying densities in juxtaposition being a standard recognized by men of science as very desirable for sound deadening.

These doors are offered as models of beauty, of thorough construction and of high efficiency in retarding sound—not of course one hundred per cent efficient, as only a steel safe door perhaps thus could be.



Metal Covered Doors

One of 31 doors in the Cleveland Terminals group of buildings. Metal covered in the "Kalamein" manner. Note—the knob handle is superfluous, but desired in this case

Operation—When door swings, handle is in diagonal upward position. Close the door, push handle one-quarter turn downwards, causing the latch to engage with the wedge in the strike-plate, thus forcing the door against the stops as a refrigerator door is clamped into its seat.

Coincidentally the canvas protected felt-board moves downward to the threshold, all being securely held by mere frictional resistance between latch and the long inclined surface of the wedge. Part of the inner mechanism is a counterweight to prevent felt-board from dragging when the door swings. Stops are adjustable in and out, while the length of thrust in the felt-board is varied by the up or down refastening of the wedge in the strike plate. These two adjustments permit of correct initial placement and of readjustment later if required. The inner mechanism is steel, with riveted pivotal connections, strong and simple, and without springs.

Uses—There are about 3000 doors, many in use for a dozen or more years in over 350 buildings comprising music schools, music salesrooms, hospitals, physicians' offices, committee rooms, private offices, bedrooms, bathrooms, "movie-talkie" studios, broadcasting studios, telephone booths, prison cells, jury rooms, testing rooms, and the like.

How Sold and Installed—Illustrated catalogue and list of installations are sent upon request, and from it you may find installations in your neighborhood for inspection. A full and exhaustive specification for use of civic, State and Government buildings sent on request.

Wisconsin mills furnish the woodwork, and the doors are fabricated, crated and shipped from Evanston. Your local contractor trims and hangs them from printed instructions.

Each prospective installation is figured upon its own basis. All installations are "special," and there is no price list. "Sanitary flush" doors in unselected birch and in plain red oak are kept in stock for quick shipment. For all other kinds your request for estimate should come well in advance of your needs, as often the woodwork is not obtainable at short notice. Quick shipment, however, is done by obtaining woodwork from mills so specializing, but at higher cost. Please state number of doors of each size, the kind of wood, and some indication of panels and mouldings.

On the Pacific Coast, a manufacturing and sales agency is established to cover Washington, Oregon and California.

If your door frames are to be of metal, your metal frame contractor should obtain in advance templates and instructions for metal cutting to take the special stops and hardware.

HAMLINIZED FOLDING PARTITIONS

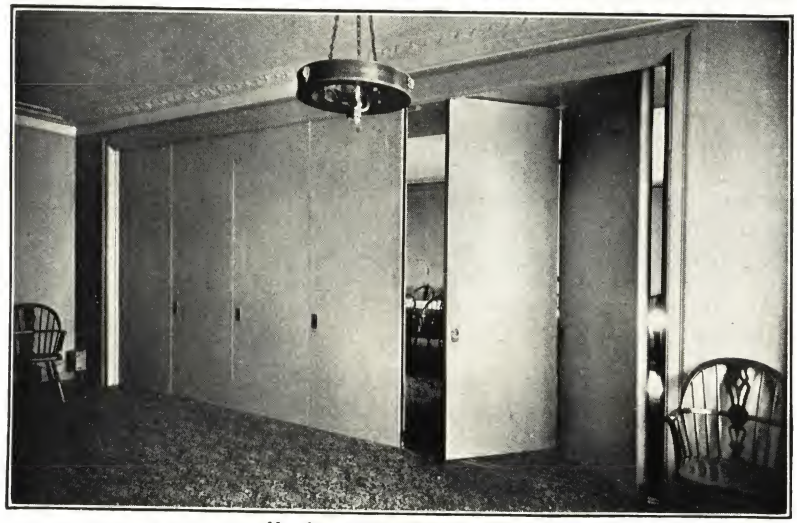
The Evanston Sound Proof Door is used for wide and high openings—the kind commonly known as folding partitions. Many successful installations are now in evidence, and a list of same will be sent upon application.

The superiority of the Hamlinized form is very obvious. The old forms are visual barriers only, while this new form introduces not only sound deadening construction of the doors themselves, but closes the openings above and below and about the sides.

The type of door adapted to the Hamlinized treatment is where the doors are hinged in pairs and pushed across the opening, each pair independently of the others, but linked together in each other's grasp by wide and shallow tongue and groove joints. The doors are 3⅛ in. thick.

In lieu of the 5-in. permanent lever handle (see illustration of the door) each of these folding doors has a flush bolt head to which is applied a removable handle for operating the mechanism which closes the head and floor openings. This is a necessary substitution, as otherwise the protruding handles would not allow of a compact folding of the doors.

The suspension hardware used is the Topping Manufacturing Company's "Easyfold," which has been re-designed in a thoroughly successful way to the Hamlinized requirement, namely an "off-center" application of the hangers and guides so as not to interfere with the centered inner mechanism and movable felt-board peculiar to the Evanston Sound Proof Door. Complete drawings are available upon application, showing details of construction of the doors, the jambs, hangers, guides, etc., and their adaptation in the new Hamlinized manner.



Hamlinized Folding Partition

GRAHAM, ANDERSON, PROBST & WHITE, Chicago, Ill., Architects

One of five used by the Cleveland, Ohio, Chamber of Commerce, on the fourteenth floor of the Terminals Tower Building

Estimates — Estimates are made for complete installations. Request for estimate should give the size of opening, kind of wood, approximate indication of panels and mouldings and should show whether doors are to fold into pockets or to be exposed at the jambs, also if they are to be parted in the center of the opening and fold both ways, or all to fold in one direction.

JOHNS-MANVILLE

EXECUTIVE OFFICES
292 Madison Avenue, NEW YORK, N. Y.

For Branch Offices, see Section on Wall Tile

Products

JOHNS-MANVILLE ACOUSTICAL TREATMENT AND SOUND ISOLATION.

Also Packings for all purposes; Refractory Cements; Waterproofing and Dampproofing; Asbestos Ebony; Asbestos and Asphalt Roll Roofing; Rotproof Roofs; Asbestos products of all kinds.

For the following Johns-Manville products, see Manufacturers' Index: Shingles, Built-up Roofing; Home Insulation; Insulating Board and Insulating Lath; Insulations; Tile Flooring; Transite, Flat and Corrugated; Wall Tile.

JOHNS-MANVILLE ACOUSTICAL TREATMENT AND SOUND ISOLATION

Johns-Manville is prepared to supply a solution to any problem involving the control of sound in buildings. This includes the quieting of offices, banking rooms, stenographic rooms, bookkeeping departments, telephone rooms, school and hospital corridors, etc.; the attaining of good hearing conditions in theatres, auditoriums, churches, lecture and concert halls, courtrooms, etc., and the isolation of sound so that it will not be transmitted through walls, floors or ceiling from one room to another. Problems involving sound isolation require an entirely different method of treatment, in no sense interchangeable with the methods employed in acoustical correction. With the increasing number of large buildings, housing scores of various activities, the necessity for adequate sound insulation between rooms and floors becomes increasingly apparent. Johns-Manville also presents the J-M (formerly Stevens) System of Sound Isolation as an addition to this service on sound control. Available sizes of units and other characteristics of all Johns-Manville acoustical materials are tabulated on page 5.

Exact calculation can be made of the degree of quieting possible to obtain and the results measured and checked with accurate measuring apparatus. Performance reports on Johns-Manville installations are available showing improvement effected by this quieting treatment, the increased efficiency of employees and the results in savings in dollars and cents.

Johns-Manville has had more than twenty years' experience in acoustical work, dating from the retaining of the late Wallace Clement Sabine of Harvard University as consultant. During this period Johns-Manville Engineers, employing Johns-Manville acoustical materials have successfully undertaken problems of every type involving reverberation, echo, distortion, resonance, faulty distribution, etc.

The materials employed have been developed for specific purposes. There has been no adapting or making over of products designed for other uses in order that they might be exploited as an acoustical material. Where a need for an acoustical treatment having certain characteristics of finish or sound absorption has developed, a search has been made until such a material has been found or invented. As the science of acoustics has progressed, the Johns-Manville line has been improved to keep abreast with demand. The new and exacting acoustical requirements of sound film and radio broadcasting studios and talking movie theatres have been met.

Co-operation of our Acoustical Engineers with the architect has always been the keynote of J-M Acoustical Service. Particularly in the sketch stage of design is such co-operation desirable, as early study generally makes possible the attainment of ideal rather than simply acceptable acoustics. In the case of existing structures, J-M Acoustical Treatment can be applied to interiors with little or no mutilation of their architectural lines and with no visible alteration in shape or size.

Adaptability

One of the outstanding advantages of J-M Acoustical Materials is their adaptability to practically any architectural requirement. Large unbroken areas, panels, plane, curved or coffered surfaces may be treated. The resulting surfaces may be continuous similar to a plaster treatment or jointed as where tile are used. Square or rectangular tiles applicable in ashlar, herringbone, basket weave, etc., patterns are procurable.

Every material in the J-M Line is permanent, sanitary and readily cleaned. With few exceptions they can be washed with soap and water and repainted.

Color and Texture

The decorative effects procurable in the use of J-M Acoustical Materials, both in color and texture, are almost unlimited. The natural and interesting textures of the materials themselves may be utilized or their surfaces may be treated to produce the effects obtained through the use of the more familiar forms of interior finish. Solid colors, patterns, stenciled decorations, special border effects, wood graining, etc., are attainable. Almost any textural effect obtainable in plaster as well as wood and metal treatments is possible. Johns-Manville acoustical materials make their own contribution to the decorative scheme.

Efficiency

In sound absorbing efficiency these materials are equally preeminent. There is a material for any degree of absorption required, from Sanacoustic Tile, with the highest absorption, on down the list. In addition, Johns-Manville has conducted a great deal of research on the variation of absorption with frequency, so that each J-M Treatment is especially adapted to the class of sound sources with which it has to deal.

Fire Resistance

Another important characteristic of J-M Acoustical Materials is their resistance to fire. Each one has been developed with this requirement in mind. As a result, Johns-Manville offers in Sanacoustic Tile the only acoustical material which has to date been passed by the National Board of Underwriters as being without fire hazard. Other J-M acoustical materials are so nearly incombustible that they are accepted for fireproof buildings by building departments universally.



Sanacoustic Tile

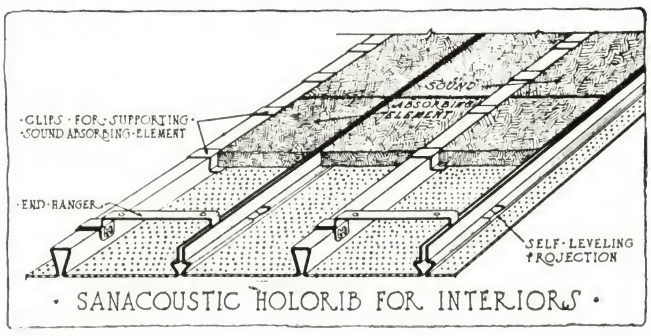
Sanacoustic Tile

Johns-Manville Sanacoustic Tile is a sound absorbing interior finish that consists of a perforated metal container utilizing J-M Banroc Wool as the sound-absorbing element. The tile are made in six standard styles and sizes, permitting a great variety of patterns. They are supported by copper bearing steel furring T's which may be economically fastened to any type of structural support. When installed in buildings during the course of erection, metal lath and plaster may be omitted.

The surface of J-M Sanacoustic Tile is finished in baked enamel which gives it a very high light reflecting value and a sanitary surface which may be easily cleaned with a damp cloth or sponge. It may be repainted or decorated without impairing its sound-absorbing efficiency. Any decorating media may be used to secure any desired effect. Sanacoustic Tile is also available in pre-decorated form, nine standard designs being available, including types appropriate for any of the most commonly used styles of interior decoration.

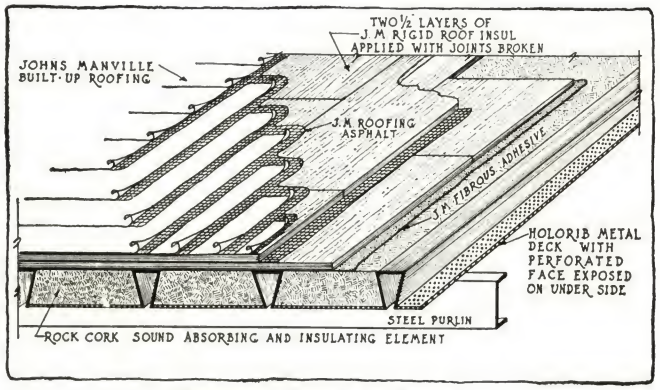
It is particularly adapted to offices, hospitals, restaurants and schools. Under excessive humidity conditions, such as are encountered in swimming pools, kitchens and sterilizing rooms, the tile and supporting members are made of aluminum, and under these conditions there is absolutely no danger of corrosion either of the tile or the sound-absorbing element.

Sanacoustic Tile finishes may also be obtained in flat perforated sheets known as Sanacoustic Panels. They may be obtained 30 to 48 in. in width, up to 14 ft. long. By this means it is possible to use various of the new commercial metals and alloys, or to obtain panel effects with imitation wood veneering, etc.



Sanacoustic Holorib for Interiors

This product utilizes the large unit possibilities of a perforated Holorib metal deck plus the highly efficient sound absorbing qualities of rock wool, providing all the exceptional qualities of Sanacoustic Tile in large units with a corresponding saving in cost of installation. The product is obtainable in lengths up to 10 ft. and the finished appearance is that provided by long narrow panels rather than square or rectangular tiles.



Sanacoustic Holorib for Roofs

Sanacoustic Holorib for Roofs

This product is an adaptation of the familiar steel roof deck unit wherein extraordinarily high sound absorption characteristics are added to the well established advantages of this type of construction. It utilizes the perforated metal feature of J-M Sanacoustic Tile on the exposed interior surface, filling of J-M Rock Cork as the sound absorbing element, two layers of J-M Insulating Board as heat and cold insulation in addition to that provided by the Rock Cork, the whole being weatherproofed on the exterior surface with J-M Asbestos Built-up Roofing. It may be used wherever steel roof deck construction is applicable. It is a combination of materials which have individually and successfully proven their worth over a period of time.



Rockoustile

The name "Rockoustile" describes the material perfectly. This newest addition to the Johns-Manville line of acoustical materials is an acoustical tile in which the principal constituent is rock wool. In the process of manufacture it is compressed into a block sufficiently rigid to be easily installed, yet with enough porosity to make it a highly absorptive acoustical finish.

Rockoustile presents a pleasingly variegated surface and can be obtained in a variety of colors. It is cemented in place with a special Johns-Manville Asbestos

Cement. It is manufactured in several different sizes and can be adapted to a wide variety of patterns and designs.

Transite Acoustical Tile

Johns-Manville Transite Acoustical Tile is a sound absorbing interior finish consisting of a 1-in. thick rigid block, the sound absorbing element, faced with a perforated sheet of $\frac{3}{16}$-in. thick Transite and backed with asbestos paper securely cemented to the block. The whole assembly is held together as a unit with specially designed grommets. All face edges of the unit have a $\frac{1}{8}$x$\frac{1}{8}$-in. bevel. The tile are furnished in three standard colors, Natural Variegated Gray, Natural Variegated Buff and Cream White Enamel. Any other color or stencil design may be applied on the job using ordinary flat finish wall paints, or any type of decoration applicable to ceilings or walls can be put on Transite Acoustical Tile.

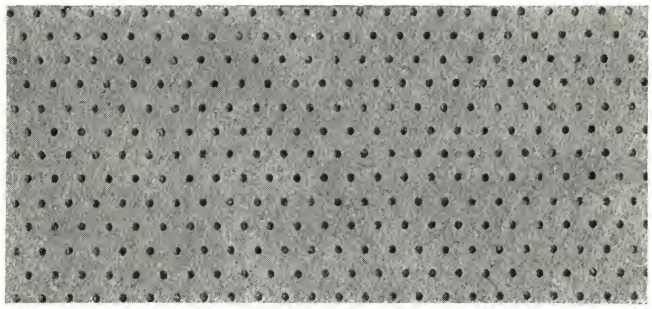
Nashkote

Nashkote is a system of building up a sound-absorbing interior finish on the job. It consists in the application of a highly efficient acoustical felt to an ordinary structural backing, and the finishing of the exposed surface of the felt with various types of finishes, depending upon the architectural requirements.

Nashkote may be applied over areas of any size without the necessity of paneling or coffering. It is a most adaptable type of sound-absorbing interior finish.

Nashkote Type A—In this type a fabric of sheer muslin is cemented to the surface of the felt and painted with a washable oil paint. It has the finished appearance of a painted hard wall plaster surface upon which any type of decoration or murals may be painted. After this the surface is perforated by mechanical means to provide any predetermined acoustical efficiency without loss to the decorative value of the finish.

Nashkote Type B—In Type B the finished fabric cemented to the surface of the felt is an oilcloth, perforated in a variety of interesting patterns. The perforations do not detract from the appearance, but rather add a fine feeling of texture. The surface may be washed or decorated without an appreciable effect upon the sound-absorbing efficiency of the material.



Nashkote Type B

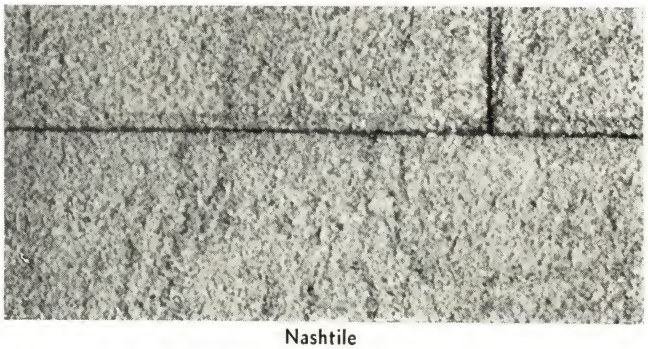
Nashkote Type C—Utilizes a white surfaced felt in which the decoration where desired is applied directly to the surface of the felt. It is excellent for high ceilings in churches, armories and auditoriums where sound-absorbing efficiency, economy and decorative value demand equal consideration.

Nashkote Type F—In this type the finished fabric consists of a pre-decorated membrane such as dyed burlap, brocades, cretonnes, Japanese grass cloth or awning cloth. These fabrics may be applied as competently upon the acoustical felt as on a plastered surface.



Nashkote A1S

Nashkote A1S—A sheer muslin fabric is cemented to the surface of the felt and painted with a sand and oil or sawdust and oil paint to simulate a sand finished plaster surface. This type of finish is employed to obtain caen stone effects and interesting swirl textures.



Nashtile

Nashtile

Nashtile consists of specially prepared asbestos and hair felt, punched and sized to form semi-rigid tile in standard sizes with or without beveled edges. The surface of the tile is finished with a mineral aggregate cemented directly to the felt with a waterproof cement. Color may be secured either through the natural color of the aggregate or the surface can be finished with lacquer. The tile may be laid up in cement against any kind of a structural backing, to form an unlimited variety of patterns. The surface of the tile may be washed or scrubbed or relacquered by the brush or spray method. The sound-absorbing efficiency is very high.

Short Form Specification for Furnishing and Applying Johns-Manville Acoustical Treatment

Work Included—The work contemplated under this specification shall include all materials, labor, equipment and service necessary for and reasonably incidental to the installation of Johns-Manville Acoustical Treatment (State in detail, surfaces to be covered. See Note 1.) as shown on drawings or herein specified.

(Include the following paragraph if other than the standard finish is desired):

The decorating of the acoustical treatment shall be (State whether "included" or "excluded." See Note 2).

(Omit the following paragraphs if no mouldings are to be used):

The furnishing and installing of mouldings adjoining the acoustical treatment shall be (State whether "included" or "excluded").

Work Not Included—The following work will be furnished and installed as specified under other divisions of the specification which this contractor shall read to ascertain what is called for therein. (See Note 3.) (The paragraphs which do not apply to the job at hand are to be omitted.)

(a) Unless otherwise specified, the special decoration on all exposed surfaces of the acoustical treatment.

(b) Unless otherwise specified, all mouldings adjoining the acoustical treatment.

(c) Prepare concrete surfaces to receive the Nashkote, Nashtile or Rockoustile types of treatment by finishing with a neat coat of Portland cement and sand, brought to a true level.

(d) Prepare tile or masonry surfaces to receive Nashkote, Nashtile or Rockoustile types of treatment by finishing with plaster brought to a true level.

(e) Prepare furred ceiling surfaces to receive Nashkote, Nashtile or Rockoustile types of treatment by finishing with scratch and brown coats of plaster, brought to a true level and floated reasonably smooth. (A white putty coat may be substituted in place of the brown coat, if desired.)

Prepare furred ceiling surfaces to receive the Sanacoustic Tile or Transite Acoustical Tile type of treatment, omitting all metal lath and plaster but furnishing and installing hot rolled steel plasterer's channels or angles, rigidly and securely suspended to a uniform surface $1\frac{9}{16}$ in. above the finished ceiling surface. Such channels or angles shall be spaced not to exceed 4-ft. centers. Similar channels or angles shall also be placed 4 in. from all walls, beams and other projecting surfaces which are parallel to the direction of the channels or angles.

(f) Prepare wood framing to receive Nashkote, Nashtile or Rockoustile types of treatment by spacing members not to exceed 18-in. centers.

Prepare wood framing to receive the Sanacoustic Tile type of treatment by spacing the members not to exceed 4-ft. centers.

(g) Set all electrical outlet boxes flush with the finish surface of the acoustical treatment.

Materials and Workmanship—All work under this Specification and Contract shall be executed in strict conformity with the "Standard Specification of JOHNS-MANVILLE for the Furnishing and Applying of Acoustical Treatment," which Standard Specification is hereby declared and made a part of this specification with the same force and effect as if written herein in full.

The work shall be done by JOHNS-MANVILLE or an authorized and approved Contractor for Johns-Manville Acoustical Materials.

Type of Acoustical Treatment—Acoustical Treatment shall be.....(State type designation, thickness and, in the case of tile, size and standard or special color of units, design to be followed in applying, and whether square or beveled edge tile are desired. See note 4.)

Note 1: Acoustical or sound absorbing materials vary in sound absorbing efficiency with variations in the physical properties of the material, and the character of the finished surface. The Architect or Engineer should confer with the J-M Acoustical Engineer; determine the type of sound absorbing material best adapted, from an architectural and decorative standpoint, for the project; have an analysis made showing the location and number of square feet of surface area necessary to treat with the material selected in order to obtain the results desired; and indicate clearly on the drawings or in the specifications the location and amount of surface area to be treated.

If Sanacoustic Tile employing a sound-absorbing element 2 in. or greater in thickness is to be used, consult the J-M Acoustical Engineer for special specification.

Note 2: The decorating of the acoustical treatment where other than the standard finish is desired *may* be done by other contractors. In this event the Architect or Engineer should, in conference with the J-M Acoustical Engineer, determine the type of decoration best adapted for the purpose and specify the medium to be used.

Where it is desired that composition ornament be installed on the face of the acoustical treatment, the Architect should so specify or show on the drawings. He should confer with the J-M Acoustical Engineer to determine the manner in which such ornament shall be supported and specify under what contracts the work is to be divided.

Note 3: Johns-Manville Nashkote, Nashtile and Rockoustile types of Acoustical Treatment may be looked upon as a finish veneer requiring a structural backing. Being flexible or semi-rigid in form, the finish surface of these types of acoustical treatment will be only as smooth in contour as the structural backing.

Johns-Manville Sanacoustic Tile or furring may be utilized as a structural veneer, in which case the Sanacoustic Tile Supporting Tees, Sanacoustic Panels and Transite Acoustical Tile when applied to cement, hollow tile or masonry, may be shimmed to take up irregularities in the surface of the structural backing. On furred ceilings the Sanacoustic Tile Supporting Tees may be wired or clipped to the plasterer's channels or angles and the Sanacoustic Tile and sound-absorbing element contained therein will, under these conditions, constitute a complete substitution for the metal lath and plaster.

Note 4: In addition to the foregoing it will be necessary to specify the following:

If Nashkote Type F is to be used, specify the finish fabric desired. If to be "as selected," a limiting cost per yard should be specified.

If Sanacoustic Tile or Sanacoustic Panels is to be used, specify whether metal parts are to be steel or aluminum.

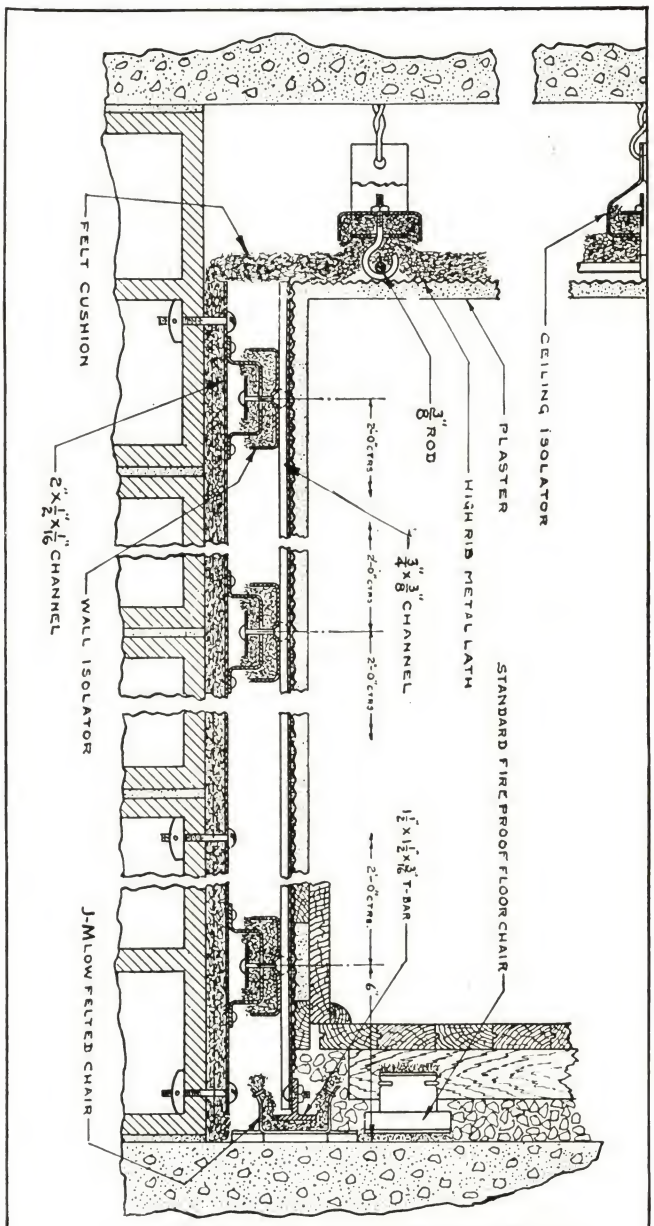
If the treatment involves the use of wood furring strips or mouldings, specify whether they are to be plain or fireproofed.

If wood or metal mouldings are to be included in connection with the treatment, the size, type and profile of such mouldings should be specified as shown on the drawings.

Johns-Manville System of Sound Isolation (Formerly Stevens System of Sound Proofing)—Sound isolation is the process of preventing sounds generated in one part of a building from passing to another part through partitions or other members of the structure. Sound waves either pass directly through these structures or set them in vibration. In the latter case the vibrating structure reproduces the sound on the opposite side. With this in mind it becomes obvious that one of two things must be done to prevent sound transmission. Either the structure must be built so massively that the sound waves cannot set it into vibration, or else the surface must be so isolated from the substructure that it is free to vibrate of itself without transmitting the vibrations.

The J-M System of Sound Isolation employs a series of patented isolators. These devices are placed between the exposed face of the structure and the substructure to prevent vibrations from being transmitted. The shock absorbing action of these isolators is usually aided by a layer of sound-absorbent material. This system provides a series of materials having different densities, each of which offers new resistance to the passage of the waves.

Among its more common applications may be mentioned the insulation of ballrooms, kitchens and laundries in hotels, bowling alleys in clubs or combination theater buildings, lodge buildings, apartment buildings, broadcasting studios, etc.



J-M SYSTEM OF SOUND ISOLATION FOR PARTITION FLOOR AND CEILINGS IN FIREPROOF CONSTRUCTION

Four of the largest groups of broadcasting studios in the country are built throughout with Johns-Manville sound insulating walls, floors and ceilings.

J-M Isolators consist of steel "chairs" or clamps lined with hair felt. Different designs are used for the various floor, wall and ceiling constructions. Special combinations are designed for use under machinery to prevent the vibration from being transmitted to the supporting structure.

The system is flexible. It has been used for more than a decade in all types of buildings with notable success, including the most modern fireproof constructions.

Specifications furnished on application.

TABULATION OF VARIOUS TYPES OF JOHNS-MANVILLE ACOUSTICAL TREATMENT

TYPE DESIGNATION	FOUNDATION REQUIRED	SIZE OF UNITS	LIMITATIONS OF SURFACE CONTOUR	CHARACTER OF FINISHED SURFACE	SOUND ABSORBING MEDIUM	FIRE RISK	UPKEEP REQUIRED	MATERIAL THICKNESS	WEIGHT PER SQUARE FOOT	SOUND ABSORBING EFFICIENCY AT 512 CYCLES	ADAPTED FOR
SANACOUSTIC TILE	NO LIMITATIONS	12" × 12" 12" × 24" 8" × 16" 16" × 16"	FLAT WALLS OR CEILINGS OR VAULTS OF LARGE RADIUS	ENAMELED PERFORATED STEEL OR ALUMINUM	ROCK WOOL	FIRE RESISTANCE APPROVED BY BUILDING DEPARTMENTS UNIVERSALLY	WASH OR PAINT ANY MEDIA	1 3/16"	STEEL 2.5 LB. ALUMINUM 2.0 LB.	.82	QUIETING OF EVERY TYPE
SANACOUSTIC PANELS		30" TO 48" WIDE IN LENGTHS UP TO 14'-0"						1 1/8"	STEEL 1.5 LB. ALUMINUM 1.3 LB.	.82	AUDITORIUM WORK AND ANY TYPE OF WALL OR CEILING PANELING
SANACOUSTIC HOLORIB FOR INTERIORS		22" WIDE IN LENGTHS UP TO 12'-0"						2"	2.7 LB.	.82	SOUND QUIETING OF EVERY TYPE PARTICULARLY ADAPTABLE FOR CORRIDOR WORK
SANACOUSTIC HOLORIB FOR ROOFS	STEEL PURLINS SPACED UP TO 8'-6" C.C.	18 1/8" WIDE IN LENGTHS SUITABLE TO PURLIN SPACING	PLANE SURFACES OR SURFACES OF LARGE RADIUS	ENAMELED PERFORATED STEEL	ROCK CORK			2 7/8"	6.7 LB.	.82	WHERE THE UNDERSIDE OF ROOF CONSTRUCTION CAN SERVE AS THE CEILING FINISH
TRANSITE ACOUSTICAL TILE	NO LIMITATIONS	6" × 12" 12" × 12"	FLAT WALLS OR CEILINGS VAULTS OF LARGE RADIUS	PERFORATED TRANSITE ENAMELED OR NATURAL SMOOTH STONELIKE APPEARANCE	ROCK WOOL			1 3/16"	3.0 LB.	.70	SOUND QUIETING OF EVERY TYPE WHERE TILE PATTERNS ARE DESIRED
ROCKOUSTILE	BROWN OR PUTTY COAT OF PLASTER FLOATED SMOOTH · CONCRETE WITH LEVELING COAT OF PLASTER OR CEMENT · WOOD SHEATHING · PLASTER BOARD INSULATING BOARD · FLAT SHEET STEEL · WOOD STUDS OR JOISTS 12"-16"-18" C	6" × 12" 12" × 12" 12" × 24" 9" × 18" 18" × 18" SPECIAL SIZES	NO LIMITATIONS	AN INDIVIDUAL TEXTURE NOT UNLIKE TRAVERTINE	ASBESTOS AKOUSTIKOS FELT		CLEAN WITH VACUUM CLEANER OR SAND PAPER	1" 3/4"	2.0 LB. 1.5 LB.	.62 .58	ALL TYPES OF AUDITORIUMNS FOR QUIETING WHERE TILE PATTERNS ARE DESIRED
NASHKOTE TYPE A PERFORATED AFTER ERECTION		NO LIMITATIONS		SMOOTH OIL PAINT			WASH OR REPAINT AND PERFORATE	1/2" 3/4" 7/8"	7 OZ. 10 " 13 "	.43 .53 .67	AUDITORIUMS - CHURCHES THEATRES - COURT ROOMS WHEREVER A HIGH QUALITY FINISH IS REQUIRED TO MATCH PAINTED PLASTER
NASHKOTE TYPE A1S				PAINTED SAND FINISH PLASTER				1/4" 3/4" 7/8"	8 OZ. 11 " 14 "	.31 .38 .48	
NASHKOTE TYPE B				PERFORATED OIL CLOTH			WASH OR PAINT	1/2" 3/4" 7/8"	8 OZ. 11 " 14 "	.43 .53 .67	OFFICE HOSPITAL RESTAURANT AND GENERAL QUIETING
NASHKOTE TYPE C				WHITE FACED FELT SIZED · UNQUE FINISH TEXTURE			WASH OR PAINT WITH SPRAY	1/2" 3/4"	7 OZ. 10 "	31 .42	HIGH AUDITORIUM CHURCH OR ARMORY CEILINGS
NASHKOTE TYPE F				BURLAP · REP · BROCADE · AWNING CLOTH OR ANY DYED FABRIC			DRY OR VACUUM CLEAN	1/2" 3/4" 7/8" 1 1/2" 1 3/4" 3"	8 OZ. 11 " 14 " 21 " 28 " 42 "	.35 .49 .65 .72 .76 .77	ALL TYPES OF AUDITORIUM · CHURCH, THEATRE WORK WHERE FABRIC FINISH IS DESIRABLE
NASHTILE		6" × 12" 12" × 12" 12" × 24" 9" × 18" 18" × 18" SPECIAL SIZES		AN INDIVIDUAL STONE LIKE TEXTURE			WASH OR SPRAY WITH LACQUER	3/4"	13 OZ.	.38	ALL TYPES OF AUDITORIUMS FOR QUIETING WHERE TILE PATTERNS ARE DESIRED

ACOUSTICAL CORPORATION OF AMERICA

Mechanical Engineering Consultants and Contractors in Acoustics, Soundproofing, Sound Control and Regulation

10 South 18th Street, PHILADELPHIA, PA.

NEW YORK OFFICE: 11 West 42nd Street

OFFICES IN OTHER PRINCIPAL CITIES

The Organization

Acoustical Corporation of America is a pioneer in the field of acoustics, having had seventeen years' uninterrupted experience solely in this work. Members of the organization have been continuously in this field since its inception.

The Corporation acts as mechanical engineering consultants in acoustics and soundproofing, acoustical and soundproofing contractors, and operators under patents of M. C. Rosenblatt, M.E., M.A.S.M.E., F.R.S.A.

A Comprehensive Service

We believe our organization to be the only one of its kind in the acoustical field. It is unique in that it is *not* primarily a manufacturer of acoustical materials but a *selector* of products, materials and constructions to properly comport with the acoustical problem and the architectural style. This is an *invaluable* advantage to the architect.

We control the manufacture of several of our materials as noted below but have no prejudice toward or against any proven material on the open market which is suitable for acoustical purposes. We deal with them all but refine them by our own processes and to meet the problem involved.

Plan Analysis

We are able to predetermine all acoustical characteristics and degree of soundproofing from your plans.

Responsibility

Acoustical Corporation of America is prepared to show financial responsibility to undertake work of any size or quantity. We have lately completed the largest single contract ever awarded in this field. A guarantee bond will be cheerfully furnished.

Description of Products

Silent-Ceal—This is a complete suspended fireproof acoustical ceiling construction. It looks like a ceiling with over-all painted finish and forms a permanent structure. It has a high uniform sound absorbing efficiency—average over 70% between 256 D V and 2048 D V. Considering the omission of cross furring lath, plaster and painting by others Silent-Ceal is very economical. For auditoriums and theatres it is an extremely economical acoustical treatment. It may be zoned for sound absorption and conforms to any curve.

Porolith—Porolith is finished fireproof tile form of acoustical material. It is produced with beveled or square edge and in variegated colors and textures.

Cushocel—Cushocel is a standard felt and contact membrane type presenting an over-all stippled finish in colors or decorations as desired. Cushocel has high efficiency and may be obtained with a sanitary washable membrane.

Absorbege—This is a fibre board type material having exceptionally high efficiency in this field for the low pitches—over 35% at 128 D V as well as for high pitches—over 90% at 4096 D V. It is a beautiful material with beveled or square edges, variations of grain and texture. It can be provided in panel units or, because of its edge grain structure, may be finished to present an over-all finish. It can be cleaned and repainted at will without impairing its acoustical efficiency.

Soundproof Partitions—We can provide soundproof partitions ranging from the moderate cost "Apartment type" for a reduction from 70 decibels to 25 decibels to the most soundproof type, such as is necessary between radio studios or music rooms.

Soundproof Floors—We can lay out a soundproof floor construction to provide any degree of soundproofing required.

Soundproof Doors—Our soundproof doors are mechanically correct and are equipped with our special hardware and accessories.

Quiet-Quite Machinery Isolators—These are designed to prevent telephonic transmission of sound through the structure from fans and motors, exhausters, ventilation equipment, elevator machinery, humming panelboards and switches and all other machinery creating vibration, noise and magnetic hum.

Baffle Chambers—Our properly designed baffle chambers and duct linings for ventilating systems can be produced for a reduction of from 75 decibels to 15 decibels in adjacent rooms.



D. A. R. Constitution Hall, Washington, D. C.
"The Stradivarius of Music Halls"
John Russell Pope, Architect
Geo. A. Fuller Co., General Contractors

References—A Small Representative List

Empire State Building, New York, N. Y., Shreve, Lamb & Harmon, Architects; Starrett Bros. & Eken, General Contractors
Atlantic City Convention Hall, Atlantic City, N. J., Lockwood, Green & Company, Architects
Ziegfeld Theatre, New York, N. Y., Joseph Urban, Architect
D. A. R. Constitution Hall, Washington, D. C., John Russell Pope, Architect
Hunter College, New York, N. Y., Thompson, Holmes & Converse, Architects; John T. Brady Co., General Contractors
Church of the Heavenly Rest, New York, N. Y., Bertram Goodhue Associates, Architects
William B. Irvine Memorial Auditorium, Philadelphia, Pa., Horace Trumbauer, Architect
Bryn Mawr Hospital, Bryn Mawr, Pa., Zantzinger, Borie & Medary, Architects
Southern Railway Office Building, Washington, D. C., Waddy B. Wood, Architect
Bell Telephone Company Buildings
Temple University, Philadelphia, Pa., Wm. H. Lee, Architect
Art Museum, Philadelphia, Pa.
RCA-Victor Company, New York, N. Y., and Atlantic City, N. J.
Hollywood Theatre, Reading, Pa., Wm. H. Lee, Architect

Specifications

It is impractical to prepare standard specifications which will meet every condition. From our analysis of the architect's plans, as previously described, we will prepare and furnish him with a guiding specification to meet his particular problem.

A general specification should read: Acoustical construction for the following spaces ..... shall be in accordance with the standard, quality, construction and materials of the Acoustical Corporation of America. The contractor shall submit working details of the acoustical construction showing the relation with all other trades joining or intersecting this work.

For more detailed specifications write, telephone or wire and request descriptive folders or a personal call by one of our engineers.

ARMSTRONG CORK & INSULATION COMPANY

Manufacturers of Armstrong's Corkoustic

935 Concord Street, LANCASTER, PA.

BRANCHES

ALBANY, N. Y.
ATLANTA, GA.
BOSTON, MASS.
BUFFALO, N. Y.
CHARLOTTE, N. C.
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CINCINNATI, OHIO
CLEVELAND, OHIO
DALLAS, TEX.
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GRAND RAPIDS, MICH.
HOUSTON, TEX.
JACKSONVILLE, FLA.
KANSAS CITY, MO.
LOUISVILLE, KY.
MILWAUKEE, WIS.
MINNEAPOLIS, MINN.
NEW YORK, N. Y.
OMAHA, NEB.
PITTSBURGH, PA.
ROCHESTER, N. Y.
ST. LOUIS, MO.
SYRACUSE, N. Y.
MONTREAL, QUE.
TORONTO, ONT.
WINNIPEG, MAN.
LONDON, ENG.

AGENTS

BALTIMORE, MD., John R. Livezey, 526-530 St. Paul Street
LOS ANGELES, CAL., Gay Engineering Corp., 2650 Santa Fe Avenue
NEW ORLEANS, LA., H. T. Steffee, 922-930 Tchoupitoulas Street
PHILADELPHIA, PA., John R. Livezey, Glenwood Avenue West of 22nd Street
PORTLAND, ORE., Gillen-Cole Co., 15th and Overton Streets
SAN FRANCISCO, CAL., Van Fleet-Freear Co., 557 Howard Street
WASHINGTON, D. C., John R. Livezey, 902 Woodward Building

Products

ARMSTRONG'S CORKOUSTIC, for Sound-quieting and Acoustical Treament.

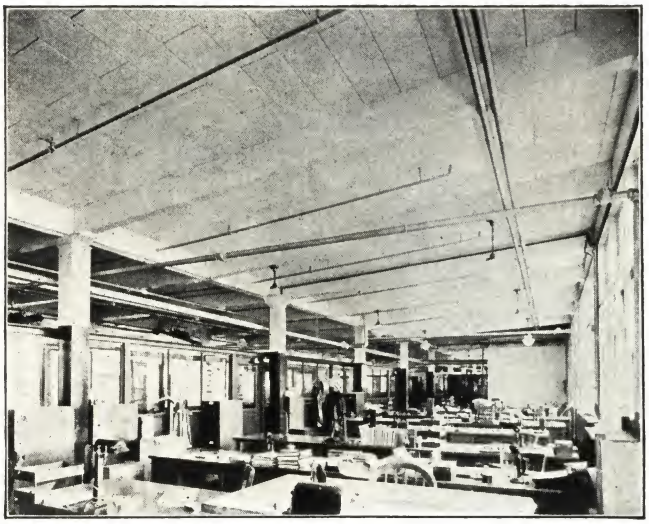
See Manufacturers' Index for Armstrong's Corkboard for insulation of walls and roofs of refrigerated structures and equipment; Armstrong's Corkboard and Armstrong's Temlok for the insulation of walls and roofs of all normally heated buildings; Armstrong's Vibracork for reducing vibration of moving machinery; Armstrong's Cork Covering for all cold lines.

Acoustical Correction

Armstrong's Corkoustic is a cork material, possessing a high sound-absorption coefficient, high insulating efficiency, remarkably decorative possibilities, excellent structural qualities. It is clean and sanitary. Having a high insulating efficiency, *it serves a double purpose, acting both as a sound-absorbent and as insulation against heat and cold.*

Where Acoustical Correction Is Needed—There are two principal classes of structures in which acoustical correction and sound-quieting are most necessary and desirable. The first class comprises auditoriums, churches, schools, theatres, clubs, and similar rooms where conditions must be such that speech and music can be heard clearly and distinctly by the audience.

The other class of buildings where sound-quieting is needed comprises hospitals, natatoriums, offices, shops, workrooms, factories, etc.—in fact, all places where noisy surroundings are objectionable. All the evidence that science has gathered points out that reduction of noise increases efficiency.



Armstrong's Corkoustic, Applied to Ceiling of General Offices of RCA-Victor Corporation, Boston, Mass.

Corkoustic subdues distracting noises and adds to the efficiency of employees. It also serves as an insulation against heat and cold in this top-floor office space. In this office, the Corkoustic has been sprayed with two coats of white alabastine



Armstrong's Corkoustic, Applied to Ceiling of the Central M. E. Church, Muskegon, Mich., Provides Acoustical Treatment and Adds Charm and Dignity.

SUNDT & WENNER, Philadelphia, Architects
GEORGE E. LATHER & SON, Muskegon, Mich., Contractors

Armstrong's Corkoustic

Armstrong's Corkoustic is made of pure cork granules compressed into strong, firm boards. All of the details of manufacture are so regulated that the material produced meets the requirements for sound-control work. The most rigid inspection is employed and only material that meets the highest standard is supplied on order.

Sizes, Surfaces, and Finishes

Corkoustic is furnished in standard units ranging in size from 12x6 in. to 12x36 in. All sizes are available in four thicknesses, 1, 1½, 2, and 3 in.

A choice of two surfaces is given—"sawed" and "sanded." The sawed surface, naturally, is the rougher. While comparatively smooth, it nevertheless has considerable surface texture and a deep rich quality. Sanding of the surface brings out the "grain" between the cork granules and gives the surface a smooth appearance. The sound-absorbing efficiency is practically the same for both surfaces.

Corkoustic units are made in two finishes—"beveled" and "regular." In the former the edges are slightly beveled in order to simulate the masonry effect that is often desired. The other finish—"regular" has the edges squared so that they will set tightly together to give the effect of a flat surface. Either finish may be obtained in "sawed" or "sanded" surface and in any of the standard sizes.



Armstrong's Corkoustic Applied to Walls and Ceiling of the Broadcasting Station of St. Louis Police Department.
Mauran-Russel & Cromwell, Architects
Kenton Construction Co., Contractor

Decoration of Corkoustic

The wide range of size, surface, and finish of Corkoustic makes the decorative possibilities of the material almost without limit, especially in view of the fact that surface decoration in color is thoroughly practical.

The natural color of Armstrong's Corkoustic is a rich neutral brown. When Corkoustic is used in conjunction with dark woodwork often it is left in its natural state.

When a note of contrast is desired, stenciled designs of bright color may be used. Where a lighter allover color is desired, spray coats of cold-water paint are used. This treatment produces a very interesting effect, the dark interstices between the cork granules showing up against the lighter paint color to give an appearance somewhat similar to travertine.

The beveled-edge units of Armstrong's Corkoustic provide for a wide variation of pattern.

Structural Qualities

Armstrong's Corkoustic is easy to handle and apply. It is a strong, firm board. With ordinary care in handling it will not chip, crumble, or fall apart. This adds greatly to the ease and economy of application. The units are light and that, too, makes for easy handling.

The structural strength of Corkoustic is many times greater than required to hold it true and rigid after application. After being properly nailed or cemented in place it will hold its form indefinitely without deterioration. Due to remarkable resistance of cork to moisture and its inertness to temperature fluctuations, Armstrong's Corkoustic never swells, buckles, or warps; will not decay or rot.



Armstrong's Corkoustic to Subdue Clatter of China and Make Conversation Easy in Dining Room of Jacksonville Women's College, Jacksonville, Ill.
Royer, Danley & Smith, Urbana, Ill., Architects
Wm. C. F. Kuhne, Rantoul, Ill., Contractor

Application

Corkoustic can be readily applied to walls, ceilings, and columns. By use of standard methods, it may be applied to any structural surface, either masonry or wood construction.

The Armstrong Cork & Insulation Company contracts to install Corkoustic as competent workmen and trained supervisors are maintained by the Company for this work.

Acoustical Analysis

Corkoustic is a uniform product and its coefficient of absorption always a dependable factor, so that it is comparatively easy to ascertain the exact amount required for acoustical correction under any conditions. Tables and charts, which greatly simplify the calculations and give results that can be depended on to insure satisfactory acoustic conditions in any type of room, along with complete detailed specifications and much other valuable data, are included in our 32-page book, "Armstrong's Corkoustic," which will be furnished promptly on request.

Advisory Service

The Armstrong Cork & Insulation Company maintains at all times a staff of experts to assist in the solution of acoustical problems. The facilities of the Company's research laboratories are constantly in use by the Corkoustic Department and a careful study of performance under actual conditions is made at every opportunity. The information and data that have been gathered from a number of years of such study will be applied to any problem upon which you desire advice and assistance. There is no charge or obligation for this service. Get in touch with the branch nearest you or address the Armstrong Cork & Insulation Company, Lancaster, Pa.

CALICEL PRODUCTS, INC.

GENERAL OFFICES AND FACTORY
HAMMOND, IND.
EXECUTIVE OFFICES: CHICAGO, ILL.
SALES OFFICES IN PRINCIPAL CITIES

(1) Building and Home Insulation.
(2) Acoustical Tile.
(3) Acoustical Plaster.
(4) Sound Deadening.

Calicel INSULATION

(5) Calistone Roof Slabs.
(6) Insulating Concrete Aggregate.
(7) Refractory Insulation.
(8) Pulverized Fillers.

For Calicel (H) Building Insulation and Calistone Roof and Floor and Insulating Concrete Aggregates, see Manufacturers' Index

CALICEL ACOUSTICAL TILE—CERAMIC

"The Permanent Acoustic"

The architect is offered at last full freedom of design in work involving acoustic treatment.

No more is it necessary for the architectural designer to limit and very often lose the entire expression of his decorative requirements by providing areas for characterless or unblending commercial or standard acoustical material. No longer does the necessity of sound control place the architect in a position which was disturbing to his professional instinct. Not always could he harmoniously accept a floor-like appearing acoustic tile ceiling. These are broad statements, but proven.

Calicel Acoustical Tile was developed to meet a specification—one such as you might develop, and we respectfully request that you consider and compare it accordingly.

Calicel Acoustical Tile express rare beauty, embodying surprising flexibility of natural colors and textures; also decorative coloring effects with comparatively everlasting or renewable flat and glossy lacquers, oil paints and bronzes in single and two-tones and polychromes; maintaining under these conditions full acoustical and sound absorbing qualities necessary for complete sound control. Add to these, abrasive and wearing strength which permits wall and wainscot acoustical treatment even as low as the base; permanent natural fireproofness and waterproofness, the former assuring of eventual low fire insurance rates and the latter permitting Calicel to be completely saturated with moisture for long periods of time without expansion, contraction, buckling, disintegration or loosening from its supports; permanent acoustical treatment for steamy kitchens, baths, showers, and swimming pool rooms.

Calicel Acoustical Tile has been subjected to almost every conceivable laboratory and practical test pertaining to water and fire. Installations in dry kilns and ventilating ducts with alternating high and low degrees of relative humidity. Alternate complete water immersion and kiln drying over periods of six months and more—all without visible and physical change from its original qualities.

Natural colors in clear fields and balanced or unevenly blended combinations of warm white, faint buff, golden and dark brown, and black, with fine smooth textures or irregular coarse textures. The particles in Calicel Acoustical Tile comprise uncountable minute cells with mirror-like walls so that very often panels of this material reflect surrounding colors—chameleon-like.

For utmost sanitation in hospitals, kitchens, laboratories, nurseries, etc., two coats of highly glazed lacquer or oil paint will maintain its finish for a period of seven to fifteen years, permitting frequent washing and cleaning. Authoritative laboratory reports (Electrical Research Products, Incorporated, New York), have established a loss in acoustical value of less than 1% per coat for the first two coats of lacquer—which will, of course, permit redecorating many times without appreciable decrease in sound absorbing value.



A Single Grain of Calicel Magnified 20 Diameters
The unretouched photo shows the minute air cell construction that accounts for the superior insulating and sound deadening qualities of Calicel

Calicel is so strongly distinctive that it represents a new epoch in the acoustical field. Many architects use Calicel Acoustical Tile as decoration at a very reasonable price, at the same time providing full acoustical treatment without cost—in fact, for nothing. As a decorative wall treatment, Calicel is to be compared only with the finest of marbles, Caen stones, travertines, etc.

Distribution

Calicel Sound Absorbing and Sound Insulating products are distributed by direct sales offices or approved contractors located in all principal cities.

Installation is made by or under the direct supervision of these direct representatives.

PHYSICAL CHARACTERISTICS

Material and Manufacture

Calicel, basically, is a highly expanded stone. It is a cellular mineral, a refractory insulator, a synthetic combined silicate of lime and alumina formed at temperatures in excess of 2000° F., being so cooled that the molten mass is expanded from 10 to 40 volumes. This highly cellular structure somewhat resembles a petrified sponge. Subsequent refining and grading operations produce finished Calicel which serves as an aggregate for Calicel Acoustical Materials as well as for numerous thermal insulators.

This Calicel Aggregate is carefully graded for size and color, thus making possible a wide variation of natural colors and textures in the finished product.

The actual production of Calicel Acoustical Tile is like that of any standard floor or wainscot tile in that the aggregate is thoroughly mixed with a highly refractory time-tried bonding agent, then moulded with sixty-ton hydraulic presses, after which it is burned or dried in high temperature kilns. The basic materials and consequently the Calicel Acoustical Tile are as permanent and renewable as any standard building material.

Acoustical Absorption

The Electrical Research Products, Incorporated, a subsidiary of the Western Electric Company, New York City, schedule coefficients of sound absorption on Calicel Acoustical Tile, average textures, as follows:

Tile	Frequency—Cycles per second					
	125	250	500	1000	2000	4000
Type A., ¾-in. thick*.....	.22	.29	.64	.66	.68	.51
Type A. A., 1-in. thick*...	.23	.33	.72	.75	.71	.46
Type A. A., 1-in. thick (two heavy coats lacquer)....	.22	.35	.70	.76	.72	.48

*Tile undecorated.

Note: *Type A. A. A., 1¼-in. thick—This thickness is used only in special cases where extremely high absorption is required at certain frequencies—the maximum being 85 at the 500 cycle frequency.*

The high absorption of Calicel at the low frequencies is greatly responsible for its adoption as a standard treatment by theatres, owners of orchestra or band rooms, etc. It is most essential in commercial quieting for eliminating low rumbles and street noises.

Standard Sizes

6x6, 6x12, 12x12, 9x9 and 9x18-in. permitting a wide variation in center, border, herringbone and geometric design.

Standard Architectural Types (All Sizes)

Commercial Tile—Both fine or coarse textures in natural light ivory shades either evenly graded for color or slightly variegated.

Sanitary or Light Diffusing—Both fine or course textures heavily lacquered or painted, color to suit. Stenciled if desired. Highly washable.

Spanish or Tapestry Tile—A sprinkling of natural dark golden, reddish brown, and black colored particles on a coarse texture ivory field.

Early Italian Tile—A sprinkling of natural dark golden reddish brown, and black colored particles on a fine texture ivory field.

Caen Stone Tile—An all over sprinkling of mica flakes on a warm ivory fine texture field.

Multichrome Tile—Remarkably beautiful, quiet or theatrical effects, in all colors secured by using stains or bronzes in relief on extra heavy lacquers. All textures. High abrasive strength and washable.

Monumental Tile—Varying blends of black on white or ivory fields, resulting in fine or coarse texture greys.

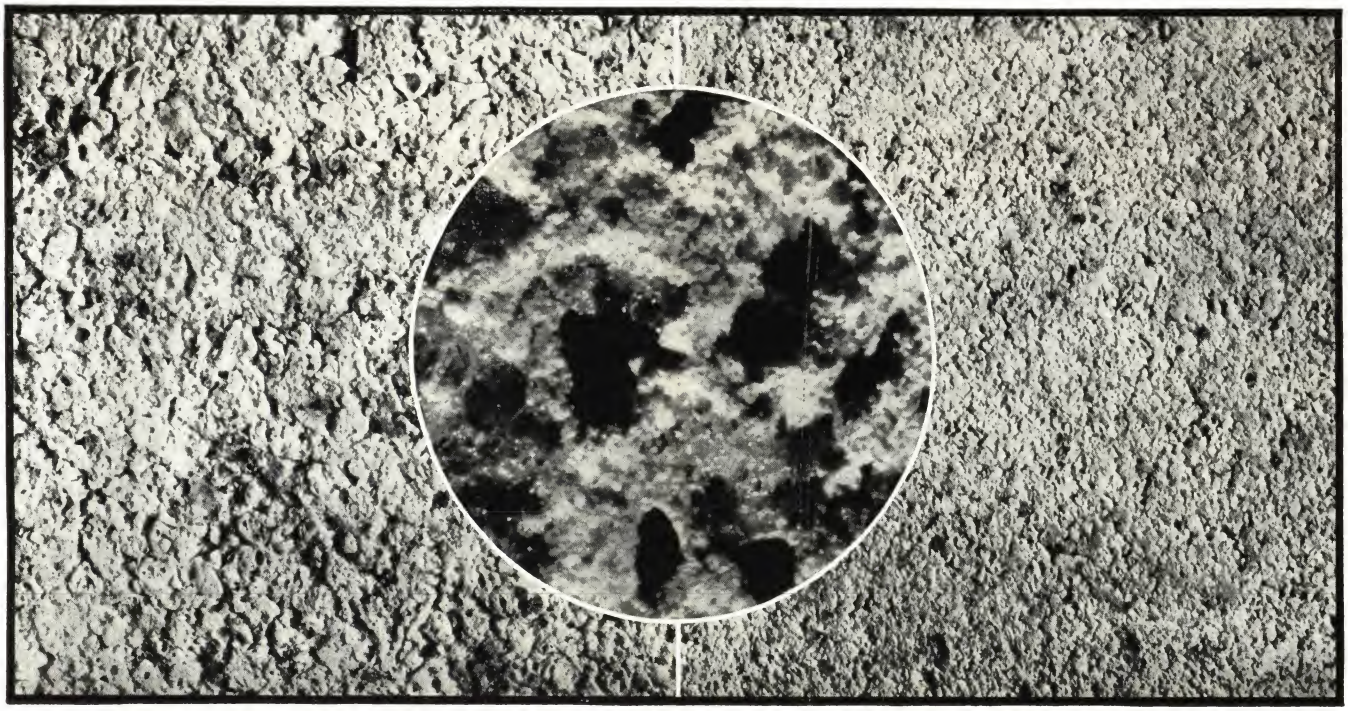
Period Tile—Hexagon shape in light ivory and warm white. All textures.

Special Sizes, Thicknesses, Textures and Colors

Unusual freedom is possible to the designer in adapting Calicel for special patterns and motifs. Ceramic Tile can also be used in random or design with Calicel Acoustical Tile.

Moulded Types

Calicel aggregates may be moulded into desired forms for use with Calicel Acoustical Tile, carrying the same textures, color and finish. Estimates and samples on request.



Full Size of Fine and Coarse Texture Calicel Acoustical Tile Enlargement in Center (40 dia.) Shows Porosity

ADAPTABILITY—DISTINCTIVE QUALITIES

Application

Calicel Acoustical Tile is applied direct to cement or plastered wall or ceiling areas by the use of a plastic, moisture-proof, heat-resisting cement. It is possible to apply the tile to the falsework direct, *but it is not recommended, for the reason that the air circulation through the spaces between acoustic-tile causes an uneven collection of dust and dirt around the joints.* This fault may be eliminated and an economy effected, provided a suitable wall or plaster board backing is secured to the falsework, joists or studs. The tile is then applied direct to this backing.

Uses

Theatres, auditoriums, churches, assembly halls, court rooms, banks, offices, restaurants, broadcasting studios, laboratories, class and study rooms, libraries, monumental interiors, corridors, gymnasiums, hospitals, sanitariums, swimming pools, hotels, kitchens, telegraph and telephone exchanges, stock exchanges, sales and display rooms, etc., all provide acoustical problems for which CALICEL PRODUCTS, INC. maintain a thoroughly competent engineering staff for consultation, advice, surveys and estimates, without obligation and cost.

Cost

The architect will be most agreeably surprised to find Calicel acoustic treatment no more expensive than ordinary types. Even specially prepared orders are moderately priced.

Regarding Permanency

Calicel Acoustical Tile is vermin, rodent and bacteria proof—not by any short lived admixture, but because it is made from expanded stone formed at high temperatures and with no materials added which will support life.

Cleanability

The cleaning of the natural or unlacquered tile is quite simple and effective due to the fact that there seems to be no "breathing" to the tile. This means that dust and dirt does not penetrate but collects on the surface only, thus permitting of easy cleaning by wiping with commercial wallpaper cleaner.

A recent report regarding this, prepared by Prof. Peebles, of Armour Institute, will be forwarded upon request.

Decoration

When glosses are desired, Calicel is customarily lacquered—in all colors, without noticeable loss of absorption. Lacquers are preferred, principally due to their longevity or permanence—from seven to fifteen years. Dyes may be used without effect, but practically all fade easily. Many oil paints may be used, also, without noticeable effect, but the manufacturer should be consulted in all painting or repainting. Calicel has one great advantage: *If improper paints are applied by error, they may be removed by sanding,* permitting a return to practically original efficiency.



Coarse Texture (Unpainted) Wall Treatment in Y. W. C. A. Gymnasium, Alton, Ill.

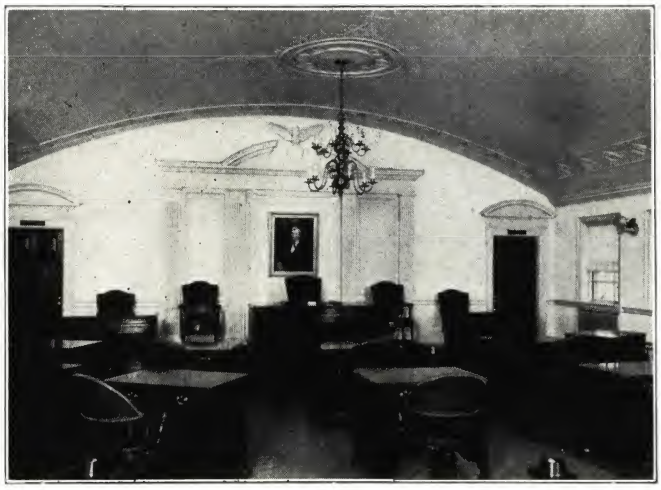
Note that the exceptional structural strength of Calicel Acoustical Tile permits its installation clear to the floor

Light Reflection

The Electrical Testing Laboratories, New York City, report that Calicel Acoustical Tile in its natural light color will reflect 55½% of light; when lacquered a light cream color the light reflection is 70½%.

Fire Test

Columbia University, New York, exposed Calicel Acoustical Tile to a direct flame for forty minutes, the temperature on the flame side being 1720 degrees F. and on the other side only 184 degrees F., showing high heat insulating value. When flame was removed, water was applied to the specimen with no visible change in surface.



Light Ivory Lacquered Tile Walls, Colonial Effect, Installed in Council Chamber, Clayton City Hall, St. Louis, Mo.



Ceiling Panels, Combination of Light and Dark Fine Textures (Unpainted), Installed in the Oriental Gardens, Chicago, Ill.

SUGGESTED SPECIFICATIONS—CALICEL ACOUSTICAL TILE

Scope of Work

The work to be done includes the furnishing of all labor and materials necessary to complete the installation of an acoustical treatment in accordance with the plans and specifications on the following described areas: (Ceilings, inclusive or exclusive of beams; walls, inclusive or exclusive of pilasters, etc.)

Material

The acoustical treatment shall consist of Calicel Acoustical Tile of thickness, shade and texture to be selected (beveled edges furnished unless otherwise specified). The tile shall be applied with a moisture-proof, heat resisting plastic cement as furnished or approved by the manufacturer. Pattern work or panel designs and size of tile as indicated on plans or to conform to details furnished later.

Preparation of Base

The base upon which the acoustical treatment is to be applied and which is to be provided by others, shall not be less than a scratch or brown coat of plaster floated to a smooth even surface, parallel to and one inch (1") from the desired finished surface. This base shall be thoroughly dry before the application of the treatment.

(The plastic cement as furnished by the manufacturer permits the application of the tile to a dry cement or concrete surface, or to a backing of suitable fiber or plaster board, metal or wood secured to the framework.)

Paints or Lacquers

These materials shall be furnished or approved by the manufacturer and applied in accordance with the manufacturer's directions. Color as selected by the architect.

Workmanship

The tile shall be applied by the manufacturer or an approved contractor. The installation shall be made in a workmanlike manner, care being taken to make all tile, joints and panel edges true, level and even. The complete installation shall be guaranteed against defects of material and workmanship for a period of one year.

SOME INSTALLATIONS OF CALICEL ACOUSTICAL TILE

(Architects' Names Furnished on Request)

Fox Theatres, Inc.—ten theatres
Warner Bros. Theatres, Inc.—five theatres
R.K.O. Shore Road Theatre, Brooklyn, N. Y.
Mt. Eden Theatre, New York, N. Y.
Broadway Theatre, Woodcliff, N. J.
Sheldon Theatre, Brooklyn, N. Y.
Mountainside Hospital, Montclair, N. J. (two installations)
Mt. Vernon Hospital, Mt. Vernon, N. Y.
Mt. Sinai Hospital, New York, N. Y.
Grafton State Hospital, Grafton, Mass.
Milwaukee Hospital, Milwaukee, Wis.
Connecticut College, New London, Conn.
Joliet Township High School, Joliet, Ill.
Crescent Ave. Presbyterian Church, Plainfield, N. J.
St. Meinrad's Abbey, St. Meinrad, Ind.
Illinois State Capitol, Springfield, Ill.
Meyer-Rieger Laboratories, Inc., New York, N. Y.
St. Louis Bank Bldg. & Equip. Co., St. Louis, Mo. (seven banks)
Second Nat'l Bank, Jackson, Miss.
Wisconsin Bell Telephone Co., Watertown, Wis.
KMOX Broadcasting Studios, St. Louis, Mo.
Kraft-Phoenix Cheese Corp., New York, N. Y.
Shell Eastern Petroleum Co., New York, N. Y.
Pillsbury Flour Mills Co., New York, N. Y.
Star Publishing Co., New York, N. Y.
Westchester Lighting Co., Westchester, N. Y.
Equitable Office Bldg. Corp., New York, N. Y.
American Face Brick Assn., Chicago, Ill.
Burnham Bldg., Chicago, Ill.
Consumers Company Offices, Chicago, Ill.

SOUND INSULATION AND CALICEL ACOUSTICAL PLASTER

Calicel High Efficiency Acoustical Plaster

Certain selected Calicel aggregates dominate in acoustical and sound absorbing values when used as an aggregate for plaster. The acoustical field has developed a definite use and a demand for a highly efficient sound absorbing plaster which is fulfilled by Calicel.

Specifications, surveys and special data furnished upon request.

Sound Insulation

Relates only to the transmission of vibrations causing sound through walls, floors and ceilings.

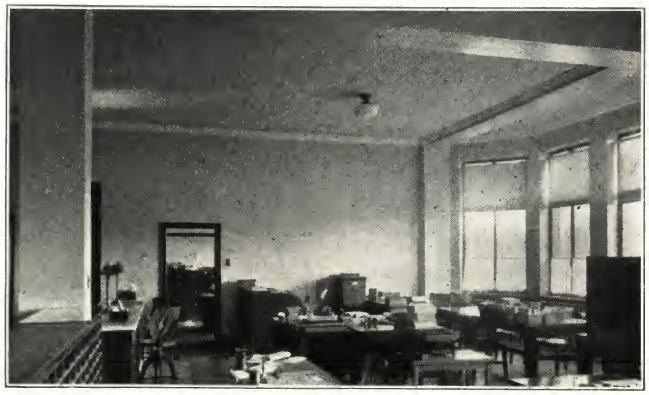
Calicel Sound Fill and Calicel Mastic solve almost all sound insulation or sound proofing problems at very moderate cost, *without the use of eccentric and freakish construction details.*

Present installations comprise apartments, commercial buildings, a major broadcasting studio, band practice rooms, etc. A recent installation of 4 in. thick Calicel Sound Fill partitions between an orchestra practice room and adjoining offices recorded a measured lowering of intensity of 75 decibels.

The manufacturer maintains a complete engineering service for consultation with architects regarding this art.



Calicel Acoustical Tile Ceiling Installed in Boy Scouts of America Office, New York, N. Y.



Calicel Acoustical Tile Installed in General Offices of Evanston Township High School, Evanston, Ill.

THE CELOTEX COMPANY

Member of the Producers' Council

Celotex Acoustical Products and Service

919 North Michigan Avenue, CHICAGO, ILL.

For Celotex Cane Fibre Insulation, Insulating Products, Compo-Board and Wallboards, see Manufacturers' Index

Description

PAINTABLE PERMANENT ACOUSTI-CELOTEX TRADE MARK REGISTERED U. S. PATENT OFFICE MINERAL FIBRE TILE

Acousti-Celotex is the registered trade-mark of sound absorbing tile which is paintable and therefore permanent.

There are two kinds of Acousti-Celotex: Cane Fibre Tile and Mineral Fibre Tile.

KALITE sound absorbing plaster

Sizes and Types

Each is made in three standard sizes: 6x12 in., 12x12 in., and 12x24 in.

PAINTABLE PERMANENT ACOUSTI-CELOTEX TRADE MARK REGISTERED U. S. PATENT OFFICE CANE FIBRE TILE

Acousti-Celotex Cane Fibre Tile is made in three different types:

Type	Thickness	Absorption Coefficient
Single B	5/8 in.	.48
Double B	13/16 in.	.62
Triple B	1¼ in.	.84

Absorption Coefficients

Absorption coefficients are as determined by the United States Bureau of Standards.

Acousti-Celotex Mineral Fibre Tile is made in one type, Triple X 1¼ in. thick, 12x12 in. in size. (With the increases planned in factory production facilities, it is expected that other types and thicknesses will be available.)

The sound absorbing efficiency of Acousti-Celotex Mineral Fibre Tile Triple X as determined in the Celotex Laboratories is over .80. Bureau of Standards tests have not been made at the time this goes to press.

All sound absorbing values given are at the standard frequency of 512 vibrations per second, which frequency is commonly selected in comparing efficiencies of accoustical materials. These figures show that portion of the sound energy absorbed at each impact compared to that absorbed by an open window which is unity, i.e. 1.00. Accordingly, Type Triple B at 512 cycles absorbs 84% of the incident sound, thus furnishing .84 sound absorbing units per square foot.

Paintability and Decoration

The large, deeply penetrating perforations in Acousti-Celotex give it the unique property of "paintability."

Many materials have the ability to absorb sound in sufficient degree to be useful for acoustical correction, but Acousti-Celotex couples with a wide range of absorbing ability the unique and valuable advantage of taking repeated coats of paint without loss of efficiency. Manufacturers' specifications for painting may be closely adhered to when sound absorbing material is initially installed, but costly experience has proved that in later renovation original instructions are forgotten with disastrous consequences to the investment in acoustical correction. This risk is avoided when Acousti-Celotex is used.

Painting the surface of Acousti-Celotex in no way impairs the efficiency of the material. Hundreds of painted installations, as well as laboratory experiments including tests at the United States Bureau of Standards, attest the fact that it may be repeatedly painted without affecting its acoustical efficiency.

Where a finish is desired having a higher light reflection factor than the natural surface, white or light cream interior paints may be used to advantage. Curtis Lighting, Incorporated, give the light reflection factor of such a surface as 78%, indicating that a painted Acousti-Celotex ceiling meets even the requirements of a completely indirect lighting system.

The sizes and types of Acousti-Celotex make it possible to plan installations in a great variety of attractive patterns.

Application

Acousti-Celotex may be applied directly to finished surfaces, which must be hard, smooth, dry, reasonably true and level.

On old ceilings or walls, calcimine or loose paint should be removed to provide a good bonding surface for the glue spotted or spread on the back of the tile.

Acousti-Celotex may be nailed to wood sheathing, or furring strips spaced 12 in. on centers or in accordance with the requirements of the design.

The sizes of Acousti-Celotex tile are such as to facilitate installation on curved surfaces, such as arches and groined ceilings, as well as on plane surfaces.

The good appearance of any finished installation of Acousti-Celotex tile is only obtained by properly laying out the tile and carefully maintaining true alignment during application. All Acousti-Celotex Contracting Engineers have been trained in this particular item of craftsmanship.

Kalite Sound Proofing Plaster

This time-tested, really porous plaster is a California product now distributed by Celotex.

Among acoustical plasters it is unique in that it can be applied in thicknesses of ½, ¾ and 1 in., with efficiencies ranging between .30 and .55 and can be had in a variety of finishes including a fine textured, genuinely washable surface.

Portland cement Kalite is ideal for swimming pools, wainscoting, etc.

A specially prepared hardener can be applied by brush or spray gun to obtain color effects.

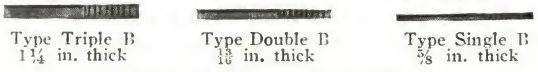
Celotex Acoustical Service

Celotex Acoustical Products are sold and serviced throughout the United States by independent organizations operating in their respective territories as approved Acousti-Celotex Contracting Engineers. These local organizations consist of sales engineers, competent acoustical engineers, and efficient application mechanics. For additional information regarding Celotex Acoustical Products, including analyses and recommendations on specific problems, consult them direct, or write to THE CELOTEX COMPANY, 919 North Michigan Avenue, Chicago, Ill.

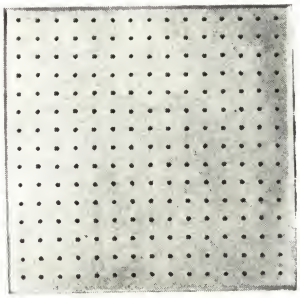
Acoustical Correction and Sound Quieting Projects

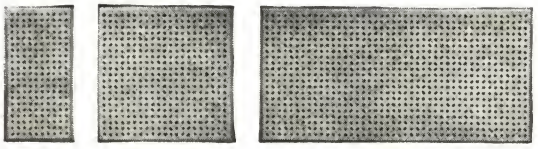
Banks—
Workrooms and Bookkeeping Rooms
Main Banking Rooms
Offices—
Private and General Offices
Schools—
Auditoriums—Gymnasiums
Classrooms—Corridors

Hospitals—
Corridors—Utility Rooms—Nurseries
Kitchens—Ward Rooms—Nervous Wards
Churches—
Auditoriums—Sunday School Rooms
Corridors
General—
Theatres—Court Rooms—Lodge Halls
Bowling Alleys—Radio Studios
Telephone Booths—Swimming Pools
Music Rooms—Chapels—Pistol Ranges

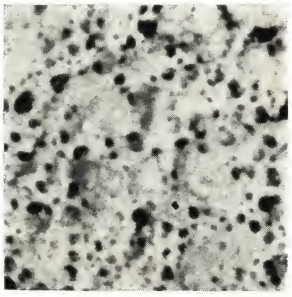


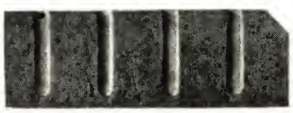
Types of Acousti-Celotex Tiles


12x12-in. Mineral Fibre Tile



Sizes of Acousti-Celotex Tiles


Magnified Section of Kalite Sound Absorbing Plaster


Cross Section Mineral Fibre Tile

CORK INSULATION CO., INC.

Manufacturers of Corinco Acoustical Corkboard, and Engineers for Acoustical Correction

GENERAL OFFICES
154 Nassau Street, NEW YORK, N. Y.

BRANCH OFFICES

BOSTON, MASS. | LOS ANGELES, CAL. | SAN FRANCISCO, CAL. | ST. LOUIS, MO.
*CHICAGO, ILL. | PHILADELPHIA, PA. | SEATTLE, WASH. | ST. PAUL, MINN.
BALTIMORE, MD.

IN CANADA: Cork Insulation Co. (Canada) Ltd., MONTREAL, QUE., VANCOUVER, B. C.
*Represented by the Corinco Insulation Co., Inc.

Product

CORINCO ACOUSTICAL CORKBOARD for acoustical correction, sound control, or noise reduction in all types of buildings.

For our pages on Cold Storage Insulation, Machinery Isolation, etc., see Manufacturers' Index.

The Company

For data on the nature, size, history and reputation of the organization, see Insulation pages.

Experience

CORK INSULATION CO., INC. Engineers are experienced in the correction of acoustics and the control of sound in auditoriums, schools, theatres, convention halls, gymnasiums, homes, etc. Years of practical experience have been augmented by extensive special study and research. Our engineers are always available to assist architects in the solution of any problems involving the principles of acoustics—whether it be the soundproofing of an office or the correction of acoustics in a theatre or auditorium.

Advantages of Corinco Acoustical Corkboard

The absorption of sound is due to the porosity, compressibility and elasticity of a material. Due to the natural cellular structure of cork, Corinco Acoustical Corkboard fills each of these requirements remarkably well, and has a fixed laboratory coefficient of absorption.

Among its advantages are these:

(a) High sound absorption coefficient.

(b) Serves a secondary, though scarcely less important, function of insulating the building against outside temperatures. As auditoriums and similar structures are used intermittently, rapid and economical heating is a considerable factor, and acoustical corkboard provides a great advantage in this respect.

(c) Is outstanding among building materials for its fire-resisting qualities; slow burning, will not support combustion.

(d) Takes a low fire insurance rate.

(e) Lends itself readily to interesting decorative effects.

(f) Is light and compact and does not materially increase the weight on walls and ceilings.

(g) Is sanitary and odorless and will not harbor vermin or germs.



Structurally Strong and Easy to Handle

Corinco Acoustical Corkboard is strong and compact. Its effectiveness is not dependent upon the proficiency of the workmen. It can be handled like lumber and is practical for any installation, whether a new or a reconditioning job. Where nailing is possible, two finishing nails per square foot will secure it firmly in place, or it can easily be applied with Corinco Erection Cement. Because of these factors it is a very economical material to erect.

Decorative Possibilities

There are many interesting patterns in which to apply Corinco Acoustical Corkboard; the most common being random cut, herringbone and broken joint types. The natural cork finish makes a rich, dark brown effect that harmonizes well in many decorative schemes. When some other color is desired, it is a simple matter to spray the surface with the proper color of acoustical paint.

The designs shown on this page are merely suggestive of the wide variety of patterns which are possible.

Sizes, Finishes and Surfaces

Corinco Acoustical Corkboard comes in standard units ranging from 12x6 to 12x36 ins., and in various thicknesses ranging from 1 in. Surface textures are "sawed" and "sanded"—the former being rougher, with a deep brown, rich quality, while the latter is a lighter shade and has a peculiar and pleasing appearance of its own. The surface has no practical effect on the sound absorption coefficient.

Two finishes are available: Beveled to simulate masonry, and Standard to provide a smooth wall finish.

For best results, the beveled finish is recommended.

Catalogue and Samples

Architects interested are invited to write for a catalogue with complete data showing both the "sawed" and "sanded" finishes.

Please address the nearest office.







A Few Typical Examples of C.I.C. Acoustical Service

The application of any acoustical material requires that the engineer work closely with the architect in order to reconcile the two aims of acoustical efficiency and architectural beauty. C.I.C. Engineers have enjoyed a wide experience in this work, assisting architects in the acoustical correction of schools, auditoriums, libraries, gymnasiums, and fine homes.

The rooms shown above were all acoustically treated by C.I.C. Engineers working in collaboration with the architects.

R. GUASTAVINO COMPANY

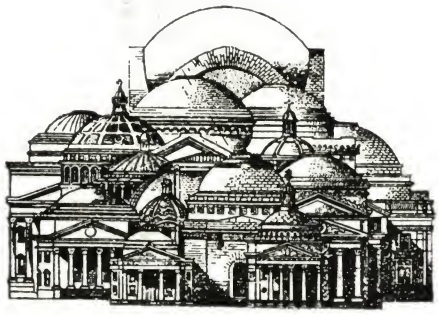
40 Court Street
BOSTON, MASS.

225 West 34th Street
NEW YORK, N. Y.

REPRESENTATIVES

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CANADA: R. GUASTAVINO CO. OF CANADA, LTD.
New Birks Building, Montreal



ENGINEERS AND BUILDERS
OF STRUCTURAL TIMBREL ARCHES
AND VAULTS FOR CEILINGS AND FLOORS
"GUASTAVINO CONSTRUCTION"

MANUFACTURERS OF
DECORATIVE CERAMIC TILE AND SOUND
ABSORBING MASONRY MATERIALS
HAVING ARCHITECTURALLY STRUCTURAL
CHARACTER



Riverside Church, New York, N. Y.
HENRY C. PELTON, ALLEN & COLLENS
Architects

ONE OF MANY MONUMENTAL BUILDINGS HAVING

Guastavino Timbrel Arch Construction, and obtaining good acoustics, permanence and beauty by using

GUASTAVINO ALL MASONRY ACOUSTIC MATERIALS

Guastavino Timbrel Arch Construction

While the GUASTAVINO Timbrel Arch construction is not necessarily required in the installation of our acoustic tiles, many well known buildings which have acoustical treatment have also used this construction with a soffit course of AKOUSTOLITH Tile.

This type of construction was first introduced into this country in 1885 by the late Rafael Guastavino Sr., and the business has been in continuous operation under practically the same personnel for nearly fifty years.

The construction is light and shell-like and especially adapted to the building of arches, domes, arch construction for floors, ceilings and roofs.

Construction of Large Domes

Many of the largest masonry roof and floor domes in this country constructed within the past thirty-five years have been built by the R. GUASTAVINO COMPANY—such well known domes as on the Cathedral of St. John the Divine, span of 135 ft., dome of the University of Pennsylvania Museum, span 90 ft., etc.

Type of Construction

Floor and ceiling vaults and domes are constructed of thin tile 1 in. thick and about 6x12 to 24 ins. in length.

They are laid flat in cement mortar and bonded together so as to make a solid and homogeneous mass.

For ordinary spans, the crown of the arch is usually about 4 in. thick. In general, if the vault forms a ceiling only it can be built after the general contractor has installed the constructive floor or roof immediately over it.

When used as a carrying vault it can be installed at such time as conditions of walls and interior finish permit.

Can Be Designed to Carry Any Load

This system of vaulting can be designed to carry any load, from that of private residence to storage buildings and bridge work. Tests for both fire and load have been passed many years since by the New York Building Department and Compression, Shear and Tension Tests made at the Massachusetts Institute of Technology.

While domes or vaults may show exterior as well as interior lines exposed as part of the design, they are also built with an exterior leveling to obtain flat or sloping surfaces. In the case of floor vaults, this is done by "bridges and flatwork" formed by dwarf walls about 24 ins. on centers which carry the tile leveling. The air cells so formed are often used for concealing heating and ventilating ducts.

Applicable to Use in Various Architectural Styles

The use of the vault affords a wide range of possibilities in the matter of design. The earlier installations were practically all left with a rough tile soffit, exposed or plastered. In later work glazed and unglazed repressed ceramic tiles carefully pointed were used for the soffit course, culminating in such ornamental ceilings as some in the new Nebraska State Capitol Buildings. Here highly ornamental treatments were used combining polychrome panels of our glazed tile in a RUMFORD (acoustic) tile field. In order to have complete supervision of the decorative glazed tile as well as the acoustic tile, we built our own factory at Woburn, Mass. In this way we can assure architects that not only the construction but our finished materials as well are under our complete control.

On the following page are shown construction details of typical Guastavino vaulted ceilings and illustrations from finished photographs are on the preceding and following pages.

A Strictly Engineering Problem Worked Out by Our Engineers in Consultation with the Architect

It will be readily seen by examining the detail drawings that we must necessarily work in close co-operation with the architect. For vault, dome or arch work of a constructive nature our engineers will work with the architect to obtain the effect he desires and then design the construction to fit the requirements.

Considerable steel will be saved over old floor arch methods of construction on account of the lightness of the material and possibilities for use over large spaces. Our engineering service is rendered without charge for this work.

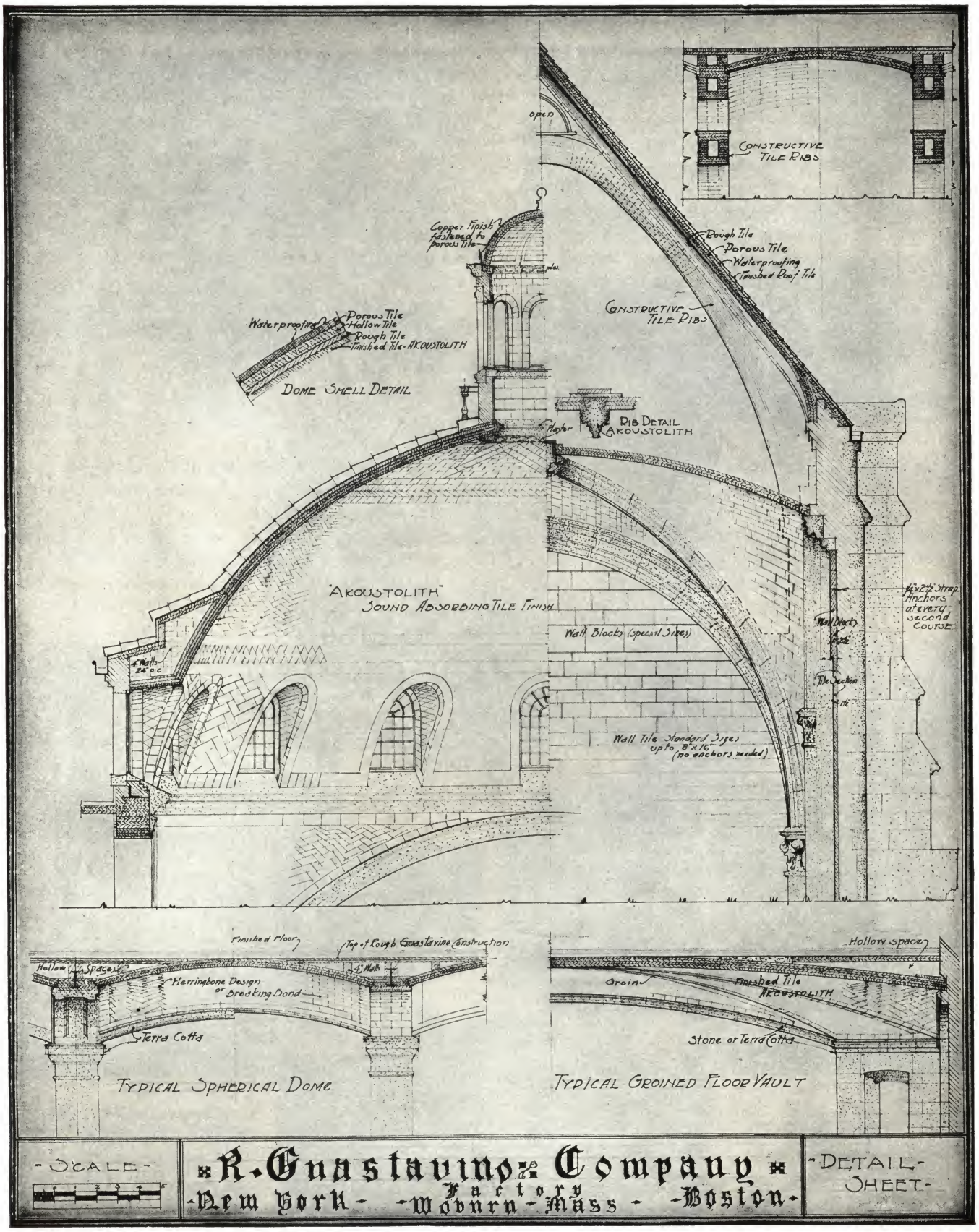
Specifications

For typical specifications with AKOUSTOLITH Tile soffit course, see page 7, AKOUSTOLITH Tile Specifications Ceiling Work—(a).

Specifications will be written by us for this work and its relation to other work in the building.

Installation of Our Construction

In order to assure undivided responsibility we install all of our timbrel arch construction with our own mechanics specially trained in this work through many years of experience.


open
CONSTRUCTIVE TILE RIBS
Copper Finish fastened to porous Tile
Rough Tile
Porous Tile
Waterproofing
Finished Roof Tile
CONSTRUCTIVE TILE RIBS
Waterproofing
Porous Tile
Hollow Tile
Rough Tile
Finished Tile-AKOUSTOLITH
DOME SHELL DETAIL
RIB DETAIL AKOUSTOLITH
Mortar
"AKOUSTOLITH" SOUND ABSORBING TILE FINISH
Wall Blocks (special Sizes)
Wall Tile Standard Sizes up to 8"x16" (no anchors needed)
Finished Floor
Top of Rough Guastavino Construction
Hollow Space
Herringbone Design or Breaking Bond
Terra Cotta
TYPICAL SPHERICAL DOME
Hollow Space
Groin
Finished Tile AKOUSTOLITH
Stone or Terra Cotta
TYPICAL GROINED FLOOR VAULT
SCALE
R. Guastavino Company
Factory
New York - Woburn - Mass - Boston
DETAIL SHEET

Acoustic Materials Should Have Architectural Character

When an architect designs an interior it should not be necessary to change its character on account of the necessity for use of acoustical materials. Many otherwise fine interiors have lost their architectural and structural character through the use of incorrect material from an esthetic as well as acoustical viewpoint.

In designing and producing sound absorbent materials, Rafael Guastavino in collaboration with the late Professor Wallace C. Sabine of Harvard University succeeded in producing materials which had great acoustical value as well as architectural, structural and fireproof values. This idea was of the greatest importance and has been so recognized by the architectural profession as witnessed by the number and importance of the works entrusted to us. (See page 10.)

If the interior is designed with a masonry character, this character should not be destroyed by the use of acoustic materials but rather enhanced by them. If a plaster interior is desired the material should carry out this effect. If a stone or tile effect is desired these should be produced.

It will be readily noted from the illustrations shown that, under a wide variety of conditions and styles of architecture, the architectural effect desired has been carefully and successfully produced.

Special Materials for Special Purposes

Sometimes it is as unwise to have too much sound absorbing material in a room as it is to have too little. So much depends on the size and shape of the room as well as its architecture, that the selection of the best materials to assure proper acoustics is one requiring mature experience.

In order to take care of practically all conditions we have produced two types of masonry acoustic tiles or ashlar and two of acoustic plaster. We produce glazed and unglazed ceramic tile used in our arches and domes. This latter is the well known original Guastavino tile and has been used for more than 45 years in constructing many of the largest domes and vaulted ceilings in the world.

In some cases where, as in the Nebraska State Capitol Building, our acoustic tiles have been used we have combined colored tile borders and inserts. All of our finish tiles (glazed, unglazed and acoustic tiles) are made in our own plant and a large variety of colors and designs have been developed.

Where Tile Effects in Ceilings, Arches and Sidewalls Are Desired—"Rumford" Tile—"Akoustolith" Tile

"Rumford" Tile—This is a ceramic product and was the first masonry material of high acoustical efficiency.

"Akoustolith" Tile—We believe this is the most efficient masonry sound absorbing material on the market (see page 7). It can be obtained in a variety of textures with color range practically unlimited and can be moulded or cast into special shapes as required.

For Side Walls Requiring Stone Character

Where it is desired to carry out the effect of a stone ashlar in sizes up to 15x30 ins., AKOUSTOLITH Ashlar sound absorbing artificial stone should be used. AKOUSTOLITH can be made to match very closely the color and texture of natural stones. (See below.)

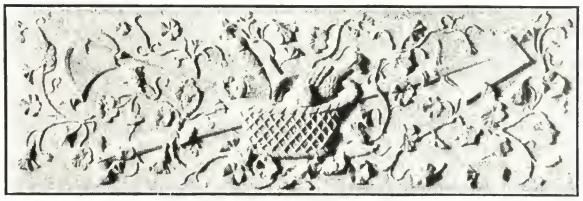
For Sidewalls or Ceilings in Plaster

Where expense is a controlling factor in the selection of acoustic materials or a plaster finish is desired, we suggest:

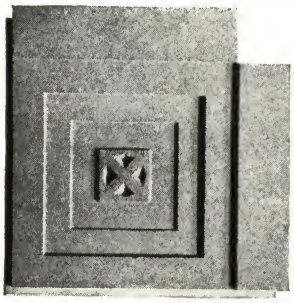
"Akoustolith" Plaster—A material with high sound-absorbing qualities, which is applied as a finish coat over the ordinary plaster base coat (see page 8). AKOUSTOLITH Plaster can be tinted and textured as desired, but should be used only on plain surfaces and applied with the trowel. Mouldings, ornaments, etc., can be cast on the job in our

"Castacoustic" Casting Plaster—This latter material using a gypsum binder can be cast, backed up and set in the usual way for plaster ornament, yet retaining its high acoustical efficiency (see page 9).

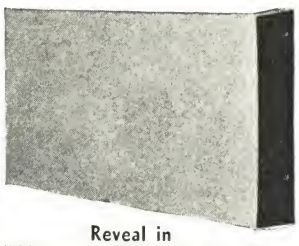
SOME MATERIALS MADE BY GUASTAVINO



"Castacoustic" Plaster



Coffer in "Akoustolith" Sound Absorbing Stone



Reveal in "Akoustolith" Sound Absorbing Stone



"Castacoustic" Plaster



"Akoustolith" Plaster Texture

VARIOUS TYPES OF INTERIORS TREATED WITH GUASTAVINO ALL-MASONRY ACOUSTICAL PRODUCTS



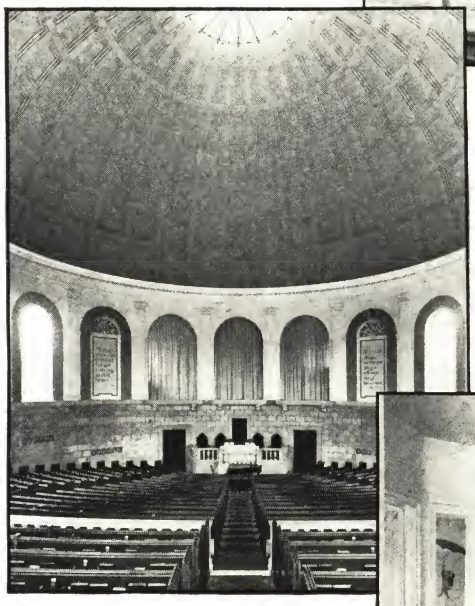
Buffalo Central Terminal of New York Central Railroad, Buffalo, N. Y.
ALFRED FELLHEIMER and STEWART WAGNER, Architects
Timbrel arch vaulting and AKOUSTOLITH Tile Soffit



New Athletic Building, Harvard University, Cambridge, Mass.
COOLIDGE, SHEPLEY, BULFINCH & ABBOTT, Architects
Ceiling over both pools finished with AKOUSTOLITH Plaster



New York Stock Exchange Board Room, New York, N. Y.
TROWBRIDGE & LIVINGSTON, Architects
Ceiling of CASTACOUSTIC Plaster. Walls of AKOUSTOLITH in ashlar sizes



First Church of Christ, Scientist, Cambridge, Mass.
BIGELOW, WADSWORTH, HUBBARD & SMITH, Architects
Coffered ceiling of timbrel arch vaulting with AKOUSTOLITH Tile Soffit



Temple Emanu-El, New York, N. Y.
KOHN, BUTLER & STEIN, Architects; MAYERS, MURRAY & PHILLIP, Associates
Walls of AKOUSTOLITH Tile with gold ceramic inserts



Hospital at Grosse Pointe, Mich.
STEVENS & LEE, Architects
Corridor ceilings finished with AKOUSTOLITH Plaster

AKOUSTOLITH

Sound Absorbing Artificial Stone in Tile or Ashlar Form

What "Akoustolith" Is

AKOUSTOLITH is an artificial stone, having a sound-absorbing value believed to be greater than any other masonry material.

Its acoustical value was first determined by laboratory tests of the late Professor Wallace C. Sabine at Harvard University and more recently by the United States Bureau of Standards. These latter tests give the coefficient of absorption of AKOUSTOLITH Tile up to 85% at 512 cycles (C4) for a thickness of 2 ins., the efficiency varying according to thickness and grade.

Its Uses

Owing to its light weight and facility of manufacture AKOUSTOLITH is easily adapted to plain or elaborate architectural forms. It is used in tile form on walls, ceilings, arches, vaults and other architectural forms of a constructive nature. In ashlar form it has been used considerably by architects on sidewalls in imitation of stone work and has been successful in meeting their requirements.

Textures and Colors

It has a fine granular surface and is made in textures similar to that of natural stones or as desired. It is made in colors to closely resemble those of natural stones ranging from gray white through various shades of buff, brown or other colors of the natural stone. It is genuine masonry, non-combustible and non-smoke producing. It will not warp. Moisture has no effect on its structure and it can be easily cleaned by vacuum or by washing.

Sizes and Weight

AKOUSTOLITH is manufactured in any size from the smaller tile dimensions, 3x6 in.; 4x8 in.; 5x10 in.; 6x12 in. and 8x16 in. usually about 1 in. thick and for this thickness weighs about 4 lbs. per sq. ft. This light weight permits AKOUSTOLITH to be used in places where heavier material would be impracticable—for instance, ceiling work.

For wall ashlar, AKOUSTOLITH can be made in any size up to 15x30 ins., thickness from 1½ to 2 ins. It can also be moulded or cast in the usual architectural forms.

Its Installation

AKOUSTOLITH Tile used on ceilings has primarily been installed in connection with our regular GUASTAVINO Arch Construction, using it as a soffit course and backing up with two or more layers of our rough tile construction. It is also being installed by applying it directly to the soffit of concrete floor slabs or to wire lath and cement plaster ceilings.

For sidewall installations it can be cemented directly to any of the many masonry surfaces without scratch coat, if the surface is reasonably true.

We generally do our own installing, but in special cases the material can be purchased f.o.b. factory and set by the general contractor's bricklayers.

AKOUSTOLITH TILE SPECIFICATIONS

Ceiling Work

(a) As Part of Guastavino Timbrel Arch Construction—

Where indicated on drawings, or as hereinafter specified, the ceilings shall be constructed of Timbrel Tile arches by R. GUASTAVINO COMPANY, New York and Boston, with the soffit of the arch faced with (give size of tile) AKOUSTOLITH sound absorbing artificial stone tile. Tile to be laid in pattern shown.

Arch construction in addition to the soffit course of AKOUSTOLITH Tile shall consist of not less than two layers of good, hard burnt, rough, semi-porous terra cotta tile, ranging from 1x6x12 ins. to 24 ins. in length. Tile shall be laid in 1 to 2½ mix portland cement mortar and reinforced with steel rods or bars between the courses or between the ends of the tile of the same course as may be necessary.

Centering—The contractor for the above vaulting shall provide and erect all centers required for the installation of his work. Centering shall remain in place until the mortar is set and hard, after which he shall remove all his centering from the building.

Vault Supports—The general contractor shall leave out recesses, or build masonry corbels or brackets in walls as well as any steel necessary for the support of the tile vaulting as shown on the working drawings of the architect and tile vault contractor.

(b) For Installing "Akoustolith" Tile Against Soffit of Concrete Floor Slabs—

Where indicated on the drawings, or as hereinafter specified, the ceiling or soffit of concrete floor slabs and beams shall be faced with AKOUSTOLITH sound absorbing artificial stone tile as manufactured by R. GUASTAVINO COMPANY, New York and Boston. Tile shall be (give size), laid in 1 to 3 portland cement mortar in patterns as shown, directly against the cement slab and beams. Joints ⅜ in., colored as directed with approved mortar colors.

(c) For Installing "Akoustolith" Tile on Metal Lath Ceilings—

Note for Metal Lath and Furring Specifications: Where AKOUSTOLITH is specified or indicated on ceilings, beams, etc., the metal lath foundation should be formed of 1 in. standard channels set 12 in. o.c., covered with 3.4 lb. metal lath.

Note for Plastering Specifications: Wherever AKOUSTOLITH Tile is required for finished ceilings the metal lath shall be given two coats of portland cement mortar, the last to be scratched.

Wall Work

Where indicated in drawings or hereinafter specified the sidewalls shall be finished with AKOUSTOLITH sound absorbing artificial stone manufactured by R. GUASTAVINO COMPANY, New York and Boston. This shall be in ashlar (give sizes) of color and texture as selected by the architect, and laid up in pattern as shown on the drawing with a ⅜-in. joint. AKOUSTOLITH ashlar shall be cemented directly against the masonry wall or furring with portland cement mortar.

AKOUSTOLITH SOUND-ABSORBING PLASTER

Purpose

AKOUSTOLITH Plaster was developed under our patents in answer to a demand for an acoustic material which could be applied with a trowel. It is a lightweight masonry material, troweled on as a finish coat over the ordinary ground coats. Only the ordinary plasterer's tools are necessary.

Acoustic Qualities

AKOUSTOLITH Plaster has been tested at Jefferson Physical Laboratory, Harvard University, the U. S. Bureau of Standards, Washington, D. C., and other laboratories.

The graph developed from the Bureau of Standards test on AKOUSTOLITH Plaster ½ in. thick shows an efficiency of 32% at 512 d.v. (C^4) to 59% at 2890 d.v. The test on ¼-in. plaster at the Jefferson Physical Laboratory shows an efficiency of 24% at C^4 to 42% at C^7.

It is to be remembered that AKOUSTOLITH Plaster has been in use for years on many of the finest buildings in this country, and the claims made as to its efficiency have been completely justified.



Magnified Photograph of Plaster Texture Showing Porosity

Appearance

The texture, on account of the structure of the plaster, is of necessity similar to that of sand finish, but the general surface treatment may be varied as desired.

Color

In its natural color it is very light gray, almost white. It can be colored to practically any shade desired by the use of mortar colors.

Painting

Tinting after installation can be done by either the brush or spray method. Special instructions will be sent on request to cover specific requirements, and we urge that the services of our organization be utilized in approving paint and application before proceeding with this work in order to insure the best results.

Servicing of Jobs

It is our practice to service each job in the United States with a competent representative at the starting of installation. This is usually done at no extra charge.

Covering Capacity

AKOUSTOLITH Plaster ½ in. thick will cover from 100 to 110 yds. to the ton. At ¼-in. thickness it will cover from 165 to 175 yds. per ton. It should be noted that AKOUSTOLITH Plaster ¼ in. thick, *as actually applied on the job,* is more efficient than other acoustic plasters ½ in. thick, making the cost per unit absorption less than with these other acoustic plasters and much lower than the felted or fibrous acoustical correctives.

Acoustical Analysis Service

Upon receipt of plans and a description of furnishings, our engineering staff will make an analysis, and indicate where AKOUSTOLITH Plaster should be used to give satisfactory results. Plans should be sent to the nearest office.

Construction of the Plaster

Laboratory tests and actual installations have proved that mere surface texture does not make an efficient acoustic plaster.

The granular appearance and intercommunicating porosity of AKOUSTOLITH Plaster as shown in the accompanying photograph, is the same throughout the entire thickness and is responsible for its high efficiency in absorbing sound. AKOUSTOLITH *Plaster requires no floating, stippling or other mechanical processes after application to secure its efficiency.* The method of securing the porosity of AKOUSTOLITH Plaster is fully covered by United States patents, and consequently equivalent results can be expected with no other plaster.

Permanence

AKOUSTOLITH Plaster is manufactured by a Company which has been continuously in the building construction field for nearly 50 years, and which has had an unsurpassed experience in the acoustic field. It is, and always has been, a fireproof material entirely unaffected by water. The surface is hard and it may easily be cleaned by washing. For this reason it has been used in many hospitals and other buildings where sanitation and washability are prime considerations. AKOUSTOLITH Plaster has been used in practically every type of building and has been uniformly successful. On page 10 will be found a list of a few of the outstanding jobs in which AKOUSTOLITH Plaster has been used.

How Distributed

AKOUSTOLITH Plaster is sold direct to the plastering contractor f.o.b. factory, Woburn, Mass., packed in bags, and ready to use with the addition of water only. It can be applied by any intelligent plasterer following the specifications furnished by the manufacturer.

NOTES FOR SPECIFICATION WRITER REGARDING AKOUSTOLITH PLASTER

For New Buildings

Where AKOUSTOLITH Plaster is to be applied against masonry construction or wire lath the usual heavy scratch coat shall be applied, thoroughly covering irregularities. A brown coat shall be applied if necessary, according to manufacturer's specifications.

The base coats may be composed of either gypsum, portland cement, or lime plaster. The surface on which the binder coat is to be applied shall be thoroughly cross-scored to provide a proper bond and shall be sufficiently wet to stop most of the suction.

When the scratch coat (or brown coat if used) is

properly set but still somewhat moist, apply a ⅛-in. binder coat composed of a rich mixture of hydrated lime and sand to be followed immediately with the finish coat of AKOUSTOLITH Plaster (½ or ¼ in. thick as specified), this coat to be applied in strict accordance with the manufacturer's directions.

For Swimming Pools

Over swimming pools or other places where AKOUSTOLITH Plaster is to be applied on walls or ceilings exposed to continuous dampness, the base coats shall be composed of portland cement plaster and applied in accordance with the standard specifications of the Portland Cement Association.

The binder coat shall be of the following proportions by weight: ½ part portland cement, 1 part sand, ⅕ part hydrated lime. After the base coats have thoroughly dried and obtained their full shrinkage, same shall be dampened with water to stop most of, but not all, the suction. The binder coat shall then be applied ⅛ in. in thickness and followed immediately with one coat of AKOUSTOLITH Plaster (thickness ½ or ¼ in. as specified).

For Old Buildings

The surfaces to be plastered with AKOUSTOLITH Sound-Absorbing Plaster shall be hacked to remove the old finish coat of plaster, leaving the base coat exposed. The ceiling shall then be thoroughly dampened to stop most of the suction.

Apply the ⅛-in. binder coat of lime and sand mortar and follow immediately with finish coat of AKOUSTOLITH Plaster (½ or ¼ in. thick as specified) same to be applied in strict accordance with the manufacturer's directions.

Specification

Where acoustical treatment is shown on the plans and in the following spaces ..... it shall be AKOUSTOLITH Plaster as manufactured by R. GUASTAVINO COMPANY of New York and Boston, applied (specify thickness ½ or ¼ in.) in strict conformity with the manufacturer's directions.

CASTACOUSTIC PLASTER FOR ORNAMENTAL CEILINGS

Purpose

CASTACOUSTIC is a sound-absorbing plaster designed expressly for ornamental or coffered ceilings where acoustical treatment is desired, and where a ceiling having a period design or architectural character is required. (CASTACOUSTIC is not suitable for trowel application.)

Appearance

CASTACOUSTIC has a fine granular appearance and on high ceilings is scarcely distinguishable from ordinary plaster.

Acoustical Engineering

Upon receipt of plans together with information concerning the furnishings of the room we shall be glad to inform the architect what acoustical results may be expected if CASTACOUSTIC is used.

Structure

When mixed with the proper quantity of water, the structure of CASTACOUSTIC Plaster is open and continuously porous from the finish face completely through its entire depth. This porous structure provides the highest acoustical efficiency.

Facing

A facing approximately 1 in. thick of CASTACOUSTIC Plaster should be used as far as possible.

Backing and Reinforcing

CASTACOUSTIC should be backed up with gypsum moulding plaster and reinforced as required. Reinforcing will depend on the size of the castings.

Moulds

The use of plaster moulds is recommended wherever possible instead of glue or gelatin moulds.

Undercutting

Except on heavy or massive relief, undercutting should be avoided.

Type of Ornament

Almost any type of ornamental work which can be cast in plaster moulds can be formed in CASTACOUSTIC Plaster. Elaborate ornament with sharp undercut sections is difficult to cast satisfactorily.

Speed of Set

CASTACOUSTIC will take its initial set in a little over one hour's time. This speed of set checks with the average job requirements, but can be altered to suit special conditions of casting. CASTACOUSTIC Plaster may be removed from the plaster moulds as soon as it has its initial set, but should be left for a longer period in glue moulds.

Color

In its natural color CASTACOUSTIC is a very light gray, almost white. It can be colored to any shade by the use of mortar colors added by the plasterer.

Painting

Refer to "AKOUSTOLITH Plaster."

Covering Capacity

The covering capacity of CASTACOUSTIC Plaster is as follows—applied 1 in. thick one ton will cover approximately 45 yards.

Sales Distribution

CASTACOUSTIC is sold direct to the plastering contractor f.o.b. factory, Woburn, Mass., packed in 100-lb. burlap bags and ready to use with the addition of water only.

Specification

The following rooms shall have all ornamental castings, as indicated on drawings, cast in CASTACOUSTIC Plaster as manufactured by R. GUASTAVINO COMPANY of New York and Boston. CASTACOUSTIC Plaster shall be mixed in strict accordance with the manufacturer's directions. The plasterer shall submit a sample casting for the approval of the manufacturer and architect. All cast work shall be set accurately and straight. Reinforcing and backing shall be used as would be required for the best type of ordinary ornamental plaster work.

A FEW OUTSTANDING INSTALLATIONS IN GUASTAVINO CONSTRUCTION

Cathedral of St. John the Divine, New York, N. Y.
Cram & Ferguson, Architects
Grace Cathedral, San Francisco, Calif., Lewis P. Hobart, Architect; Cram & Ferguson, Consulting Architects
St. Albans Cathedral, Washington, D. C.
Frohman, Robb & Little, Architects
Christ Church Cathedral, St. Louis, Mo.
Jamieson & Spearl, Architects
Nebraska State Capitol, Lincoln, Neb., Bertram Grosvenor Goodhue and B. G. Goodhue Assoc., Architects
Riverside Church, New York, N. Y.
Pelton, Allen & Collens, Architects
Chicago University Chapel, Chicago, Ill.
Bertram Grosvenor Goodhue Assoc., Architects
Princeton University Chapel, Princeton, N. J.
Cram & Ferguson, Architects
Duke Chapel, Durham, N. C., Horace Trumbauer, Architect
Joslyn Memorial, Omaha, Neb.
McDonald & McDonald, Architects
St. Bartholomew's Church, New York, N. Y.
Mayers, Murray & Phillip, Architects
Central M. E. Church, Brooklyn, N. Y.
Halsey, McCormack & Helmer, Architects
Church of the Heavenly Rest, New York, N. Y.
Mayers, Murray & Phillip, Architects
Temple Tifereth Israel, Cleveland, Ohio
Charles R. Greco, Architect
Temple Emanu-El, New York, N. Y.
Robert D. Kohn, Charles Butler and Clarence S. Stein, Architects; Mayers, Murray & Phillip, Associate Architects
Temple Isaiah, Chicago, Ill.
Alfred S. Alschuler, Architect
Epworth Euclid M. E. Church, Cleveland, Ohio
Bertram Grosvenor Goodhue Assoc., Architects; Walker & Weeks, Associate Architects
St. Aedan's Church, Jersey City, N. J.
Murphy & Lehmann, Architects
First Church of Christ Scientist, Cambridge, Mass.
Bigelow, Wadsworth, Hubbard & Smith, Architects
Sacred Heart Church, Washington, D. C.
Murphy & Olmstead, Architects; Maginnis & Walsh, Associate Architects
Trinity College Chapel, Washington, D. C.
Maginnis & Walsh, Architects
First Unitarian Church, Chicago, Ill.
Dennison B. Hull, Architect
Church of Our Lady of Perpetual Help, Brooklyn, N. Y.
F. Joseph Untersee, Architect
Immaculate Conception Church, Germantown, Pa.
Paul Monaghan, Architect
Eglise de la Nativite d'Hochelaga, Montreal, P. Q.
Viau & Venne, Architects
St. Joseph's Convent, Brentwood, L. I., N. Y.
Murphy & Olmstead, Architects
National Shrine of the Immaculate Conception, Washington, D. C.
Maginnis & Walsh, Architects
St. Vincent Ferrer Church, New York, N. Y.
Bertram Grosvenor Goodhue Assoc., Architects
Buffalo City Hall, Buffalo, N. Y.
Dietel, Wade & Jones, Architects
New York Central Passenger Station, Buffalo, N. Y.
Fellheimer & Wagner, Architects
Federal Reserve Bank, Boston, Mass.
R. Clipston Sturgis, Architects
Federal Reserve Bank, New York, N. Y.
York & Sawyer, Architects
Federal Reserve Bank, Richmond, Va.
Sill, Buckler & Fenhagen, Architects
Federal Reserve Bank, Louisville, Ky.
D. X. Murphy & Bro., Architects
Federal Reserve Bank, Baltimore, Md.
Parker, Thomas & Rice, Architects
Federal Reserve Bank, Philadelphia, Pa.
Bunting & Shrigley, Architects
Dept. of Commerce Building, Washington, D. C.
York & Sawyer, Architects
U. S. Post Office, Custom House and Courthouse, Duluth, Minn.
Supervising Architect, Treasury Department

REPRESENTATIVE LIST OF AKOUSTOLITH PLASTER INSTALLATIONS

Riverside Church, New York, N. Y.
Henry C. Pelton and Allen and Collens, Architects
Temple Emanu-El, New York, N. Y., Kohn, Butler & Stein, Architects; Mayers, Murray & Phillip, Associate
Sacred Heart Church, Jersey City, N. J.
Cram & Ferguson, Architects
First Church of Christ, Scientist, Cleveland, Ohio
Walker & Weeks, Architects
St. Gabriel's Church, Washington, D. C.
Maginnis & Walsh, Architects
Lutheran Church, Detroit, Mich.
W. E. N. Hunter, Architect
Centenary West End M. E. Church, Winston-Salem, N. C.
Mayers, Murray & Phillip, Architects
Massachusetts General Hospital, Boston, Mass. (2 installations)
Coolidge, Shepley, Bulfinch & Abbott, Architects
Quincy Hospital, Quincy, Mass. (2 installations)
McLaughlin & Burr, Architects
Tampa Municipal Hospital, Tampa, Fla.
Stevens & Lee, Architects
Mountainside Hospital, Glen Ridge, N. J. (2 installations)
York & Sawyer, Architects
Brooklyn Hospital, Brooklyn, N. Y.
Lord & Hewlett, Architects
Maine General Hospital, Portland, Me.
Coolidge, Shepley, Bulfinch & Abbott, Architects
West 50th St., West 18th St., and Brooklyn Telephone Buildings, New York, N. Y.
Voorhees, Gmelin & Walker, Architects
No. 1 Wall Street Building, Irving Trust Co., New York, N. Y.
Voorhees, Gmelin & Walker, Architects
State Capitol Building, Charleston, W. Va.
Cass Gilbert, Architects
Boston Herald-Traveler Building (2 installations)
Henry B. Alden, Architect; French & Hubbard, Engineers
National Education Association Building, Washington, D. C.
Frank Irving Cooper Corp., Architects
Stone & Webster Building, Boston, Mass. (2 installations)
Stone & Webster, Architects
Stone & Webster Building, New York, N. Y.
Stone & Webster, Architects
Empire State Building, work spaces of Irving Trust Co., New York, N. Y.
Voorhees, Gmelin & Walker, Architects
Harvard University Swimming Pool, Cambridge, Mass.
Coolidge, Shepley, Bulfinch & Abbott, Architects
Ireland Residence Swimming Pool, Cleveland, Ohio
Abram Garfield, Architect
Holmes Residence Swimming Pool, Sands Point, L. I., N. Y.
Ed. William, Architect
Yale Library Quadrangle, New Haven, Conn.
James Gamble Rogers, Architect
Harvard University, Cambridge, Mass. More than 15 buildings since 1925, including Lowell, Dunster, Eliot, Leverett and Adams Houses, Physics Laboratory, Faculty Club and Biology Building
Coolidge, Shepley, Bulfinch & Abbott, Architects
Geography Building, Harvard University, Cambridge, Mass.
Horace Trumbauer, Architect
Belle Skinner Music Building, Vassar College, Poughkeepsie, N. Y., Allen & Collens, Architects
Ottawa Hills High School, Grand Rapids, Mich.
H. H. Turner, Architect
Quincy High School Addition, Quincy, Mass.
Frank Irving Cooper Corp., Architects
Chapel, Clothier Memorial, Swarthmore College, Swarthmore, Pa.
Walter T. Karcher, Architect
Union League Club, New York, N. Y.
Morris & O'Connor, Architect
Addition to Town & Country Club, Hartford, Conn.
Smith & Bassette, Architects
Brunswick Recording Laboratory, New York, N. Y.
Private Plans
Paramount Studios, Astoria, L. I., Private Plans
H. F. DuPont Residence, Wintherthur, Del.
Albert E. Ives, Architect
Washington County Museum of Fine Arts, Hagerstown, Md.
Hyde & Shepard, Architects

The Guastavino Company maintains an interesting exhibit of its products in the reception room of the Architects' Sample Corporation at 101 Park Avenue, New York, N. Y.

HOUSING COMPANY

ACOUSTICAL DIVISION

Manufacturers of Acoustex, the Decorative Sound Absorbent

40 Central Street
BOSTON, MASS.

60 East 42nd Street
NEW YORK, N. Y.

ERECTORS IN PRINCIPAL CITIES

ACOUSTEX

Product

ACOUSTEX Sound Absorbing Tile for wall and ceiling acoustical treatment.

Engineering Service

An engineering service is maintained for the architect, builder, or owner. A scientific analysis will be made of acoustical conditions in an existing room or of a contemplated construction.

Recommendations for the use and location of the proper amount of treatment will be given without obligation or charge.

Purpose

Acoustex is a decorative, fire-resisting material especially developed and designed to correct the acoustics of auditoriums, churches, lodge halls, gymnasiums, ballrooms, theatres, radio studios, courtrooms, and similar rooms; and to produce quiet and comfort in hospitals, schoolrooms, bank rooms, boardrooms, restaurants, printing rooms, swimming pools, and all other similar places where the desire is to reduce noise to a point where it is not objectionable.

Acoustex, the Decorative Sound Absorbent, is a material which offers every practical advantage of installation and use, and, in addition, brings to the architect a new freedom in acoustical design.

Appearance

Acoustex is characterized by a rich texture which makes a beautiful finish in itself. Acoustex is never monotonous, never out of place. It welcomes the close inspection given a sound absorbent on an office ceiling; fits into the decorative plan of the finest church or auditorium.



Office of Boit, Dalton & Church, Boston, Mass., Effectively Quieted with Acoustex

Absorption Value

U. S. Bureau of Standards tests as follows:

Frequency	256	512	1024	2048
Acoustex "60" (1 in.)	.21	.53	.81	.81
Acoustex "70" (1½ in.)	.34	.75	.85	.84
*Acoustex "70" (1½ in.)	.30	.74	.90	.85

*After six coats of paint were applied Acoustex showed no reduction in efficiency (all figures within the experimental error). Additional coats may be applied without materially affecting absorption coefficients.

Sizes

Acoustex is furnished in standard tiles 6x12, 12x12, 12x24 in.; also in sheets 2 ft. wide and up to 8 ft. in length, especially suitable for panels.

Two thicknesses are available to meet all absorption requirements: Acoustex 60, 1 in. thick; Acoustex 70, 1½ in. thick.

Joints

Acoustex Tiles and Sheets have beveled edges.

Decoration

Acoustex Tiles are supplied predecorated. Twelve standard colors are available. Variations from standard colors and stenciled designs furnished upon request.

Design

Acoustex can be installed in any of the popular tile patterns—broken joint, ashlar, basket weave, herringbone, etc. Interesting and beautiful ceiling effects can be secured by varying and combining these patterns, not only in design but color. Other interesting designs can be obtained with the large sheets. Stenciled Acoustex offers further possibilities.

Maintenance

Acoustex presents no problems of maintenance. It can be easily vacuum cleaned. It is redecorated by spray painting with any good brand of flat interior oil paint.

This can be done innumerable times without filling its texture or impairing its acoustical efficiency. (See report of painting test above.)



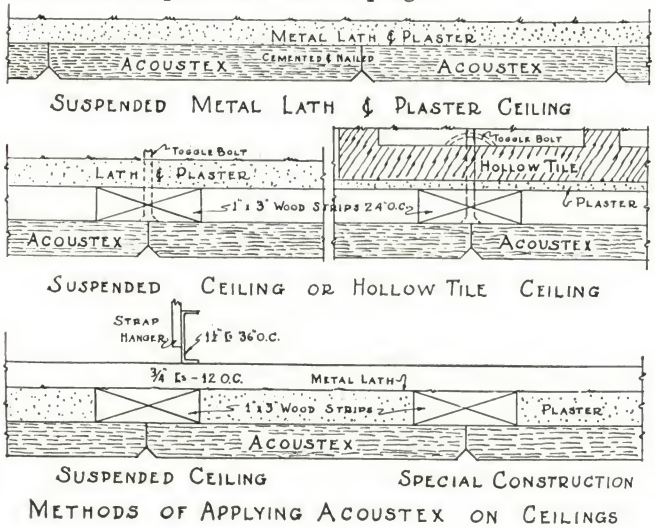
Westminster Church, Albany, N. Y.
DELANO & ALDRICH, Architects
Note that Acoustex in the ceiling panels was installed in strips finished to resemble dark oak planking

Application of Acoustex

Cementing and Nailing to Plaster—Acoustex is light in weight (approximately 2 lb. per sq. ft. for 1-in. thickness; 3 lb. for 1½-in.); and where plaster is hard and firm, it may be cemented and nailed to the surface. On new work the brown coat should be leveled to a true, even surface and Acoustex applied, omitting the finish or white coat of plaster. Special insulation cement is spread on the back of each tile. One or two nails driven into the plaster at an angle hold the tile in place until cement is set. Acoustex does not warp, shrink, or swell, and therefore no movement takes place in the tile after it is applied.



Nailing to Wood Strips—When Acoustex is to be applied to old ceilings, and where plaster is not firm enough to support the additional weight, wood furring strips spaced on required centers should be applied by fastening with toggle bolts, and Acoustex can then be nailed to the furring strips. On hollow tile, concrete, or brick, the furring strips may be fastened by the use of expansion bolts or plugs.



METHODS OF APPLYING ACOUSTEX ON CEILINGS

Wood Ceiling Construction—Where armories, churches, or school gymnasiums have planked roofs, Acoustex may be nailed directly to the underside of the planking. In Gothic churches or where ceilings are beamed, Acoustex may be applied in large sheets between the beams and held securely in place by a finish moulding.

Special Uses

Acoustex can be adapted to many kinds of special construction to save material and labor costs. It was used in the auditorium of the Boston & Maine Terminal as a form for a poured gypsum roof. It can also be used in special construction, eliminating lath and plaster.

Specification

Where acoustical treatment is shown on the plans, it shall be Acoustex as manufactured by the HOUSING COMPANY, ACOUSTICAL DIVISION, 40 Central Street, Boston, Mass., and shall be applied by their certified contractors in accordance with detailed specifications.

Acoustex Erectors

Acoustex is sold through experienced erectors only, thus assuring a satisfactory and permanent installation.

Acoustex erectors are located in all principal cities. Should one not be available in your locality, write direct to HOUSING COMPANY, ACOUSTICAL DIVISION, 40 Central Street, Boston, Mass. Catalogues and further information for your files furnished on request.

Representative Acoustex Installations and Their Architects

Churches

Muhlenberg Chapel, Allentown, Pa., Frank R. Watson, Philadelphia
St. Paul's M. E. Church, Louisville, Ky., H. M. King, Louisville
Westminster Church, Albany, N. Y., Delano & Aldrich, New York, N. Y.

Hospitals

Chapin Memorial Hospital, Springfield, Mass., Stevens & Lee, Boston
Lennox Hill Hospital, New York, N. Y., York & Sawyer, New York, N. Y.
Mattapan State Hospital, Boston, Mass., James H. Ritchie Associates, Boston, Mass.
Psychopathic Hospital, New York, N. Y., Charles B. Meyers, New York, N. Y.
U. S. Veterans' Hospital, Augusta, Ga., U. S. Veterans Bureau

Offices

Boston & Maine General Offices, Boston, Mass., Owner
Louisville Telephone Exchange, Louisville, Ky., Alger & Vinouer, Atlanta, Ga.
Philadelphia Electric Co., Philadelphia, Pa., Owner
Western Union Telegraph Co., Boston, Mass., Stone & Webster (Engineers)
Youngstown Telegram, Youngstown, Ohio, James W. Thomas, Cleveland, Ohio

Schools

Brooklyn Technical High School, Brooklyn, N. Y., Walter C. Martin, Board of Education
Feilbach School, Toledo, Ohio, Ed. M. Gee, Board of Education
Fisk University, Nashville, Tenn., Henry C. Hibbs, Nashville, Tenn.
Ohio State University, Columbus, Ohio, Howard Dwight Smith
Sterling Memorial Building, Yale University, New Haven, Conn., Charles Z. Klauder, Philadelphia, Pa.

Miscellaneous

Childs Restaurant, New York, N. Y., J. C. Westervelt, New York, N. Y.
Columbia Broadcasting Studios, New York, N. Y.
Public Library Assembly Room, Toronto, Ont., Canada, Wilson & Gregg, Toronto
Publix-Paramount Theatres, Chicago, Ill. and Detroit, Mich.
Masonic Temple, Mount Airy, N. C., Harry Barton, Greensboro, N. C.
Russett Cafeteria, Indianapolis, Ind., Owner

THOS. MOULDING ACOUSTICAL ENGINEERING CO.

Engineers and Manufacturers of Acoustical Tile and Sound Deadening Systems

EXECUTIVE OFFICES
165 West Wacker Drive
CHICAGO, ILL.

EASTERN BRANCH: Room 1943 Grand Central Terminal Building, NEW YORK, N. Y.
DISTRICT SALES REPRESENTATIVES IN ALL PRINCIPAL CITIES

TMB ACOUSTICAL TILE

A Sound Control System Available in Five Types of Treatment

Types

TMB Metal Tile—Constructed of an all-metal frame with removable woven wire membrane and rock wool absorbing pad. Particularly adaptable to fireproof construction as it is installed direct to carrying channel, omitting lath and plaster.

TMB Type "W" Tile—Constructed of a special basswood frame with internal ledge supporting the sound absorbing pad independent and away from the woven metal membrane.

TMB Fibre Tile—Made of especially selected and prepared wood wool, impregnated with a mineral cement binder, moulded and pressed to a fixed density in special forms, producing a non-combustible tile of correct porosity with good mechanical strength. The flexibility of the felted back is advantageous for cementing direct to surfaces of unusual expansion or contraction.

TMB Laminated Tile—Constructed of a layer of TMB Fibre Tile and sheet of flax felt bound together with bronze wire stitching.

TMB Metal Membrane Treatment—Applicable to special areas where it is desired to have monolithic surfaces in individual panels up to approximately 12 sq. ft. Treatment consists of a separate installation of absorbing pad and metal membrane, furnished in special sizes to fit each specific installation.

Decoration

All TMB Acoustic Tile are finished in ivory acoustic lacquer or in any special color or stenciled design desired.

TMB Laminated and Fibre Tile can be had in plain and beveled edges and may be installed in a wide variety of patterns, producing beautiful decorative effects to harmonize with any architectural scheme. The lighter shades furnish excellent light reflection.

Maintenance

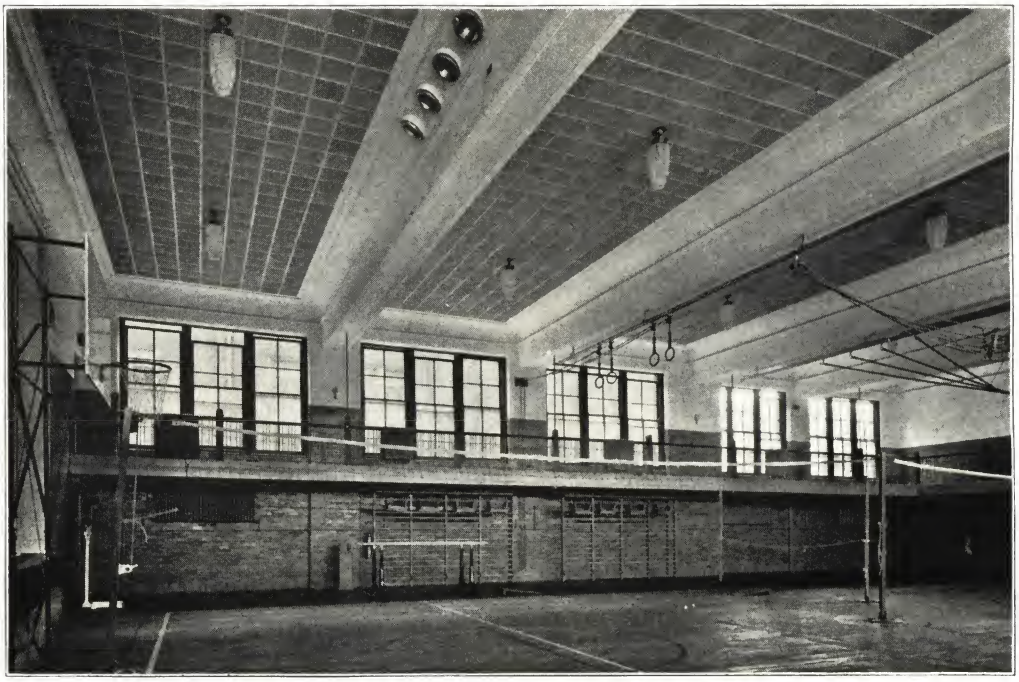
In the TMB Metal and Type "W" Tiles, the space between the membrane and absorbing pad permit repeated cleaning and decorating without impairing the acoustical efficiency.

Tests conducted by the U. S. Bureau of Standards show that repeated painting of the Fibre Tile will not reduce its sound absorption qualities.

Specification

TMB Acoustic Tiles shall be applied in accordance with the manufacturer's specification.

Complete data regarding each particular installation may be obtained upon application from the THOS. MOULDING ACOUSTICAL ENGINEERING CO., or any of its authorized dealers.



Gymnasium of Aquinas High School, Chicago, Ill.
GERALD A. BARRY, Architect FRANK BURKE & SONS, Contractor
TMB Acoustical Tile in ceiling of five bays

Application

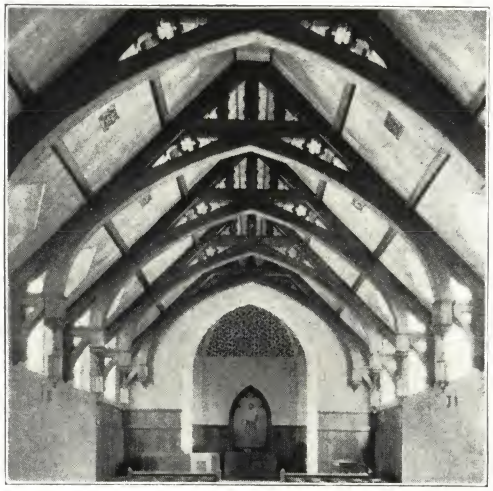
TMB Acoustic Tile is applicable to any construction or surface. Details for any specific installation will be furnished on request.

Sizes

TMB Fibre and Laminated Tiles are made in two thicknesses: 1-in. and 1½-in., providing a wide range of sound absorbing values, as shown in the table at the right. They are furnished in sizes: 6x12, 12x12, 12x24, 8x16, 16x16, and 16x32 in., and also in special sizes on request. TMB Metal Tile is furnished in 16-in. square tiles. TMB Type "W" can be had in sizes 8x8, 8x16, and 16x16 in.

Adaptability

TMB Acoustic Treatment is equally adaptable to existing buildings as well as those under construction. Our wide variety of acoustic tile makes it possible to correct any defective hearing conditions in old buildings at a nominal cost.



Auditorium and Chapel, St. Pauls' House, Chicago, Ill.
TMB Tile scored to represent wood planking

Engineering Service

We maintain a staff of competent and experienced acoustical engineers who will furnish a complete analysis and recommendation as to treatment and design needed without charge or obligation.

Coefficients of Sound Absorption

(U. S. Bureau of Standards, Washington, D. C.)

TMB Fibre Tile

	C4	C5	C6	C7
1-in. Painted	.62	.81	.73	.65
1-in. Unpainted	.58	.79	.80	.78
1½-in. Unpainted	.78	.85	.85	.78

TMB Laminated Tile

	C4	C5	C6	C7
1-in.	.63	.69	.74	.82
1½-in.	.72	.77	.81	.92

TMB Metal Tile

C4	C5	C6	C7
.86	.90	.81	.75

TMB Type "W" Tile

C4	C5	C6	C7
.61	.72	.68	.54

TMB Metal Membrane Treatment

This varies with thickness and type of sound absorbing pad used.

A Few Typical Installations

Location	Material
New York State Office Building, New York, N. Y.	TMB Fibre Tile, projection rooms and offices
Detroit News, Detroit, Mich.	TMB Fibre Tile, press rooms
St. Paul's House, Chicago, Ill.	TMB Laminated Tile, chapel and auditorium
U. S. Veterans' Hospital (Acute Building), Camp Custer, Mich.	TMB Laminated Tile, corridors and rooms
New House Office Building, Washington, D. C.	TMB Metal Tile, telephone exchange and assembly rooms
United Masonic Temple, Dubuque, Iowa	TMB Metal Tile, kitchens
St. Aquinas High School, Chicago, Ill.	TMB Type W, gymnasium, music rooms and typewriter room
Home Savings Bank, Milwaukee, Wis.	TMB Type W, accounting rooms
B & O Railroad, Fruit and Produce Exchange, Baltimore, Md.	TMB Type W, auction rooms
Wilmette Parish M. E. Church, Wilmette, Ill.	TMB Membrane, nave
St. Mary's Church, St. Cloud, Minn.	TMB Membrane, nave

TMB SOUND DEADENING SYSTEM

Designed to Prevent the Passage of Sound from One Room to Another

Description

System is designed to create a wall or ceiling of comparatively light weight and free to vibrate independently of retaining wall or ceiling. Deadening surface is attached to base by means of patented Gorman clips, which provide a flexible tie, with no metallic connection. Sound absorbing felt is incorporated between the exposed face over the retaining wall.

For floor deadening this system provides continuous felt support under all sleeper area, preventing any deflection of the floor when unequal loads are applied.

SERVICE IN SILENCE

Application

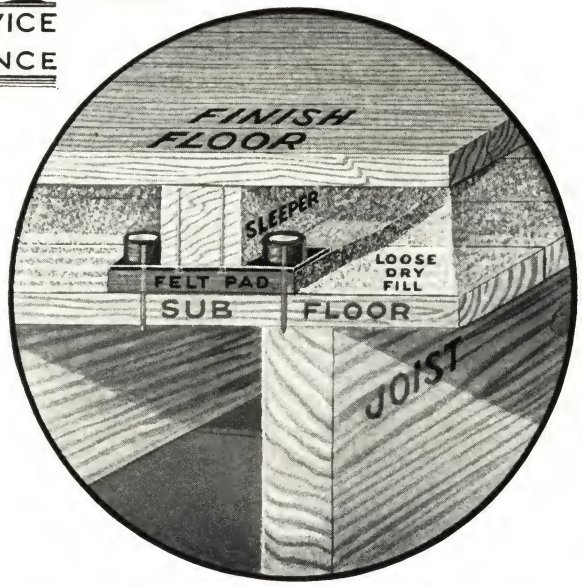
System is applicable to either fireproof or non-fireproof construction and in the former, when attached to concrete base, expansion nails are used providing a positive and permanent tie.

Installation

The system is installed and guaranteed by the Thos. Moulding Acoustical Engineering Co. All work is under the supervision of trained mechanics.

Specification

TMB system of sound insulation shall be applied in accordance with the manufacturer's specification. Complete data regarding each particular installation may be obtained upon application from the Thos. Moulding Acoustical Engineering Co., or any of its authorized dealers.



Floating Floor Prevents Sound Transmission

UNITED STATES GYPSUM COMPANY
CONTRACTING DIVISION

Sound Control Service

300 West Adams Street CHICAGO, ILL.

For Sales Offices see Sweet's Manufacturers' Index for U.S.G. Catalogue on Roof, Floor and Partition Products

RESEARCH, DEVELOPMENT AND SERVICE

Research and Development

All U.S.G. Sound Control materials and Systems are the result of directed research at the Building Materials Laboratory of the UNITED STATES GYPSUM COMPANY. This laboratory is associated with and located at the Lewis Institute of Technology in Chicago and covers 10,000 sq. ft. of floor space on four floors of a modern building, especially equipped for research and testing. The research work is carried out under the direction of trained physicists and chemists, architectural engineers and investigators, comprising a personnel of some fifty individuals. Here new materials and methods are produced and tested and improvements developed.

The fundamental nature of the laboratory's approach to any problem is well illustrated by the following: Some years ago they were asked to develop an acoustical absorbent of great efficiency which as well would be incombustible, withstand all the hazards of building construction and occupancy, equally adaptable to new or existing structures, and one which would be decorative and appropriate to any architectural treatment—Acoustone is that product.

The laboratory is unique in possessing the only complete sound chamber, owned and maintained by a manufacturer of acoustical products; a carefully calibrated acoustical measuring stick to use during the development of acoustical products and as a guide to the scientists who are developing them. It is also used for control tests on the company's output, so that the acoustical absorption and sound insulation afforded by the sound control products of the UNITED STATES GYPSUM COMPANY is constantly maintained equal or superior to the published determinations of recognized acoustical laboratories.

Service

The UNITED STATES GYPSUM COMPANY maintains a fully competent corps of acoustical engineers, completely equipped to assist architects on any problem involving sound absorption, acoustical correction or sound insulation. They render this service, without charge and without obligation, in advance of construction or will gladly advise corrective methods for existing buildings in which sound difficulties are experienced.

In auditoria this service includes analysis of the effect of curved or other sound concentrating surfaces, and investigation for objectionable echoes. In each case it indicates changes in design where they seem advisable. Where the reverberation is too great for comfort, recommendations are made for economically covering the necessary areas with acoustical absorbents.

Because the UNITED STATES GYPSUM COMPANY handles all phases of the problem and provides, not only materials for sound absorption, but also a complete system for the insulation of sound, architects are assured that absorption materials will not be recommended where sound insulation is required or vice versa. See U.S.G. System of Sound Insulation, page 8.

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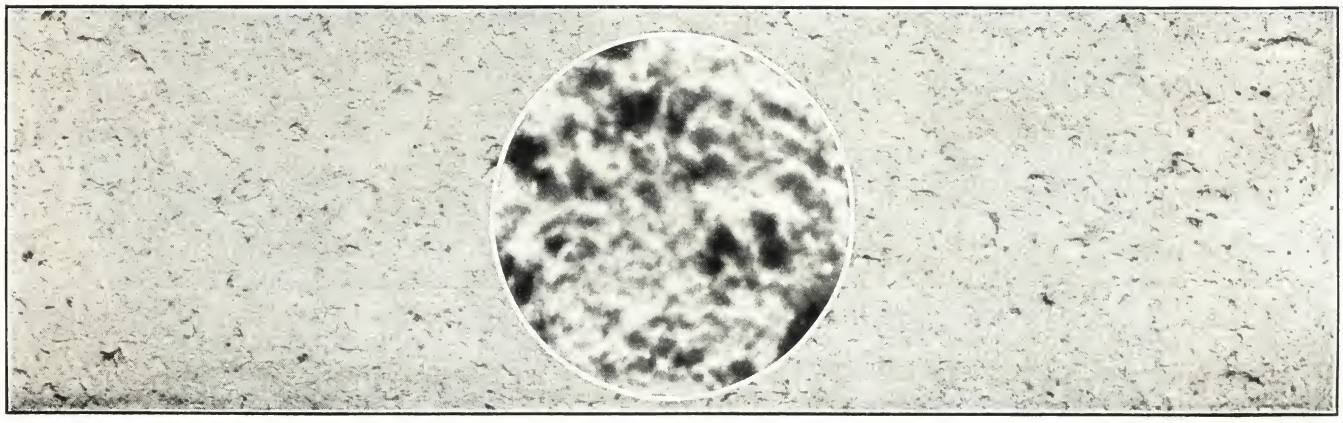
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ACOUSTONE—Actual Size Showing Texture and Enlargement Showing Porosity



ACOUSTONE—U.S.G. ACOUSTICAL TILE

Composition

Acoustone is formed from filaments of specially processed stone. Its extremely fine, almost microscopic, porosity (See page 1) provides an unusually high degree of sound absorption.

Absorption

The acoustical efficiency of Acoustone has been confirmed by all the leading laboratories. The values below were obtained from tests by Dr. Paul E. Sabine at Riverbank Laboratories, Geneva, Ill.

Tile	Pitch C3 (256 d.v.)	Pitch C4 (512 d.v.)	Pitch C5 (1024 d.v.)	Pitch C6 (2048 d.v.)
½″ thick	.16	.48	.60	.52
¾″ thick	.29	.62	.60	.66
1 ″ thick	.46	.67	.60	.64

Thickness

Acoustone is made in ¾ inch standard thickness.

Sizes

Tiles are made in the following standard rectangular sizes: 6x6 in., 6x12 in., 12x12 in., 9x18 in. Special shapes and sizes may be obtained when required.

Outstanding Decorative Appearance

In addition to its high degree of acoustical efficiency, it is outstanding in its decorative effect. The surface texture is quite similar to travertine stone, surpassing it, however, in the richness and warmth it supplies through a wider range of color tones. From the viewpoint of design, it is adapted to harmonious, unobtrusive inclusion in any decorative scheme. Ashlar masonry walls for interiors can be constructed with Acoustone facings that are as beautiful as natural stone. Interiors in the modern trend may be delightfully handled in tile with a metallic lustre in many shades and colors. The wide variety of shapes likewise adds flexibility—the tile may be laid up in many interesting patterns. There is no disconcerting mechanical effect. Colored borders, cornices in relief, and modified coffered work are easily obtained. Joints between tile units may be accented with a V profile or suppressed as desired. Struck joints may be used with ashlar patterns.

Colors

Tiles are furnished in light-reflecting white or cream. Special colors will be made to order. If for any reason changes in color or effect are desired, the tile surfaces may be brush or spray painted with any of the brushing or spraying lacquers. Sprayed lacquers, containing bronze powders in suspension, give the tile the appearance of being plated with the metal used. Exhaustive tests have proven that painting with lacquer does not reduce the acoustical efficiency or absorption of the tile. Oil paint, diluted with equal parts of thinner, may be brush applied without significant reduction in absorption.



Studio E, National Broadcasting Company, Chicago
GRAHAM, ANDERSON, PROBST AND WHITE, Architects
Ceilings and walls of Acoustone in varying shades. U.S.G. System of Sound Insulation used throughout for floors, walls and ceilings

Incombustible

Since it is made solely from specially processed stone filaments, it is incombustible.

Light Weight

Due to its extremely light weight, it is safely and permanently cemented over plaster in both new and old work.

Easily Cleaned

The complete and thorough cleaning of the porous structure of Acoustone with an ordinary vacuum cleaner thoroughly evacuates any foreign matter that may become lodged in the tile. Accumulations of grease and dirt on the surface of the material are easily removed by the same method or by using ordinary wall paper cleaner, restoring the original color and appearance. The cost of such cleaning is much less than the cost of decorating an equal area of wall or ceiling; and the wear on the tile, incidental to the cleaning, is so negligible that no appreciable difference is made either in its appearance or sound absorbing ability after repeated cleanings over a period of years.

Durable

Because Acoustone is made from especially processed stone, it does not deteriorate with age.

Sanitary

Acoustone offers complete sanitation. It is inorganic, durable, completely cleanable. It provides an aseptic, readily and cheaply cleaned sound absorbent for hospitals, sanitoria and restaurants.

Installation and Guarantee

The manufacture, installation and acoustical design of Acoustone is entirely under the control and is the sole responsibility of the UNITED STATES GYPSUM COMPANY.

This policy enables the purchaser to buy a result without reference to the manner in which the result is obtained. It definitely fixes the responsibility with the UNITED STATES GYPSUM COMPANY as it frees the purchaser or the architect from all details, engineering and installation.

Such a policy, of course, means that the UNITED STATES GYPSUM COMPANY will refuse to install Acoustone where satisfactory results will not be obtained.

The company is prepared to make the installation of Acoustone in busy offices, banks, restaurants, brokers' offices, hospitals, etc., at times so that there will be no interruption in the usual routine.

For this work only trained and experienced mechanics are employed, who will carefully protect the walls, floors and furnishings against damage during the installation.

Economical

Acoustone is not expensive to install. It costs more than ordinary wall and ceiling decorating, but by eliminating redecorating costs, over a period of years, the expense is less.

SPECIFICATIONS—ACOUSTONE

LONG FORM

Note: *Notes are explanatory or advisory only and should not be included in the specifications.*

(1) Work Included

Note: *List and locate all walls and ceilings to be covered with Acoustone. If more than one thickness of Tile is used, specify the thickness for the various areas.*

(2) Base

Acoustone shall be applied direct to plaster or similar smooth surface.

Note: *On existing work Acoustone is applied over any firm, standard plaster finish.*

(3) Acoustical Treatment Material

(3a) Acoustical treatment material shall be Acoustone ¾ in. thick and of colors selected by the architect.

(3b) Joints between Tiles shall be *(a V formed by accurately beveling the tile edges) (as detailed) (specify).*

(3c) Tiles on walls and fields of ceilings shall be of size, shape, disposition and color as shown on the various details and approved shop drawings.

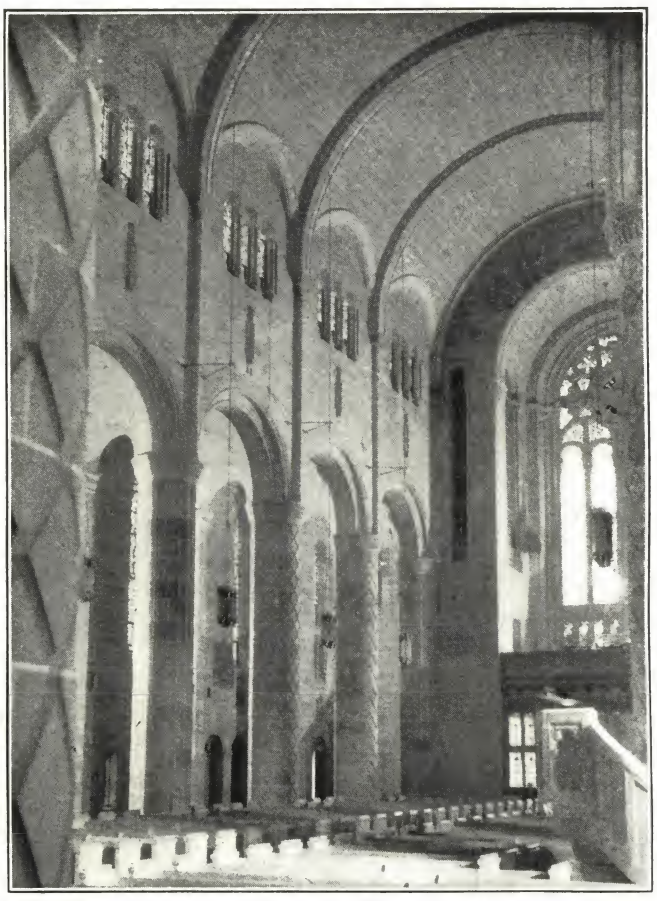
(4) Application of Acoustone

(4a) Acoustone shall be completely erected by the UNITED STATES GYPSUM COMPANY of sizes, colors and pattern shown on the drawings and details.

(4b) The Tile shall be laid close, accurately cemented in position in full conformance with the manufacturer's specifications.

SHORT FORM

The contractor shall allow the sum of $..... to cover the cost of acoustical treatment, using Acoustone to be furnished and erected by the UNITED STATES GYPSUM COMPANY as directed and approved by the architect.



Church of the Holy Child, Philadelphia
GEO. I. LOVATT, Architect
Acoustone laid in Ashlar pattern with struck joints matching in texture and random color the native stone walls

SABINITE ACOUSTICAL PLASTER

Types

Sabinite A—Sabinite A is for use in locations not subject to moisture (high humidity).

Number 38—Sabinite No. 38 is a special material for use in swimming pools, bath houses, hospitals, etc., specially developed to resist moisture.

Absorption

Tests expressed in percentages of sound absorbed made in 1931 at Riverbank Laboratories (Dr. Paul E. Sabine), Geneva, Ill.

Sabinite type	Pitch C3 (256 d.v.)	Pitch C4 (512 d.v.)	Pitch C5 (1024 d.v.)	Pitch C6 (2048 d.v.)
A	.20	.38	.51	.45
No. 38	.24	.38	.42	.41

Composition

Sabinite Acoustical Plaster is a permanent, reasonably priced, sound-absorbing plaster. Sabinite A is substituted, over the standard scratch and brown coats, for the usual hard, sound-repellent plaster finishes. Sabinite No. 38 is applied only over Oriental Exterior Stucco base coats. Sabinite absorbs sound because of its great multitude of tortuous, minute passages, which have their start in tiny openings at its surface. In these passages, inherent in the material, sound is repeatedly reflected, losing its energy to heat and friction.

Thickness

It is applied ½-in. thick in two successive coats, each ¼-in. thick, with the usual plasterer's tools.

Appearance

It presents the same appearance as a sand floated plaster finish. Sabinite A may also be left with a troweled finish if desired.

Colors

Both Standard and No. 38 Sabinite are furnished in white and four standard colors or tints; ecru, ivory, cream, buff. Special colors will be furnished on orders exceeding 5 tons. On small orders where special colors are required Sabinite may be integrally tinted on the job.

It can be painted or decorated after application without loss of efficiency. (See specifications.)

Incombustible

Composed of inorganic aggregates bonded together with gypsum plaster, long known as a fireproofing material, it is incombustible.

Durable

Sabinite Plaster is as rugged and durable as the ordinary sand float finish.

It is unaffected by dampness and does not shrink or swell with climatic changes.

Sanitary

Because it contains no vegetable or animal matter, Sabinite is sanitary. Like any gypsum plaster it is vermin proof and the pores are too small to admit flies or other insects. It may be disinfected or washed when necessary.

Distribution

Sabinite is made at the principal mills of the UNITED STATES GYPSUM COMPANY, conveniently located for lowest transportation costs and quick delivery.

Covering Capacity

One ton of Standard Sabinite applied in two coats, each ¼-in. thick, will cover a surface of over 100 sq. yds. The average plasterer can apply 100 sq. yds. of Sabinite to full specifications in 11 hrs.

To mix this material, including delivery to the mechanic, requires but 7 hrs.

Sabinite No. 38 covers from 60 to 75 yards a ton, and requires 14 hours of a plasterer's time and 8 hours of mixing labor per 100 sq. yds.

Application

It is applied by the plastering contractor in lieu of the usual finish. Its installation is always supervised by an experienced representative of the UNITED STATES GYPSUM COMPANY.

Easy to Apply

Nothing but water is added to make Sabinite ready for application. It spreads with a trowel from the hawk, like ordinary plaster and bonds easily and firmly to the base coat.

Economical

The low cost of the material, ease of application and excellent covering capacity, coupled with its relatively high sound absorption, makes Sabinite a most economical material.

SPECIFICATIONS—SABINITE ACOUSTICAL PLASTER

Note: *Notes are explanatory or advisory only and should not be included in the specifications.*

(1) Work Included

Note: *List and locate all walls and ceilings to be covered with Sabinite Acoustical Plaster. If both Standard and No. 38 Sabinite are used, list and locate separately. If different colors of integrally tinted Sabinite are used, specify the colors for the various areas.*

(2) Grounds

On walls, in addition to the usual grounds set for the scratch and brown coat plaster base, set additional ½-in. thick grounds to assure proper thickness of the Sabinite and form nailing for wood trim, etc. All corner beads shall be set to conform to the increased plaster thickness.

(3) Acoustical Treatment Material

(3a) Acoustical Treatment material shall be *(Sabinite A) (and) (No. 38)* Sabinite Acoustical Plaster as manufactured by the UNITED STATES GYPSUM COMPANY.

(3b) Sabinite shall be integrally tinted by the manufacturer at the mill.

(3c) Sabinite shall be tinted as directed on the job by the inclusion of dry color in amounts not to exceed 25 lbs. per ton of Sabinite. The usual precautions for handling colored plaster shall be observed.

Note: *Integrally tinted Sabinite should be a shade lighter than the same color would be in paint because the texture of Sabinite casts a slight darkening shadow.*

(4) Scratch and Brown Coat Base

(4a) Sabinite A—All walls and ceilings to receive Sabinite A shall be given a scratch and brown coat of gypsum plaster containing not more than two parts of sand by weight to one part of plaster.

(4b) Sabinite No. 38—Hydraulic Sabinite shall only be applied over Oriental Exterior Stucco Base Coat.

Note: *Oriental Exterior Stucco Base Coat is a prepared material requiring no sand or other addition except water. It is applied in two coats in place of the regular scratch and brown coats.*

(4c) The scratch coat shall be thoroughly broomed before the second or brown coat is applied. The second or brown coat shall be deeply raked after straightening.

(5) Application of Sabinite

The application of Sabinite shall only be made under the supervision of the Service Department of the UNITED STATES GYPSUM COMPANY and after the plasterers have received full individual instructions.

To the dry base coat, first apply one ¼-in. coat of Sabinite mixed in accordance with the manufacturer's direction, adding water only to the material as supplied. The first coat shall be straightened with a darby and thoroughly broomed with a clean broom as soon as the water leaves the surface, the broom to be kept clean of all droppings and aggregate during the operation.

The second coat shall be floated with a clean cork float to an even and porous surface when the water has left the surface. (Sabinite A shall be troweled to a smooth finish.)



Roof Garden, Downton Athletic Club, New York City
STARRETT & VAN VLECK, Architects
DUNCAN HUNTER, Associate Architect
Ceilings of Sabinite Acoustical Plaster

PAINTING SABINITE

Spray Painting

Sabinite may be spray painted. Depending on the conditions and the effects desired, the UNITED STATES GYPSUM COMPANY will make definite recommendations as to the paint or spraying lacquer to be used and the type of spraying equipment best adapted to the conditions.

They will also furnish complete specifications covering the application.

Brush Painting

The only paint for brush application approved for use over Sabinite is one recommended by the UNITED STATES GYPSUM COMPANY which may be tinted to any desired shade from the natural white by adding color ground in oil.

The UNITED STATES GYPSUM COMPANY will furnish complete specifications covering application adapted to the particular conditions.

WHERE ACOUSTICAL CORRECTION IS NECESSARY

Auditoria

The use of sound absorbing materials on the walls or the ceilings of auditoria reduces the reverberation time to a proper level, so that hearing is made perfect at every seat location. Consideration should, of course, be given to designing the room so as to secure an ample and even distribution of sound. Concentration and dead spots, which result from improper reflecting walls or ceilings, will not be present if inclined and curved surfaces are properly handled.

Gothic churches invariably will require treatment, and even then will in many cases have dead spots in areas immediately back of the transepts.

In school auditoria and gymnasia, reverberation times should be lower than those in churches and theatres. In talking-picture houses reverberation times should be still lower than in theatres if the sound of the projection apparatus is to be natural and without disconcerting barrel-like tones.

Sound, like light, is reflected by the surfaces it strikes. Although it is possible to design walls and ceilings and proscenium arches so as to obtain amply even distribution of sound; unfortunately, many architectural forms, particularly domes and elliptical curves, are apt to concentrate sound, producing areas of greater volume in some parts of the room and consequent areas of low volume in other parts.

No general rule can be given by which these difficulties are to be avoided, but acoustical engineers can usually suggest slight changes in the radii of curved surfaces and better angles for flat surfaces which will provide a more even distribution of sound. Auditoria should be acoustically treated only after a careful analysis.

Business Offices

Acoustical treatment will reduce the noise level in an office from one-third to one-tenth. Everyone appreciates a quiet place in which to think. In an acoustically treated office the noise produced by jangling phone bells, strident buzzers, and paper-thumping typewriters ceases to be a distraction. Tests have proved also that the quieting of offices makes for greater efficiency. The acoustical treatment of office buildings and noisy work-rooms pays for itself through the elimination of misunderstandings, the reduction of errors, and the lessening of fatigue.

Dr. Donald A. Laird, Director of the Psychological Laboratory of Colgate University, says, "Many executives think that noise is inevitable, that nothing can be done to lessen it, and that any way it does not matter. All three ideas are wrong. Noise cuts into dividends by lessening output and requiring more energy from workers. There is no evidence that workers get used to noise. They may become unconscious of its presence, but the effect upon their output remains.

"In the Colgate University Laboratory, it was determined by the use of special apparatus that noise of usual office intensity cuts into the output of professional typists on the average of 5 per cent. In higher mental work, such as the executive does, the cut into output is in the neighborhood of 30 per cent.

"In a survey of two large plants conducted by the United States Public Health Service, it was found that labor turnover, absence from work and requests for transfer to other work were above the plant average in those departments which were noisy.

"In many nonhospital cases the physician could apparently consider the working environment of the patient in cases of obscure neurasthenia and fatigue. The experiments on office conditions seem to indicate that in some instances a move to a quieter work-place may be as good as a rest, there being a difference of 19 per cent in the energy expenditure increment following working in a noisy as compared with a quieter environment. Men and women seemed to be similarly affected, while the more skilled typists were adversely affected in output to a greater extent than were the mediocre typists."



Trust Department, Northern Trust Co., Chicago, Ill.
FROST & HENDERSON, Architects
Paneled ceiling in various shades and sizes of Acoustone

Hotels

In hotels, elevator shafts as well as corridors are noise conveyors. Quiet guest rooms may be secured by treating the corridor ceilings with acoustical treatment. Many of the sounds occurring in guest rooms, and which seem to be transmitted through partitions, really come over the doors and through the transoms from the halls. One has but to remember his hotel experiences to know how annoying the clanging of elevator gates can be when the hall transoms are open.

Ceiling treatment, particularly in restaurants, lunch rooms and coffee shops, is recommended in hotels, as the clatter of dishes and the rattle of silverware is annoying to guests. It is also advisable to apply a sound absorbent on ceilings in kitchens and sculleries and main dining room for obvious reasons.

The ballrooms and large meeting rooms of hotels used for conventions and other purposes are notoriously bad for speech. The use of sound absorbents on the ceiling usually suffices to correct such conditions.

Hospitals

In the treatment of hospitals it is wise to apply acoustical absorbents to the ceiling, and in many cases to the side walls of corridors. It is more necessary to do this than to apply the material in the wards and rooms themselves unless the hospital is located on a noisy street where sound absorbents on the ceilings will reduce the noise which would otherwise cause discomfort to the patients. The noises caused by the wheeling of trays of food, the clatter of dishes, and disturbances in patients' rooms escape into the corridors and are carried into all of the rooms leading from the corridor. The introduction of acoustical treatment in the corridor will absorb this noise, making all the rooms leading from it quiet and restful. In hospitals it is quite common as well to treat ceilings and side walls of the labor and delivery rooms. It is excellent practice to apply treatment to the ceilings of all sculleries, kitchens and pantries which directly connect with portions of building used by patients.

Restaurants

Restaurants, quick lunches and cafeterias with their din of clattering dishes and silverware are made as quiet as carpeted dining rooms by treating the ceilings with high-efficiency sound absorbents.

Gymnasia and Natatoria

Particularly where gymnasia and natatoria are built as integral parts of the building as is usually the case in schools and Y. M. C. A.'s, the ceilings, at least, should be covered with sound absorbent material. In gymnasia besides the ceiling the upper walls may well be included in the treatment.

Many examples prove that where these rooms are properly treated the noises created within them are so successfully diminished that other departments in the building are unaware of their use.

DEFINITIONS—TECHNICAL DATA

Note: The nomenclature of the science of acoustics is so relatively new and so possible of misapplication that to assist in clarity and understanding of analysis reports submitted by acoustical engineers, it seems advisable to define the more important terms and explain certain phases of the technical data.

Data on Sound Control

Those interested in the complete details of the subject should refer to Professor Sabine's Collected Papers on Acoustics published by the Harvard University Press.

The UNITED STATES GYPSUM COMPANY will furnish on request a publication containing interesting data on the theory of acoustical control, the formulas used, their application and the criteria of excellence for auditorium acoustics. This booklet also contains an extended discussion of the theory and practice of office quieting through use of acoustical absorbents.

Sound

Sound is a wave motion of the air or other elastic medium, capable of producing the sensation of hearing. This wave motion is set up by the vibration of a sounding body, and consists of the successive vibrations of the particles of the medium. This vibration of the individual particles produces alternate rarefactions and condensations of the air or other medium at any point of the wave train.

Speed of Sound

Sound in air travels with a speed of about 1129 ft. per second at 68° F. Its velocity increases about 1.1 ft. per second for every degree rise of temperature.

Intensity of Sound

Intensity of sound may be defined as the sound energy per unit volume of the air through which the sound is traveling.

Loudness

Loudness is the degree of sensation produced on the ear corresponding to the intensity of the sound. Loudness increases with intensity, but the difference in loudness between two tones of the same pitch is roughly proportional to the logarithms of their intensities. Hence an increase of as much as 25% in the intensity of a tone produces a barely perceptible increase in loudness.

Resonance

Resonance is the enhanced response of the total volume of air included in a room to a musical tone whose pitch coincides with the natural frequency of vibration of that particular volume of air. It is frequently observed in small empty rooms and simply results in an unusual reinforcement of particular low tones in comparison with other tones.

It is sometimes a source of annoyance to a speaker upon an enclosed stage, and is undesirable in rooms intended for radio broadcasting or for phonograph recording. Rarely found in large or furnished rooms, it is seldom an important factor in auditorium acoustics.

Interference

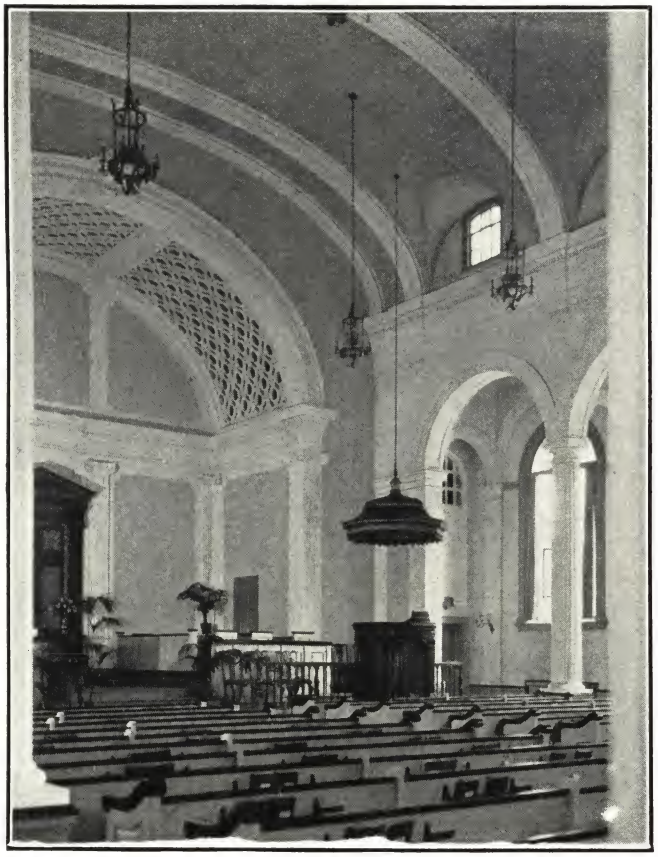
Interference is a localized phenomenon which may be observed under proper conditions at any point in any room. In the simplest case, it results when sound of definite pitch from a single source reaches a given point by two paths of different length. Where this difference of path length is an odd number of half wave lengths of the sound, a condensation arriving by one path coincides with a rarefaction arriving by the other path; the two components of the resultant sound mutually annul each other.

Obviously, there will be other points close at hand where the path difference is an even number of half wave lengths, when the two components will mutually reinforce each other. Interference thus results in an uneven space distribution of sound intensity for a given pitch, and a marked variation at any given point in the intensities of sounds of different pitches. It becomes a serious defect when the focusing action of extended concave reflecting surfaces exaggerates the normal inequality that exists in every room. Spherical domes and cylindrical vaulted ceilings with centers or axes of curvature that fall close to the audience or to the speaker are fruitful sources of defects of this type. Such defects can be avoided by proper design. They can be alleviated by the use of sound absorbent materials on the concave surfaces which produce them.

Prevention is better than cure, and the designer who proposes to use extended curved forms in an audience room should be competently advised as to the acoustical results to be expected.

Extraneous Noise

Frequently, hearing difficulties resulting from disturbing noise are ascribed to faulty acoustics. Noise of ventilating fans transmitted along air ducts are delivered to audience rooms, air conditioning machinery improperly mounted, thus setting up vibrations which are structurally transmitted, and finally street noises, may seriously lessen the intelligibility of speech in rooms that are otherwise satisfactory.



First Congregational Church, Evanston, Ill.
TALMADGE & WATSON, Architects
Ceilings of natural Sabinite

Echo

Echo is the distinct repetition of a single short, sharp sound, due to direct reflection of sound from one or more reflecting surfaces. Like interference, echo is a localized defect. It is seldom present as a source of acoustical difficulty except in rooms of large proportions. Extended, unbroken rear walls frequently produce direct reflections annoying to the speaker, but unheard by the audience. Echoes from lofty ceilings, particularly when these are curved so as to produce marked concentration of the reflected sound, frequently result in poorer hearing conditions in seats near the speaker than in seats farther away. Multiple echoes resulting from repeated reflections may be observed under special conditions in very large rooms. Every auditorium design should be carefully investigated for echoes which would cause annoyance.

Reverberation—Overlapping Sounds

Reverberation may be called "the persistence of sound in a room after it has ceased at its source." Professor Wallace C. Sabine said, "Sound being energy, once produced in a confined space, will continue until it is either transmitted by the boundary walls, or is transformed into some other kind of energy, generally heat."

When the interior surfaces of a room are constructed of materials which are highly reflective, sound waves striking them bounce rapidly from surface to surface, making many circuits of the room in every direction. The room is then filled with sound which continues until all of its original energy is dissipated.

It is easy to appreciate the resultant confusion due to the overlapping of successive syllables or notes in an audience room. The first syllable persists, while the next is uttered. Each syllable and note has to compete with preceding sounds for the attention of the audience. This effect is throughout the room. It makes audition uncomfortable, difficult, or impossible, depending solely on the length of time a sound persists. The time a given sound of known intensity and pitch persists is the reverberation time of that particular room.

Frequency

The frequency of a sound is its number of double vibrations (complete vibrations) per second. The frequency most often used in acoustical calculations is 512, or one octave above middle C (C4). The actual frequency range which is of importance in acoustical work extends from about 128 to 4096 D.V. per second, or about five octaves.

Pitch

Pitch is measured by the frequency of the vibrations. Middle C (C3) on the piano has a period of 256 complete or double vibrations per second. The various octaves above middle C and those customarily considered in acoustical correction have the following periods of vibration: C4—512 d.v.; C5—1024 d.v.; C6—2048 d.v. Some ears are able to hear vibrations as low as 14 or 16 per second and have an upper range limit that varies even more in separate individuals to almost 20,000 vibrations per second. The average ear can hear as shrill a sound as 16,000 vibrations per second.

C4 is that used as the fundamental note in auditorium analysis. Careful investigation has determined that the pitch of office machines varies between C5 and C6.

Facts Concerning Absorption Percentages

Architects should know that laboratories in determining the coefficients of absorption of materials submitted for analysis do not all use the same yardstick. For example, we find the same sample of material which tested 61% at C4 at the Riverbank Laboratories, testing 65% at another widely used laboratory and 58% at a third. In order to equitably compare various acoustical products, the architect should compare figures of the same observer.

It would seem logical that the coefficients used for comparison be furnished by laboratories using the identical methods that were employed by Professor Wallace C. Sabine in discovering the absorption of various building materials, carpets, drapes, and persons, coefficients which are recognized as standard and used by all laboratories in determining reverberation times. The UNITED STATES GYPSUM COMPANY uses the coefficients provided by the Riverbank Laboratories, Geneva, Ill., which were designed by Professor Sabine and had its sound chamber calibrated with his original pipes and by his so-called "four-organ-pipe experiment."

Too much stress should not be laid on the relative coefficients of absorption, particlarly when the problem is that of quieting. In an office 30x50 ft., with a 12-ft. ceiling, a difference of ten points in the absorption coefficient of the absorbent used produces less than a decibel (the least audible difference in loudness the human ear can detect) of difference in the noise level.

To illustrate: if the reduction in noise level caused by a 60% absorbent in this room is 5.1 decibels, a 70% absorbent produces a reduction of 5.6 decibels. Such a difference is undistinguishable by the ear, yet the difference in price of the material will frequently be as much as 10 or 15 cents per sq. ft. In this connection, the architect is reminded that the use of a low-coefficient absorbent over a wider area is generally more desirable than the use of a high-coefficient material on a concentrated area. It is the exception in auditoria where an absorbent of maximum coefficient is required.

Sound Insulation vs. Sound Absorption

The architect should differentiate between sound insulation and sound absorption. The former has to do with preventing the passage of sound through walls, floors, ceilings, and other structural parts of the building. Sound absorption, on the other hand, has to do with the control of sound within a room, either reducing reverberation so that speech and music are properly heard, or reducing the noise level in the room to a minimum. Although sound-absorbing materials will in some measure reduce the amount of sound transmitted through walls and floors, their value as sound insulators does not warrant their expense.

Another point which often causes confusion of mind is that the intensity of sound as measured by physical standards does not represent the loudness of the sensation that reaches the senses. Loudness — the aural sensation of intensity—is roughly proportional to the logarithm of the physical intensity.

As well, no means are known of separating the amount of sound that passes through a sound absorbent and that which is actually absorbed (killed) by it; but even if 50% of the sound were completely annihilated, the remaining 50% would usually be sufficiently intense to permit of ordinary conversation being heard through walls. In order to stop effectively the passage of objectionable sound through walls, floors and ceilings, sound insulation must be much more effective than this.

This insulation the qualified acoustical engineer can provide. It can be done in existing buildings, although it is best done during construction. Moreover, for the reason that conveyor flights, vent ducts, piping, etc., carry sound and must be insulated, sound insulation should be the work of one contractor, who can be made responsible for the result. See U.S.G. Sound Insulation, page 8.



Orthopedic Hospital, University of Chicago
COOLIDGE & HODGSON, Architects
Corridor ceilings of Acoustone

U.S.G. SYSTEM OF SOUND INSULATION

ELEMENTS

(1) U.S.G. System of Sound Insulation for Walls, Floors and Ceilings in Fireproof Construction.

(2) U.S.G. Sound Insulative Machine Bases for isolating vibration and noise in Machine Equipment.

(3) U.S.G. System of Sound Insulation for Floors in Non-fireproof Construction.

(4) Thermofill for Pipe Chases, Shafts, etc.

(5) U.S.G. Sound Insulative Door.

FIREPROOF CONSTRUCTION INSTALLATIONS

Purpose

To prevent the passage of sound from one room to another.

Theory and Description

Sound passes through a wall, floor or ceiling by vibrating it as a diaphragm. In the case of a wall, the sound strikes it and sets it into vibration. The vibrating wall sets up new sound waves, reduced in intensity on the opposite side. The U.S.G. System of Sound Insulation is built upon the principle of providing a wall in which one side can vibrate while the other side does not. This is accomplished by constructing a furred surface supported on springs. These springs act as "snubbers" in reducing the amount of vibration of the surface, and because of their resiliency, prevent the remaining vibration from passing through to the opposite side.

Advantages

The U.S.G. System of Sound Insulation possesses the following advantages over other methods of sound insulation.

(1) Permanence—The efficiency of this construction, being primarily obtained by steel spring devices, is maintained permanently.

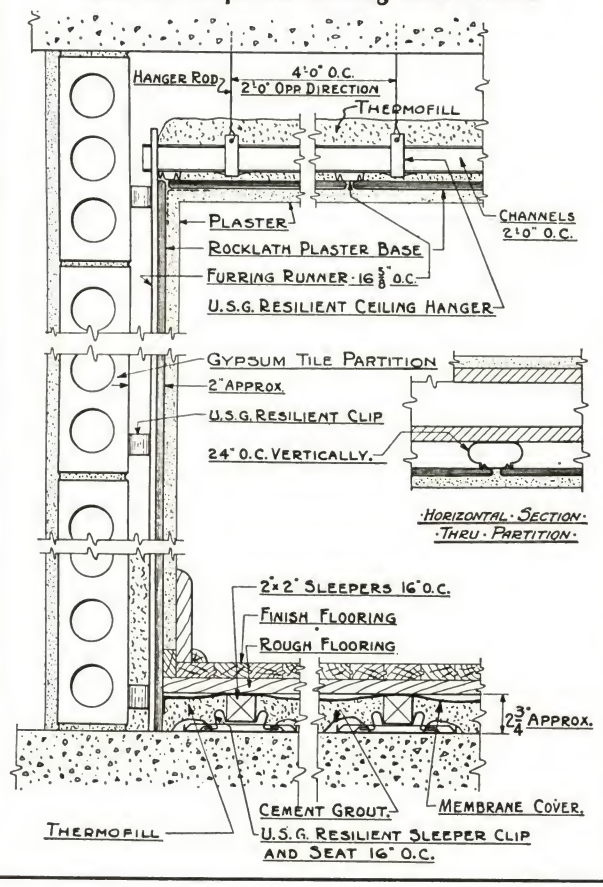
(2) Fireproofness—Only incombustible materials, steel and gypsum, are employed.

(3) Economy—Because of its simplicity of construction, the U.S.G. System of Sound Insulation offers a maximum of efficiency at a reasonable cost.

Sale and Installation

The U.S.G. System of Sound Insulation in Fireproof Construction is sold and installed only by the UNITED STATES GYPSUM COMPANY which assures undivided responsibility for the results. All work is installed by trained mechanics under strict supervision.

Detail Section of U.S.G. Sound Insulative Floor, Wall and Suspended Ceiling Construction



Installations

A few representative installations of the U.S.G. System of Sound Insulation are:

New National Broadcasting Studios, Chicago, Ill., Graham, Anderson, Probst & White, Architects

Paramount Talking Picture Studios, New York, N. Y.

Apartment Building, 1242 Lake Shore Drive, Chicago, Ill., Robert S. DeGolyer, Architect

Apartment Building, 2000 Lincoln Park West, Chicago, Ill., McNally & Quinn, Architects

Apartment Building, 136 W. 55th Street, New York, N. Y., Schwartz & Gross, Architects

Apartment Building, 98 Riverside Drive, New York, N. Y., Geo. F. Pelham, Architect

Valley Hospital, Sewickley, Pa., Schmidt, Garden & Erickson, Architects

Medinah Athletic Club, Chicago, Ill., Walter W. Ahlschlager, Inc., Architects

La Salle-Wacker Building, Chicago, Ill., Holabird & Root and A. N. Rebori, Architects

Items Furnished and Installed in the U.S.G. System of Sound Insulation (See detail, page 9)

Ceilings—Resilient Ceiling Saddles, 1½-in. Channel Runners, Furring Runners, Rocklath, Thermofill.

Note: *We do not include plaster or hanger rods. Hanger rods should be furnished by others, 2 by 4-ft. centers with first hanger 6 in. from all walls.*

Walls—Resilient Wall Clips, Furring Runners, Rocklath, Cornerite.

Note: *We do not include tile walls or plaster.*

Floors—Resilient Sleeper Chairs with tie wire and grout, Wood Sleepers, Thermofill, Paper Membrane.

Note: *We do not include the rough and finished flooring.*

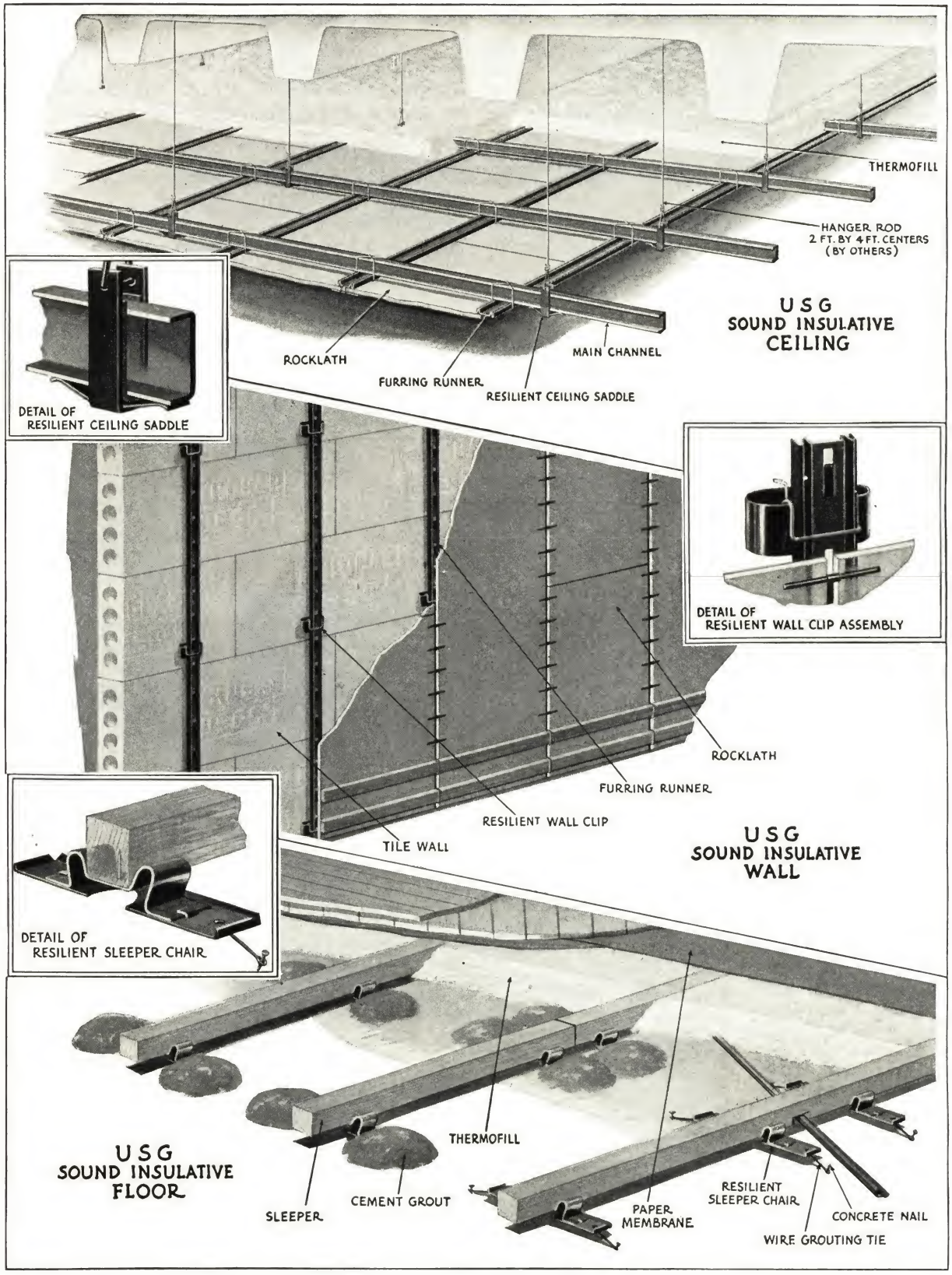
Space Required by the U.S.G. System of Sound Insulation

Ceiling—Not less than 6 in. to the bottom of Rocklath.

Walls—2⅛ in. from the face of tile wall to outside face of Rocklath.

Floor—2¾ in. from the top of the floor slab to the top of the wood sleepers.

DETAILS OF THE U.S.G. SYSTEM OF SOUND INSULATION



SPECIFICATION (SHORT FORM) U.S.G. SYSTEM OF SOUND INSULATION

Note: *Notes are explanatory or advisory only and should not be included in the specifications.*

Note: *This specification should be included under a separate heading of "Sound Insulation."*

(1) Work Included

Note: *Here list and locate clearly the walls, floors and ceilings to be treated. Also indicate the following areas clearly on the plans:*

Partitions—*Indicate by heavy black line on the side to be insulated.*

Floors and Ceilings—*Indicate on room schedules and by notations on floor plans and sections.*

(2) Sound Insulation

The sound insulation as above listed and shown on plans shall be the U.S.G. System of Sound Insulation furnished and installed by the UNITED STATES GYPSUM COMPANY, 300 West Adams Street, Chicago, Ill.

U.S.G. SOUND INSULATIVE MACHINE BASES

Purpose

To prevent the transmission of noise and vibration of motors and machines in buildings.

Description

The UNITED STATES GYPSUM COMPANY Sound Insulative Machine Base has been especially designed for use under machinery of all kinds to localize vibration and the resultant noise.

Its construction is essentially that of a rigid platform supported on very sensitive steel springs as is shown in the accompanying illustrations. These resilient springs "absorb" the noise and vibration of the machine so that practically none enters the floor upon which the machine rests. The platform has no continuous connection of any kind with the floor except through the resilient springs. The action of the springs in the base might be likened to those in an automobile, where the vibration and shock on the wheels is absorbed instead of being transmitted to the body of the car.

Uses

The bases are for use under fans, motors, pumps, elevator motor generators and control panels, oil burners, printing presses or any piece of equipment that is a source of vibration or noise.

Advantages

The U.S.G. Sound Insulative Machine Base possesses the following advantages:

(1) Adaptability—Each base is especially designed and built for the piece of equipment that it is to support. The number of springs is determined by the load and characteristics of the machine. The standard base is of all steel construction with a concrete top, although it may be furnished with a platform of wood planking with maple floor finish. Special bases with cast or plate top can also be furnished.

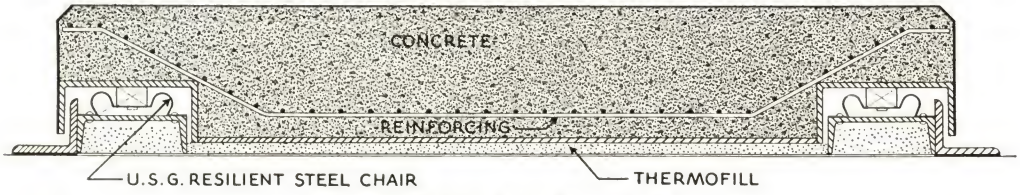
(2) Economy—By the use of this base, equipment can be placed in that part of the building most desirable from the standpoint of efficiency and economy, without regard as to possibility of disturbances to adjacent parts of building.

(3) Installation—While it will usually be found more economical to pour the concrete top at the time of erection, the base can be shipped complete with the top, and with anchor bolts imbedded therein. The wood top base can be provided with properly placed holes for bolting down the machine. The outline of the machine is clearly indicated, making installation very simple. If desired, we will furnish and install the base. The connecting of pipes, wires, ducts, etc., should be done by the proper trades. Connections should be made with a flexible coupling.

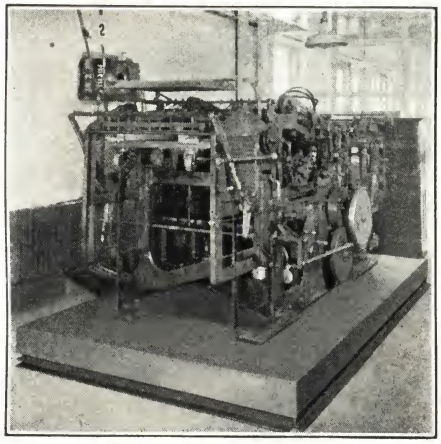
Specification (Short Form)

Note: *List under heading of "Sound Insulation."*

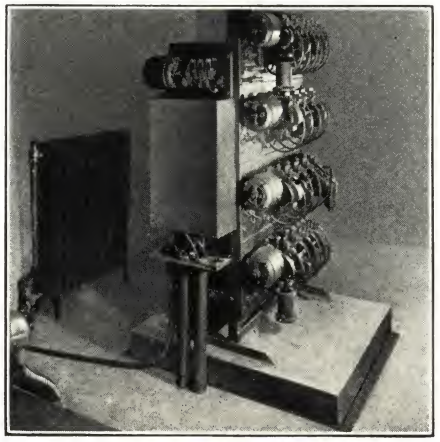
Under all (*name and describe items of equipment to be insulated*) the (*specify which*) contractor shall install U.S.G. Sound Insulative Machine Bases as designed and manufactured by the UNITED STATES GYPSUM COMPANY.



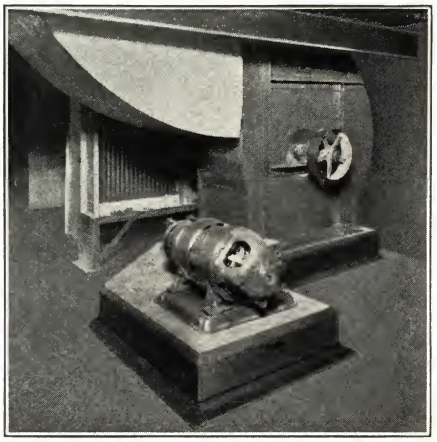
Section of U.S.G. Sound Insulative Base



Printing Press Installation



Control Panel Installation



Fan and Motor Installation

THERMOFILL FOR PIPE CHASES, ETC.

Purpose—To prevent pipes from carrying sound, the chases should be filled with Thermofill and the pipes kept free from all floor slabs and partitions in so far as possible.

Thermofill is a dry, flocculent material of light weight, which acts as an effective sound deadener. It is easily installed and is low in cost. See U.S.G. Catalogue covering Insulation Products.

U.S.G. SYSTEM OF SOUND INSULATION FOR FLOORS IN NON-FIREPROOF CONSTRUCTION

Description

The U.S.G. System of Sound Insulation is also adapted to use on floors in wood joist construction. It is designed to furnish a high degree of sound insulation in non-fireproof buildings at a nominal cost. Its use is particularly desirable in apartment buildings of this type of construction, because of the ease with which sounds travel from one apartment to another resulting in considerable annoyance to the tenants.

Items Furnished by the U.S.G. Co.

Resilient Sleeper Chair, Thermofill, Sleepers, Paper Membrane. This construction will require 2¼ in. from the top of the rough floor to the top of the wood sleepers.

Note: *We do not include the sub or finished flooring.*

U.S.G. SOUND INSULATIVE DOOR

Description

The United States Gypsum Sound Insulative Door employs the same principle used in the United States Gypsum System of Sound Insulation.

The two sides of the door are supported on resilient spring devices, which allow either side of the door to vibrate under the action of sound without the vibrations passing through to the other side.

Advantages

(1) Fire Retarding—Sheets of steel and asbestos on the inside of the door make it resistive to fire.

(2) Light in Weight—The door, because of its construction, weighs but slightly more than standard 1¾-in. flush panel doors of the same size.

(3) Regular Hardware—No special hardware is required with these doors. The ordinary standard knob and lock set operates with this door the same as with a regular door. The undesirability of special lever handle hardware is generally recognized and a sound insulative door which operates with standard hardware fills a long felt want.

(4) Effectiveness—The door is built upon the scientific principle of preventing the diaphragmatic vibrations of one side of the door from being transmitted to the opposite side. Its sound insulative efficiency is, therefore, remarkably high.

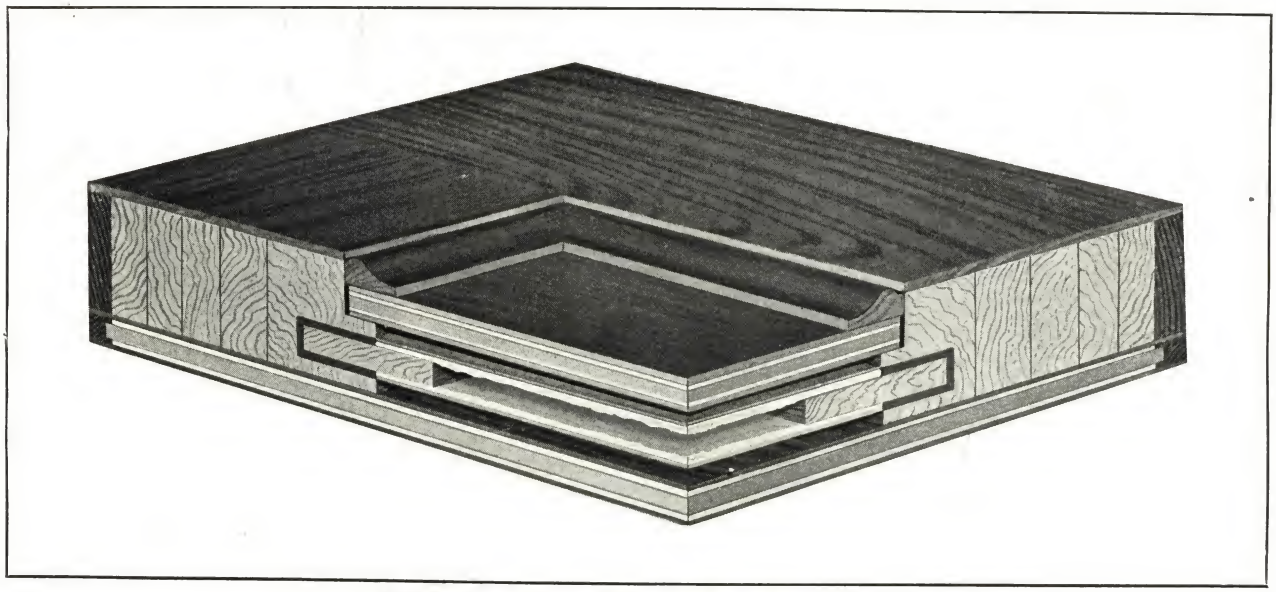
(5) Economy—This door, although it possesses unusual advantages in a "soundproof" door, actually costs less than "clumsy" and less efficient doors used in the past. It is priced to permit its widespread use in hotels and apartment houses.

Materials and Design

The doors are furnished standard 2¼-in. thick in birch, unfinished, in either flush or paneled construction. Other wood veneers or any special design of panels can be furnished at slight additional cost.

Special Items Furnished

Special stops with rubber gaskets and threshold are furnished with the door. Since no special jambs, trim or hardware are required, none are included.



Section of Door Showing Flush and Panel Construction

B 2453

INTERIOR STONE WORK

ALBERENE STONE COMPANY

Alberene Stone Sanitary Equipment, Tubs and Kitchen Sinks

153 West Twenty-third Street, NEW YORK, N. Y.

For Branch Offices, see our page on Stair Treads

Products

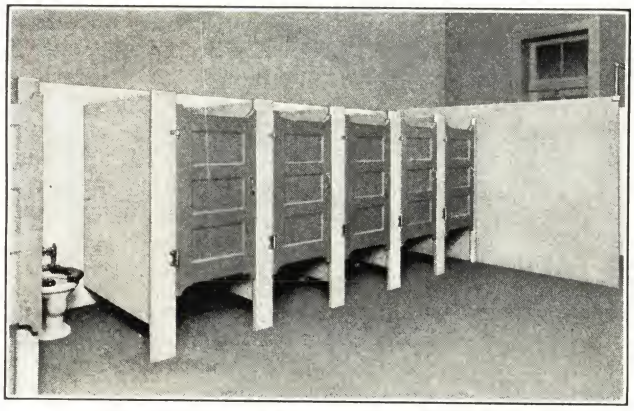
ALBERENE STONE, the natural quarried stone, is produced and fabricated for:

Sanitary Equipment (Toilets and Urinals)
Shower Compartments
Dressing Rooms
Laundry Tubs or Trays
Kitchen Sinks

For our pages on Interior Architectural Uses and Laboratory Equipment, Spandrels and Exterior Trim, see Manufacturers' Index.

Sanitary Equipment (Toilet and Urinal Work)

For this purpose Alberene Stone provides a material which is sanitary in highest degree, pleasing in color, easily cleaned and kept clean, and at the same time reasonable in cost. Its dense, non-absorbent character and the watertight joints used in assembling, make fixtures which

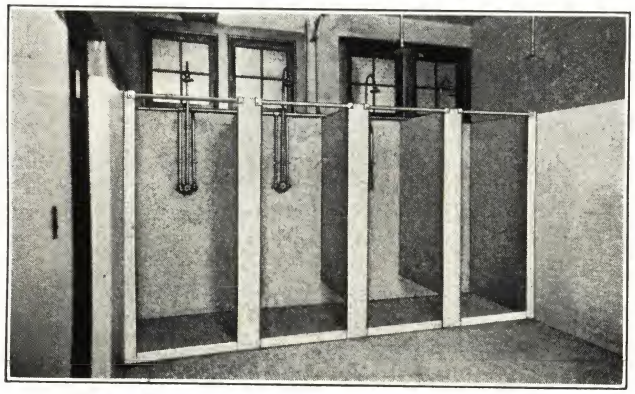


Typical Installation of Alberene Stone Toilet Partitions

are permanent, non-staining, free from odor and with no lodgement for filth. Generally this work can be assembled without using any exposed metal. Any of the approved types of toilet and urinal design can be furnished in Alberene Stone.

Shower Compartments and Dressing Rooms

With Alberene Stone, it is easily possible to build assemblies that are practically one-piece construction by means of tongue-and-groove and bolted-and-doweled joints. There is no opportunity for leakage, no lodgement for dirt or vermin.



Alberene Stone Shower Compartments with 4-in. Curbs

The color reflects light effectively and the surface finish is such that cleaning is easy. Here again it is possible to assemble without any metal exposed to corrosion. Installations in schools, institutions, public baths, etc., the country over, attest the serviceability of Alberene Stone.

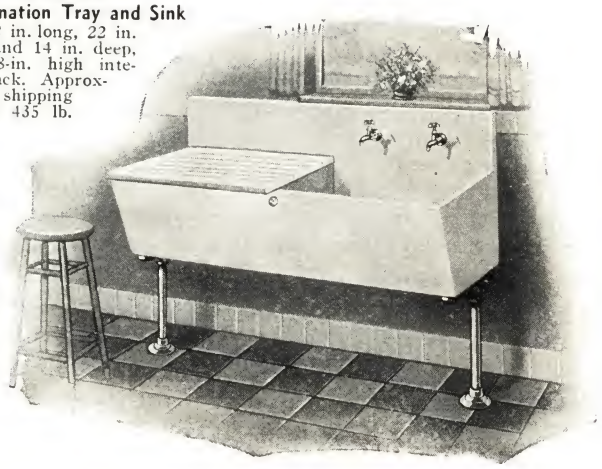


Shower Compartments and Dressing Rooms of Alberene Stone

Laundry Tubs and Kitchen Sinks

For permanence, sanitation, cleanability, watertightness, and lasting smooth surface, these Alberene Stone specialties are beyond comparison. Because of the tongue-and-groove construction, they are to all intents one-piece units. The surface will not chip or flake or crack. The pleasing light color is permanent. The non-absorbent quality of the stone eliminates dampness and odor.

K-135-B4
Combination Tray and Sink
42 in. long, 22 in. wide and 14 in. deep, with 8-in. high integral back. Approximate shipping weight 435 lb.



Compact Models and Duco Colors—Pictured is a new compact model which is low in price. Standard Alberene construction but lighter in weight.

This, and all other models, can be obtained in white, blue, green, pink and yellow at slight additional cost. Write for full details and prices.

VERMONT STRUCTURAL SLATE CO.

Quarriers and Finishers of Vermont Colored Slate

TELEPHONE
Fair Haven 28

FAIR HAVEN, VT.

SALES REPRESENTATIVES

BALTIMORE, MD., Jos. B. Dunn & Sons, 853 No. Howard Street
BIRMINGHAM, ALA., Dodge, Daniels & Shook, Inc., 3023 Sixth Avenue, So.
BOSTON, MASS., E. A. Bullard, 746 Tremont Building
BUFFALO, N. Y., George H. Dreybus, 333 Jackson Building
CHICAGO, ILL., Slate & Flagstone Co., 1825 Central Street, Evanston, Ill.
CINCINNATI, OHIO, Ohio Valley Slate Co., 119 Sycamore Street
CLEVELAND, OHIO, Cuyahoga Roofing Co., 315 Union Building
DALLAS, TEX., Vermont Marble Co., 1513 Wall Street
DETROIT, MICH., Peninsular Slate Co., 12741 Birwood Avenue
HARTFORD, CONN., Windsor Cement Co., 16 Van Dyke Avenue
LOS ANGELES, CALIF., Musto-Keenan Company, 1801 So. Soto Street
LYNCHBURG, VA., N. B. Handy Company
MEMPHIS, TENN., W. J. Northcross Mantel & Grate Co., 411 Madison Avenue
MINNEAPOLIS, MINN., George T. Warner, 1406 Washington Avenue, So.
NEW ORLEANS, LA., Architectural Cast Stone Co., 8122 Colapissa Street
NEW YORK, N. Y., Kane & Lundy, Inc., 103 Park Avenue
PHILADELPHIA, PA., William Moore Co., 1706 Fairmont Avenue
PITTSBURGH, PA., Smith Slate Products Co., 1002 Union Bank Building
SEATTLE, WASH., E. C. Hanselpacker & Co., 721 Virginia Street
ST. LOUIS, MO., J. W. Jones, 432 Pennant Building
SPRINGFIELD, MASS., W. J. Kelly Co., Mill River Lane
SYRACUSE, N. Y., Holmes Brothers, Inc., 427 E. Jefferson Street
TAMPA, FLA., Stewart-Mellon Marble & Tile Co., 310 So. Morgan Street
WASHINGTON, D. C., Standard Art, Marble & Tile Co., 118 E Street, N.W.

WAREHOUSES IN PRINCIPAL CITIES

Products

STRUCTURAL: Base, Border, Cap, Closet Slabs, Cove Base, Fireplace Facings, Fireplace Hearths, Fireplace Mantels, Flooring, Lintels, Louvres, Pedestals, Platforms, Plinths, Quoins, Radiator Tops, Saddles, Shower Stalls, Sills, String, Treads, Troughs, Urinals, Wainscot.

ROOFING: Commercial, Flat, Graduated, Textural.

Exterior Uses: Bird Baths, Coping, Exterior Trim and Ornaments, Exterior Wall Facing, Foundation Walls, Fountains, Garden Benches, Headstones, Ledger Slabs, Markers, Porches, Stepping Stones, Swimming Pools, Terraces.

Electrical: Busbar Insulators, Fuse Blocks, Gauge-boards, Panelboards, Switchbases, Switchboards.

Special Products: Chemical Agitators, Chemical Vats, Counter Tops, Flower Boxes, Laboratory Sinks, Laboratory Table Tops, Laundry Trays, Sinks, Tanks.

Mills and Quarries

We have under our direct supervision three of the largest and best equipped mills as well as eight quarries producing all the colors found in the Vermont Slate District. Inquiries, orders and, in fact, all details are handled by men who have had years of experience in the slate industry and are thoroughly conversant with the quarrying and manufacturing of slate products. No project is too large for us to render efficient service, no order so small but that it receives proper supervision.

Service

We are prepared to produce intricate jobs in slate, and on request furnish roofing, flooring and terrace layouts for approval without charge, either direct or through one of our branch offices.

Interior Floors

Vermont Colored Slate is extensively used for interior floors. The large range of colors and variety of finishes combined with durability and low maintenance cost is responsible for the increased popularity of slate for floors. Floors, though similar in design and finish, may be secured in a distinctive color blend, thus obtaining when desired, a color effect harmonizing with the interior decorations of any building.

"Slatile" is our new "ready-packed" flooring. This unit comes ready packed in boxes containing pieces required for one complete unit of 25 sq. ft. This unit is interlocking and no extra slate is required for border. Furnished in either natural cleft or sand rubbed finish.

Exterior Floors, Paving, etc.

Slate stone possesses natural characteristics making it very desirable for landscape installations. The colors are bright and permanent. The strength of slate is well known among architects and builders. Inch thickness is sufficient for paving and in fact for any installation unless subjected to extremely heavy duty. Well embedded in loam or concrete it will not crack under ordinary uses or from the effect of frosts.

See third following page for specifications A to L inclusive.

Roofing Slate

The period of usefulness of a roof depends on its resistance to the elements, and its protection to the interior of a building, its contents and the occupants. Slate, the natural stone covering for roofs, performs this service under any and all conditions, requiring practically no maintenance and enduring through the ages.

We are prepared to ship promptly all types of slate roofs, furnishing the same expert service as rendered on structural and floor slate.

References

Roofing—Yale Graduate School, New Haven Conn. Graduated roof. James Gamble Rogers, Architect.

Stuctural—Chicago University Buildings. Treads, platforms, base and string. Zantzinger, Borie & Medary, Architects.

Flooring—Joslyn Memorial, Omaha, Neb. John McDonald and Allan McDonald, Architects.

Exterior—Residence of Sam Katz, New City, Rockland, County, N. Y. Harry Allan Jacobs, Architect.

VERMONT STRUCTURAL SLATE COMPANY'S COLOR SERIES

PLATE A



Reproduced by Direct Color Photography

Vermont "Irregular" Design

Full Color Range

Colors—Unfading green, unfading purple, unfading mottled green and purple, weathering green, gray, Vermont black and red.

Color scheme may be varied according to selection and arrangement of colors.

Edges of Slate—May be supplied natural quarry cut, sawed or trimmed.

Finish of Slate—May be supplied natural quarry cleft, sand rubbed or semi-sand rubbed.

Continued on next page

VERMONT STRUCTURAL SLATE COMPANY'S COLOR SERIES

PLATE B



Reproduced by Direct Color Photography

Vermont Random Rectangular or "Randash" Pattern

Full Color Range

Colors—Unfading green, unfading purple, unfading mottled green and purple, gray, weathering green, Vermont black and red.

Color scheme is a matter of choice and arrangement of colors. Architects may secure the effect desired by varying the percentage of colors selected or by the omission of certain colors.

Edges of Slate—Sawed or sand rubbed edges recommended.

Finish of Faces—May be supplied natural quarry cleft, planed, sand rubbed or semi-sand rubbed.

Note: A Semi-Randash" design may be secured as a variation of the "Randash" by using a percentage of angles other than right angles.

Continued on next page

Brief Description of Several Types of Slate Floors

Type A. Fitted rectangles, random pattern, natural cleft face, smooth cut edges, ½-in. thickness, ½-in. cement joint. Setting plan furnished with pieces numbered to correspond. See Color Plate B. Pattern and range of sizes to be indicated by architect or left to us to use one of our standard units.

Note: We can furnish any one color or any combination of colors shown on Color Plates A and B for all specifications.

Type B. Same as A, except 1 in. thick.

Type C. Same as A, except that faces are semirubbed. This finish is recommended where a smooth floor is required, but still retaining the texture of natural cleavage.

Type D. Same as C, but 1 in. thick.

Type E. Same as A, except that faces are to be full sand rubbed. The sand rubbed finish is recommended for floors which may be used for dancing or where extreme sanitation is needed.

Type F. Same as E but 1 in. thick.

Type G. Random rectangles ½ in. thick, natural cleft face, rough sawed edges, set in cement with joint varying from ⅜ to ¾ in., all fitting to be done at the job. Recommended where an uneven or rough joint is desired. Pieces are occasionally slightly out of square and corners are sometimes slightly ragged and broken.

Type H. Same as G but 1 in. thick.

Type I. Trimmed rectangles, ½ or 1 in. thick, random sizes, to be fitted at the job, set in loam or cement, to be used where a rectangular effect is desired and an extremely low cost is required. Not recommended when laid with cement joint.

Type J. Irregular flagging, natural cleft, 1 in. thick, to be fitted at job. Set in loam with grass joints with or without a cinder bed foundation, with the joint ranging from ½ to 1 in.

Style K. Irregular flagging, 1 in. thick, natural cleft, sand rubbed or semirubbed face, set in a cement subbed pointed with 3-to-1 cement mortar. Joint ½ to 1½ in. See Color Plate A.

Style L. Standard tile sizes in the sand rubbed or natural cleft finish to be set tight or with a very narrow joint. Specify finish.

Note: Where more formality is necessary, this type of floor can be made up in conventional patterns of one, two or three sizes.

Specify type of floor by letter.

"Ready-fit" flooring in five different designs carried in stock for immediate shipment.

Type of Floor Recommended for Various Installations

Exterior

Walk	B, J, K
Terrace	B, J, H
Loggia	B, J, K
Driveway	B, K
Setback	B, L
Store entrance	A
Flat roof	A, L
Plaza	B, J, K
Court	B, J, K

Interior

Church

Nave	A, C, L
Narthex	A, C, L
Aisle	A, C, L
Vestibule	A, B

Interior (Continued)

Residence

Hall foyer	A, L
Vestibule	A, C
Dining room	A, C, E
Basement	A, B
Sun porch	A, B, C

Miscellaneous

Bank	F, L
Lobby	B, L
Showroom	A, B
Lounge	A
Smoking room	A
Common room	A

Table of Colors

As a guide to the architect in selecting and specifying colors for slate the following designations and descriptions are given. By referring to the color plates which have been made by direct color photography from the actual stones the architect can make his own selection of colors.

Black—Vermont black slate is not a true jet black but rather a dark bluish gray black. After exposure to the weather it fades to a dark brown.

Gray—A plain dark color which forms pleasing contrasts with the brighter shades.

Purple—A strong color which adds life and interest to any floor.

Unfading Green—Ranges from a grayish green to a light strong green.

Light Mottled Green and Purple—A light green slate mottled with purple. In some pieces the purple appears as streaks or veins and in others it is in spots or blotches.

Dark Mottled Green and Purple—A purple slate mottled with green which appears in veins or blotches.

Weathering Green—A greenish slate which can be secured in about four different shades of grayish green. When exposed to the weather these slates fade to different shades of yellow to brown.

Red—Varies from a dark purplish red to brick and cherry red.

Buffs and Browns—Are obtained by using weathering green or Vermont black, respectively, and allowing them to fade.

THE STRUCTURAL SLATE COMPANY

PEN ARGYL, PA.

BRANCH OFFICES IN ALL PRINCIPAL CITIES

For other catalogues of The Structural Slate Company, see Manufacturers' Index

STAIRWAYS OF SPECIALLY SELECTED SLATE

Suggested Form of Specification

(1) **General Conditions**—The General Conditions, paragraphs 1 to 14, inclusive, as printed in the 1932 Edition of SWEET'S ARCHITECTURAL CATALOGUES, and in Volume One on Structural Slate, copyrighted by and registered with the Structural Service Bureau of Philadelphia, are hereby made to constitute the General Conditions of this specification.



Slate Stair Treads and Risers in the Owls Home, Allentown, Pa.
WAYNE M. HIGH, Reading, Pa., Architect

(2) *Note:* Each portion of the slate work for stairs is specially mentioned in the following specification, in order that the portions not applicable in any particular instance need only be eliminated.

(3) **Materials and Work Included**—Furnish and install complete on the [metal] [concrete] (or other) structural supports supplied by other contractors, the slate work in connection with all steps or stairways indicated on the drawings and in accordance with this specification.

(4) **Finish**—All pieces of slate shall be standard sand rubbed on the face and have planed surfaces on the reverse side. Any exposed reverse surfaces shall be oiled and all sand rubbed faces shall be left clean without oil.

(5) **Treads and Landings**—Shall be of slate 1¼ in. thick, with slightly rounded edges to nosings, with a total projection of ¾ in. beyond face of riser. Treads shall be set to incline ⅛ in. from back to front (and landings set level).

(6) *Note:* For stairs in hotels, theaters, subways, etc., where traffic is heavy and for widths of over 3 ft. 6 in., threads and landings should be from 1½ to 2 in. thick; risers 1 in.

(7) **Risers**—Shall be of slate 1 in. thick, butt-jointed, and with full packing, not less than two ¼x1¼-in. brass dowels at each joint, to the backs of treads below and to the under front edge above.

(8) *Notes:* Where metal risers for stairs are used, if the same, whether cast or pressed, are specified or detailed to be angled or lipped near bottom for slate tread to slip under (see Detail 1 shown in the 1932 Edition of SWEET'S ARCHITECTURAL CATALOGUES, or page 6 in Volume Three, of a series on Structural Slate, issued by THE STRUCTURAL SLATE COMPANY, Pen Argyl, Pa.), the dowels are not necessarily required on top flange. In some instances specifications call for two or more lugs, or spuds to be cast on the top of risers, in which case the undersides of slate treads are countersunk to fit over same.

(9) The metal channels will form strings for stairs, but if metal is not continued around landings, slate bases should be specified and brought out enough from face of wall to receive the open ends of the channels.

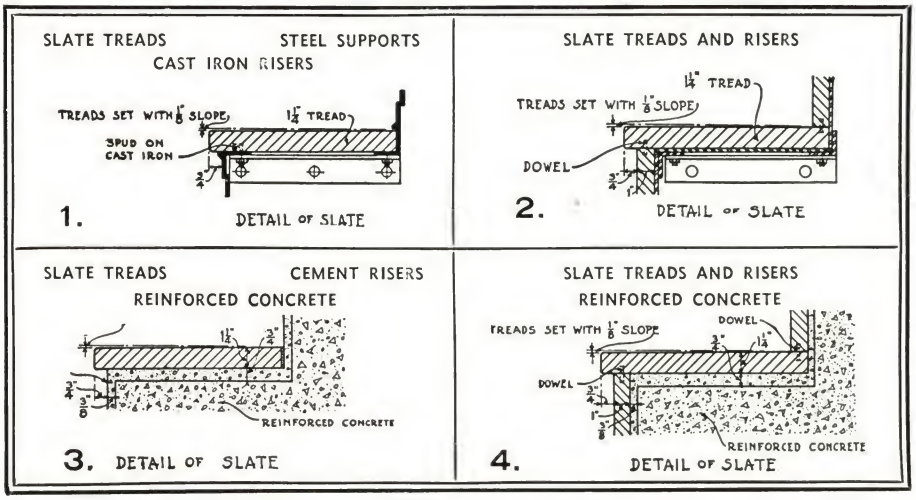
(10) **Setting—*For Slate Work Between or Upon Iron Supports***—All slate work shall be thoroughly dampened just before laying and each tread shall be thoroughly bedded in slater's cement on all (slate or metal) risers or supporting angles or metal work (and for open stairs this jointing shall be neatly cut back or pointed from the underneath as work progresses). All joints between slate and slate, or slate and metal, including those at ends, shall be packed with slater's cement and pointed tight.

(11) ***For Reinforced Concrete Supports***—All slate work shall be thoroughly dampened just before laying and shall be bedded in or backed with cement mortar, composed of one part portland cement and two parts of well graded, clean sand. All joints between slate and slate, or slate and cement shall be packed with slater's cement and pointed flush.

(12) *Note:* If risers are of cement (see Detail 3 shown in the 1932 Edition of SWEET'S ARCHITECTURAL CATALOGUES, and on page 7 in Volume Three of a series on Structural Slate, issued by THE STRUCTURAL SLATE COMPANY, Pen Argyl, Pa.), the same should be troweled on in connection with the concrete work, if not, as in some cases, poured with paneled or recessed faces.

(13) **Stringers and Bases**—Shall be of slate 1 in. (or more) thick by .... high, measured at right angles from edge of nosing (and the same height from level floor where stringers are continued around landings at floor levels or between same). All strings [bases] shall be rounded [moulded] at top with returns cut on the solid at any openings (and, where moulded, cut with solid returns on all interior and exterior angles).







Exterior Treads and Variegated Platform, Mayview Hotel, Pittsburgh, Pa.
ERIC FISHER WOOD, Pittsburgh, Pa., Architect

THE STRUCTURAL SLATE COMPANY

PEN ARGYL, PENNSYLVANIA

BRANCH OFFICES IN EVERY
PRINCIPAL CITY

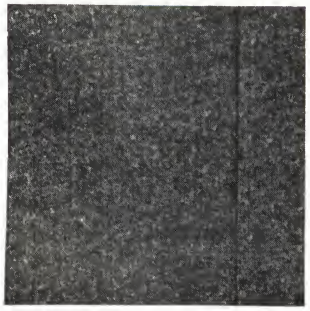
GRADING, SURFACES, FINISHES, NOTES ON PREPARATORY WORK AND BASIC SPECIFICATIONS FOR PYRAMID STRUCTURAL SLATE



Slate Wainscot, Showing Typical Markings of Ribbon Stock



Split Face Surface
Actual size



Planed Surface
Actual size

Slate for general structural uses is produced in one quality only, but the stone is divided into two natural gradings known as "Clear stock" and "Ribbon stock".

RIBBON STOCK—About 80% of the natural slate has ribbon veinings, which in no way affect its impermeability or strength.

The appearance of the ribbon stock varies indiscriminately, selection for ribbons never being made. *Ribbon stock is standard for structural and sanitary installations, and will be furnished for such purposes unless the clear stock is definitely specified.*

In keeping with the modern trend of architecture ribbon stock lends a distinctive and modernistic appearance to the installation.

CLEAR STOCK—Represents the remaining 20% of the natural slate. It may contain some "knarls", but is free from ribbons, the elimination of which seems desirable from the standpoint of appearance in some cases. Its cost is from 30 to 40% more than ribbon stock.

COLOR—The slate produced in the Pennsylvania District is the familiar "slate gray" with which color everyone is acquainted.

SPLIT FACE SURFACE—This is the surface left as a result of the first cleaving or splitting. Due to natural cleavage a variation may occur in thickness which is not undesirable for the usual application of split face slate.

USE—Split face finish should be used where a rough surface or texture effect is desired, such as outside steps, terrace floors, cloister effects, stepping stones or garden walks.

PLANED SURFACE—This is the surface left by the planing machine. While it has not the rough characteristics of the split face finish, the marks of the plane are faintly indicated.

USE—Planed surface for reasonable economy should be used for the underside of stair treads, landings and risers, and wherever uniformity of finish is not essential.

STANDARD SAND RUBBED FINISH—After being smoothed by the plane, slate is sand rubbed under the action of sand and water on large revolving metal disks. The result is a uniformly smooth, even surface, having the slightest kind of a grain or stipple. *This surface finish will be supplied unless otherwise specified.*

USE—Standard sand rubbed finish is used for toilet room partitions, lavatory stalls, shower baths, urinals, washtubs, tanks, etc., unless in special instances it is desired to go to the additional expense of honing.

HONED FINISH—Honed finish is much smoother than sand rubbed, being the nearest approach to actual polish that can be given slate. It is not a suitable finish to be used where slate is subjected to the constant abrasion given floors, stair treads, thresholds, etc.

Honing is the finest finish which can be applied to slate, and is desirable on all vertically erected slate where the expense can be justified. The cost of honing is approximately ten cents per square foot.

USE—Same as for sand rubbed slate where a finer finish is desired.

STEEL SAWED EDGES—This is the surface left by the saw on the edges of all slate—a series of curved serrations somewhat resembling a coarse tooled finish.

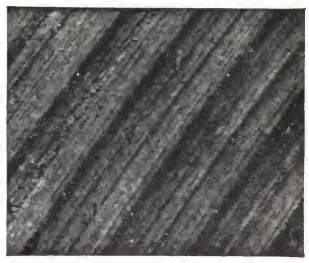
USE—Sawed edges are particularly adaptable to the faces of thick window sills, edges of wall copings, the straight nosing of outside steps, etc.



Standard Sand Rubbed Finish
Actual size



Honed Finish
Actual size



Sawed Edges
Actual size

Beautiful Struco Slate

The Colorful :: Permanent :: Natural

Slate Rock

The ever increasing demand for materials in use with modern architecture has brought from nature's great treasure chest a natural product, the characteristics of which have placed it in the first rank where beauty and service are required. Now we have this product with an applied finish where color or unusual effects are desired.

Struco Slate is a natural slate colored with a finish made up of a special nitrocellulose lacquer which gives one of the hardest and most durable surfaces of any finishing material. This lacquer finish was adopted after years of experimentation and research among the various finishes subject to hard usage, and resulted in the development of special materials which now constitute the standard formula for Struco. As the lacquer finish is chemically inert, it will not deteriorate with age, and with the care which would normally be given any highly polished surface, it will retain its beauty and color indefinitely.

The favor of Struco Slate among leading architects and builders throughout the country has resulted in its constant and increasing use, very logically so because of its numerous advantages. Being the same natural slate as of old, it combines the great tensile strength of natural slate, its durability and ease of fabrication, with a wide range of surface colors, and a low initial cost and negligible upkeep expense. Since slate is non-absorbent and germ-proof, it is sanitary and easily cleaned, a matter of very great importance when selecting a material for toilets, or washrooms, and in hospitals, restaurants, etc. It will not warp, buckle or twist out of shape. It will not peel or crack, and its finish is absolutely permanent. It is truly an ideal material that has earned for itself a growing reputation of being "The choice of the discriminating." The recognition of Struco and its hearty endorsement by leading architects has made it a popular material with unlimited possibilities.

Struco, through its rich tones and color effects, offers a medium for the creative architect to work with that is unsurpassed. Regardless of where it is used, with its color and beautiful design, under its deep, rich, highly polished finish it affords a means of tribute to the architect and to the building in which it is installed.

Each day finds a new use for Struco, and in this rather limited space it is difficult to review them all. In Banking Rooms, Brokers' Offices, Realty Buildings, etc., where the confidence of people is inspired, Struco instills an atmosphere of permanence and beauty. In the lobby of the Office Building, Hotel, Club or Apartment, and in the Restaurant, all of which in receiving their visitors must make the first favorable impression, Struco, with its inherent characteristics of hospitality and distinction, not only adds to the decorative effects of the building, but lends to it a touch of luxury and rich exclusiveness at a minimum of cost.

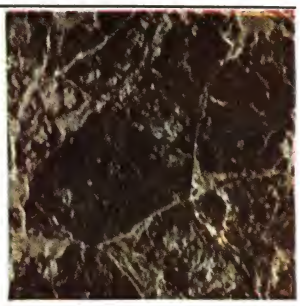
In the modern hospital the first demand is for sanitary and easily cleaned surfaces, and here Struco offers genuine advantages. It is used for ward cubicles, corridors, wainscoting and operating rooms, kitchens and laundries, and in fact wherever absolute sanitation is demanded. The sound-proof qualities of slate, together with its very important light-diffusing characteristics, make it of extreme value.

8WSA illustrated on this page when made up in a complete installation closely resembles granite. It is used primarily when an economical installation is required. It is a matt finished job of a pleasing light gray. The finish is sprayed into the sand-finished texture of the matt surfaced slate. It is recommended when abuse is encountered in more than an average degree. Like every Struco installation it will give constant service and does not require the attention necessarily expected of a highly polished surface.

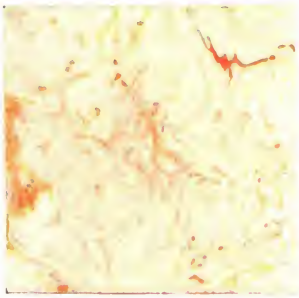
In private residences, as well, Struco offers the same infinite possibilities as in the larger and more imposing architectural achievements.

For Detailed Information

On Slate Shower and Toilet Partitions, Wainscoting, Base, Borders, Treads, Window Sills, Roofing, Flooring, Blackboards, Etc., Refer to General Index for these uses, filed in Sweet's under their respective headings.



VERDE ANTIQUE



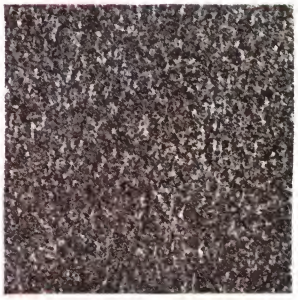
ROSETTA



BLACK & GOLD



NILE GREEN



8 W. S. A. The Matt finish Struco illustrated on the right

The following paragraphs refer to items usually not made a part of the work of the Structural Slate Contractor, and are here presented as suggestions or reminders, in connection with other specifications, or parts thereof, for the work of the various building trades. The Standard or Basic Specification presupposes that the following structural requirements have been complied with by other trades.

For Slate Used Vertically

(1) Masonry Backgrounds—Wall or partitions of brick, hollow tile, concrete, or other masonry afford excellent backgrounds for slate surfacing, either as parts of enclosures, or as wainscots, bases, etc. It is not necessary to insert plugs or grounds in any such walls, as the specification for slate work requires that the slatesetter drill, or otherwise provide, for his own anchors. Mortar or plastering is unnecessary on masonry backgrounds, as the slatesetter's backing up and jointing will take care of inequalities in these surfaces.

(2) Where shower enclosures are supported on wooden joists, all vertical slate features should be independent of the walls or partitions or have sliding anchors to allow shrinkage in the joists to permit all slate to settle equally and avoid the opening of joints which might otherwise result.

(3) Such opening of joints in the case of wainscots, or wall slabs, where wood joists occur, may be avoided by several means—such as bases, coves, wooden scotias, cutting the finished floor against the slabs, and otherwise.

(4) Wood or Metal Backgrounds—On wood or metal studs or furring back of slate, it is desirable that lathing and plastering should be placed.

(5) Wood studs should be not less than 2x4 in., and spaced not over 16-in. centers, braced at least once in their height with 2x4-in. horizontal bracing.

For Slate Used Horizontally

(6) Masonry Floor Construction—The tops of all structural tile or concrete floor construction should be kept down below the finished floor line to the depth required by the thickness of the concrete bed and the slate floor slabs and setting-bed to be used.

(7) Steel Beams—The tops of any steel beams or girders should be kept down at least 3 in. below the finished floor line, and should be covered with roofing slate, sheet metal or waterproof paper to prevent adhesion of the concrete bed.

(8) Concrete Bed on Masonry Floor Construction—The top of floor construction should be swept clean, well drenched with water and a 2-in. thick concrete bed of stone, sand or cinder concrete laid, ready to receive the slate contractor's setting-bed.

(9) Where any pipes are to be run in the concrete bed, the floor construction should be lowered, so that the top of any pipe will not come above the top of the concrete bed.

(10) Concrete Bed on Earth or Fill—When slate slabs or floors occur in connection with earth, cinder or gravel fill, the fill should be thoroughly puddled and tamped, and a concrete bed not less than 3 in. thick provided. The bed should be of crushed stone, slag or gravel for outside work, and may be of clean cinders for inside, mixed with cement and sand in accordance with good practice, ready for the setting-bed of cement mortar to be furnished and applied by the contractor for slate work.

(11) Reinforcement—Reinforcing metal, where required for concrete beds under slate floors, should be from 2 to 3-in. mesh No. 16 gauge expanded metal, or 3x8 in. No. 8 and No. 10 gauge reinforcement.

(12) Reinforcement should be placed about ¾ in. above the bottom of the concrete bed, and where more than one width or length is required, be lapped not less than 6 in. (See Paragraph 19.)

(13) Wood Floor Joists—The tops of wood floor joists, wherever possible, should be lowered to the level required to provide space for a continuous concrete bed or foundation to receive slate and the slate contractor's setting-bed.

(14) Where floor joists can not be lowered to the required level, the tops of the joists should be beveled off to a sharp edge, until the top is at least 2 in. below the finished floor.

(15) Spans of joists from 6 ft. 10 in. should be bridged with one row of cross bridging, and spans of 10 ft. and over with one row to each 5 ft. Bridging should not be less than 1x3 in.; should be accurately cut to fit, and securely nailed at each end with two 8d nails.

(16) Wood Underflooring—On top of the joists, if the joists have been lowered, should be laid a flooring of 1 in. by not over 6-in. wide boards placed about ¼ in. apart* and securely nailed to each joist.

(17) To the sides of the joists, if the joists have not been lowered, should be securely nailed 1 in. by not less than 2½-in. cleats at the depth required. Between the joists set 1 in. by not over 6-in. wide boards laid about ¼ in. apart* and securely nailed to the cleats.

(18) Concrete Beds on Wood Joist Construction—The wood underflooring and tops of joists, if joists have not been lowered, should be covered with a layer of waterproof paper, weighing not less than 11 lb. per 100 sq. ft. For floor areas of 100 sq. ft. or less, the concrete bed, if of stone, gravel, or coarse sand concrete, should be 2 in. thick, or if of cinder concrete, 3 in. thick. For areas of over 100 sq. ft. the concrete bed, if of stone, gravel or coarse sand concrete should be 2½ in. thick, or if of cinder concrete, 3½ in. thick.

(19) For floor areas of more than 100 sq. ft., the concrete bed should be reinforced. (See Paragraphs 11 and 12.)

*If laid tight, the moisture in the concrete may swell up and buckle the floor boards.

Basic Specification for Structural Slate Work

General Conditions—
(See paragraphs 15 and 16 for Abbreviated Form.)

(1) Furnish all labor, materials, tools and appliances necessary for the execution and completion of the work in accordance with this specification, except as the same may be modified in any way by the architect's drawings or specifications, in which case the architect's drawings and specifications shall govern.

(2) The General Conditions of the specifications written by the architect are hereby made a part of this Basic Specification and of the contract for the Structural Slate work.

(3) Work Included—For extent of work, and for the grade and finish of Structural Slate, see the architect's drawings and specifications —and schedule, if any is furnished.

(4) Acceptance of Preparatory Work—It shall be the duty of the Structural Slate Contractor before beginning any of his work to examine all floor and wall construction and any other supports for his work provided by others, and satisfy himself that everything is in proper condition to receive his work. The architect shall be notified by the Structural Slate Contractor in writing of any exception he may take to such construction. Failure to do so shall constitute acceptance of the construction by the Structural Slate Contractor as suitable in all ways to receive his work.

(5) Samples—If so required, typical samples, each marked as to grade and finish of slate proposed to be used, shall be submitted to the architect for approval, and left with him, before material is ordered.

(6) Quality and Finish—All slate hereafter specified shall be slate-gray in color, hard and non-absorbent, whole, sound and free from irregularities in production or defects in manufacture, and of the commercial grading known as Ribbon Stock, except where Clear Stock may be specifically called for.

(7) All slate used shall be branded with the trade-mark "Pyramid," exposed surfaces shall be smooth and free from depressions, loose pieces, cracks, or chiped edges, and all shall be left in true alignment and in every respect thoroughly neat and satisfactory.

(8) All exposed surfaces, unless honed finish is specifically called for, shall have standard sand rubbed finish.

(9) After complete erection and pointing, every piece of slate shall be thoroughly cleaned and left in a workmanlike manner.

(10) Erection—Each piece of standing slate against any wall or partition shall be properly backed up at the edges or joints with cement mortar or plaster of paris, according to the space, and anchored in place in such a manner as to insure its remaining firm and rigid. No piece to have less than two anchors, which shall be [galvanized] [brass] [bronze], so placed as to be concealed, and where of wire, not less than No. 12, WandM gauge.

(11) Where space back of slate against masonry walls is more than 2 in., brick and cement mortar shall be applied back of all joints. Any intermediate joints necessary in slate slabs shall be of the kind specified for the corner or abutting joints in the same piece of work and thoroughly filled with the same packing material; if showing, the joints must be true, close and smooth.

(12) All slabs, partitions, stiles, curbs, bases, treads or other pieces of slate shall be erected, fastened together or secured in place in a first class manner and left rigid and complete, to the satisfaction of the architect or his representative.

(13) Joints or external angles shall be made on the side least exposed to view. All external angles and all exposed edges or corners shall be slightly rounded, unless otherwise shown on drawings, or specified. The contractor for slate shall do any cutting and drilling of slate for all other trades, and for anything that is to be connected or attached to slate.

(14) Before any work is placed in the mill, two copies of shop or setting drawings shall, if required by the architect, be submitted to him for approval of the general principles involved in construction. Such approval, when given, with any corrections required, unless taken exception to by the contractor in writing shall not relieve the contractor of obligations as to rigidity of construction, correctness of sizes and measurements, or other matters pertaining to his contractual relations or to any guarantee.

General Conditions (Abbreviated)—

(15) *Note:* As this specification is being given wide circulation among architects and slate contractors, and is copyrighted by and registered with the Structural Service Bureau, it is suggested that the brief form indicated by Paragraph 16 be used wherever desired.

(16) The General Conditions, paragraphs 1 to 14, inclusive, as printed in the 1932 Edition of SWEET'S ARCHITECTURAL CATALOGUES, and in Chapter No. 3 on Structural Slate, copyrighted by and registered with the Structural Service Bureau of Philadelphia, are hereby made to constitute the General Conditions of this specification.

THE STRUCTURAL SLATE COMPANY

PEN ARGYL, PA.

BRANCH OFFICES IN PRINCIPAL CITIES

For other catalogues of The Structural Slate Company, see Manufacturers' Index

"PYRAMID" SLATE TOILET, SHOWER AND HOSPITAL CUBICLES

Partitions that Outlast the Building



French Gray Struco Spatter Installation of Toilet Enclosures

At the left is illustrated a French Gray Struco Spatter installation of toilet enclosures in the Margarita Club, Evanston, Ill. The architects were Morrison & Wallace of Chicago. In the Providence High School, at Chicago, these architects used Struco Slate and we quote a part of their letter "After careful consideration we decided to use your material in preference to marble on account of its quality for all the lavatories, showers and dressing rooms throughout the building."

At the right is illustrated a close-up of the Ward Cubicles in the Henry W. Putnam Memorial Hospital at Bennington, Vt., designed by architect, Leslie Walker, New York. Superintendent M. A. Baker, of this hospital, writes "The Struco Slate Ward Cubicles furnished in Buff Spatter to match the tiling on the floor, are found to supply the ideal cubicle material. For sanitary and practical reasons they are unsurpassed. The surface of these cubicles is easily cleaned and requires no upkeep."

Slate, either in its natural state or with struco finish, according to location and effect desired is really *ideal* for toilet, shower and in fact *any* partition job. It is non-absorbent, has tremendous strength and is fireproof.



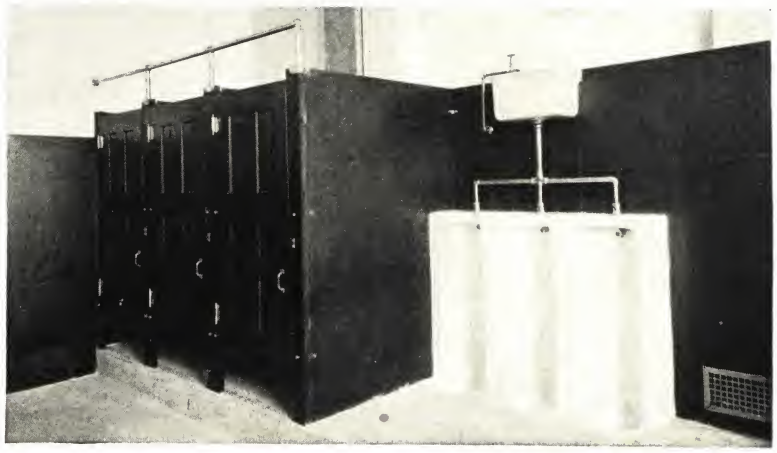
Buff Struco Spatter Installation of Hospital Cubicle



A material to be used for showers, toilets, urinals, etc., must be a material that will not rust, corrode or absorb moisture, and must have that quality which will stand up under hard usage. The solution to the problem of finding such a material is slate, which is the reason that many leading architects throughout the country are specifying slate in both the natural slate and in the beautiful shades of Struco for this type of work.

Government and University laboratories have proven its strength, non-absorbent qualities and resistance to wear. The dense structure of slate insures a strength that meets the most exacting requirements. The extremely fine, uniform structure of slate has proven it in every chemical analysis to be the least absorptive of all natural stones. Tests upon nineteen pieces showed as a result the great tensile strength of 3625 lb. per sq. in. Fire, water and most acids will not harm it. Several pieces of slate, in a recent test, were dried in an electric oven twenty-four hours at a temperature of 120° C., cooled to normal room temperature, weighed and completely immersed in water for twenty-four hours after which the surface water was dried off and the slate again weighed, resulting in an average absorption of 174 one-thousandths of one per cent.

Behind the beauty of this material is the great strength of a natural product. It will not rust or corrode and become dented and unsightly which very often necessitates refinishing and, too often, replacing. It is one of the most economical of all materials for this work and where an installation must be installed with price as the chief consideration, the selection of "Pyramid" Slate not only provides a product with fine qualities, but in addition, exceptionally low cost. Chapters with details are available and will be gladly sent by our architectural, engineering and service staffs.



A Typical "Pyramid" Slate Installation

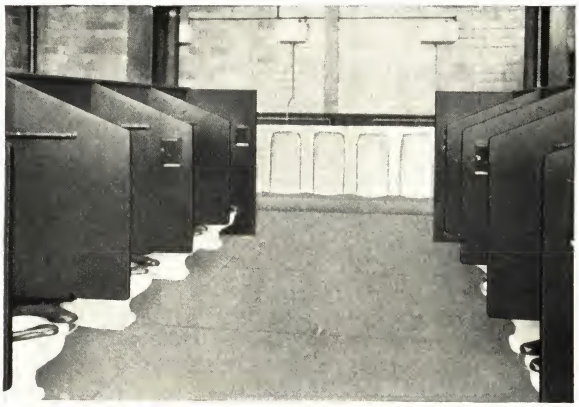


Left:

Verde Antique Struco Slate Partitions, Municipal Airport Comfort Station, Chicago, Ill.

PAUL GERHARDT, Chicago, Architect
WESTERN SLATE COMPANY, Erectors

In this station, at 63rd Street and Cicero Avenue, attractiveness as well as sanitation are provided by this beautiful product. Its deep, rich tones of green are protected by a high, rich lustre. Specify Struco for the job of distinction



Toilet Partitions, Connelly Trade School, Pittsburgh, Pa.

EDWARD B. LEE, Architect, Pittsburgh

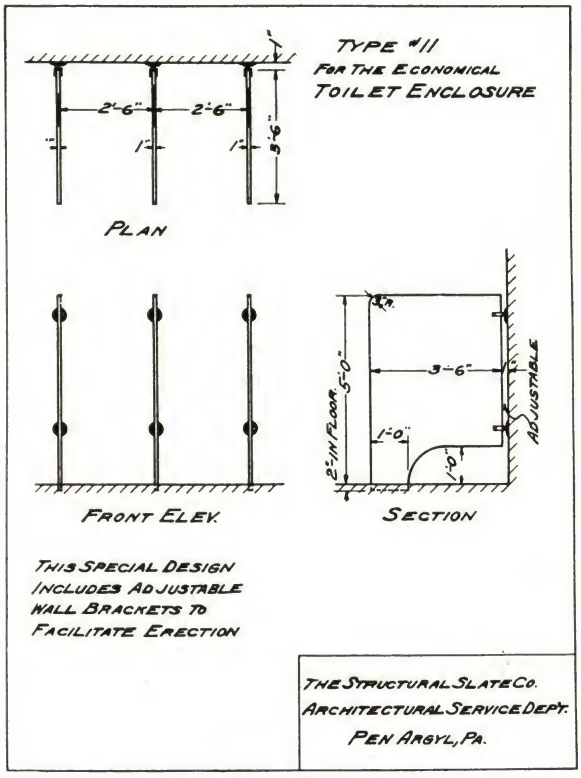
Here is an economical use of a material so designed by the architect as to reduce the cost without sacrificing the life and wearing qualities of a partition. Our Engineering Department will gladly work with you if interested in any of these designs. Our Architectural Service Department will furnish blue prints, details, etc. Specify "Pyramid" Natural Slate for the job that must "Outlast the Building"



Pyramid" Natural Slate Shower Stalls, Long Island Hospital, Boston, Mass.

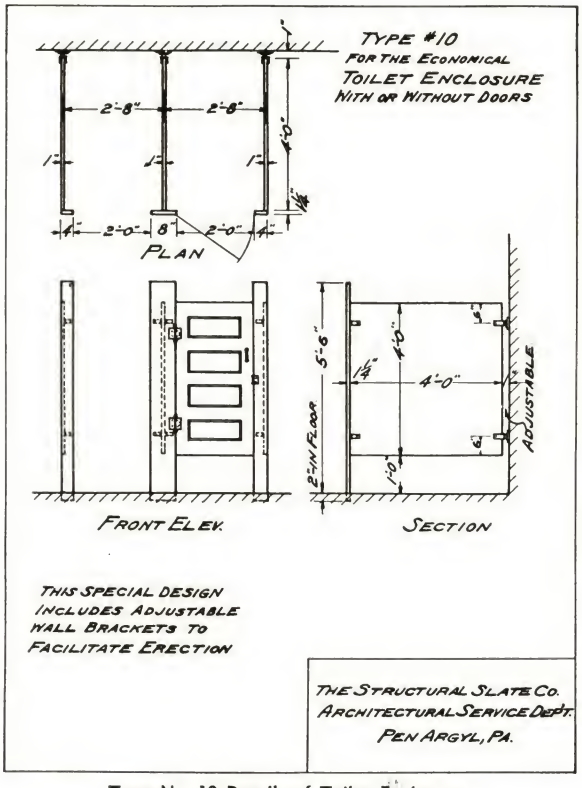
JAMES A. RITCHIE & ASSOCIATES, Architects

The repeated specifications calling for this product for use in shower stalls is convincing in itself that slate is really an ideal material where a partition must constantly be subjected to various temperatures and water without rusting and corroding. When an installation must "Outlast the Building," specify "Pyramid" slate



Type No. 11 Details of Toilet Enclosures

Designed by our architectural staff, Type No. 11 illustrates one of the popular "Pyramid" Slate enclosures, without doors, today being specified by many leading architects. When cost is a factor, this partition is used. It gives the same advantages as other partitions without the qualities of slate, yet at no increased cost. When tempted to specify a cheap material for a job that must be inexpensive, stop and consider this design



Type No. 10 Details of Toilet Enclosures

Where the use of doors is required, Type No. 10 gives adequate privacy without an expensive type of installation. It is for this reason that today, when doors are required, many leading architects are specifying Type No. 10 to reduce the cost of their toilet room installations. Remember that "Pyramid" Slate will not rust and corrode nor become unsightly. When your installation must be furnished at low cost, consider this enclosure before writing your specification

MARIETTA MANUFACTURING COMPANY

Structural Glass

INDIANAPOLIS, IND.

FACTORIES: INDIANAPOLIS, IND., and TORONTO, ONT.

BRANCH OFFICES IN PRINCIPAL CITIES

STRUCTURAL GLASS

Structural Glass

An impervious, vitreous, acid resisting material manufactured from rock ingredients fused at 2600°. Its natural fire polished surface is impermeable to water or other liquid, including all acids, except hydrofluoric, Literally, Structural Glass "stands the acid test." Laboratory tests prove it to be 40% harder than marble, or in other words, an imaginary sheet of flint will give you some idea as to the strength and durability of Structural Glass. Unlike many materials Structural Glass will not craze nor discolor. The bright lustrous surface is unimpaired after many years of the hardest kind of service and, unless maliciously destroyed, it will outlast the building itself. Climatic conditions will not alter Structural Glass in the slightest degree. Warmth, moisture or salt air will not affect it.

Structural Glass is in no sense a substitute for natural marble or tile. It combines all the advantages of these and similar products with added exclusive features, which for many purposes, make it distinctly superior.

Colors and Textures

Structural Glass is manufactured in white, black, ivory, apple green, olive green, blue and gray. It is available in fire-polished, stipple, polychrome and tiffany-faience surface textures. Any design or decoration may be reproduced on the material.

Vari-tone Structural Glass

A new creation of blended colors producing veins—artistic designs and cloud formations in many colors throughout the material.

Dimensions

Structural Glass slabs are made in sheets as large as 60x120 ins. and may be cut to any desired size. Standard thicknesses: $\frac{11}{32}$, $\frac{7}{16}$, $\frac{5}{8}$, $\frac{3}{4}$, 1, and $1\frac{1}{4}$ in.

Raised Rim (Patented)

Raised rim for table, counter and sink tops can be furnished in all colors in $\frac{3}{4}$-in. center $\frac{7}{8}$-in. rim, 1-in. center $1\frac{1}{8}$-in. rim and $1\frac{1}{8}$-in. center $1\frac{1}{4}$-in. rim material.

Uses

For Interior—Wainscoting, walls, ceiling, toilet partitions, window and door trim, store fixtures and equipment, etc.

For Exterior—Store front and bulkhead construction, columns, spandrels, and signs.

Applications

Walls—Structural Glass can be applied in sizes most adaptable for installation over walls of brick, building block, cement or plaster with our special plastic cement. This cement has been scientifically mixed for its practical use. It never hardens rigidly, thus permitting self-adjustment of the slabs to the settling of floors and walls universally encountered in practically all buildings. While tenaciously and permanently holding the material to its backing the Structural Glass setting cement remains plastic, thus eliminating the crack-tending strains on the material.

All joints of the material are pointed with our specially prepared pointing compound in colors to match the Structural Glass.

Ceiling—Structural Glass ceiling plates are stocked in sizes which we recommend, namely: 16x16, 18x18 and 20x20 in. in the $\frac{11}{32}$-in. thickness. The plates are fastened securely in place with vitreous china or metal rosettes screwed to wood furring strips. Rosettes may be had in colors to match the material.

Specifications for Toilet Partitions

Toilet partitions to be of the low type construction, 5 ft. 10 in. over all, and to a depth as shown on plan. Front stile to be $1\frac{1}{4}$ in. thick, polished on both sides. Divider to be of the laminated construction $1\frac{1}{16}$ in. thick over all, consisting of two slabs of $\frac{7}{16}$ in. thick Structural Glass firmly cemented back to back, with plastic cement, and reinforced at all four corners with $\frac{1}{8}$-in. thick metal gusset plates, complete, with tie straps for anchoring to rear wall. Center divider to be 10 in. above floor with end divider running to floor. Front stiles to be embedded into floor to a depth of $1\frac{3}{4}$ in. and anchored to divider by means of metal angle brackets. Entire weight of divider can either be supported direct from floor by the use of metal foot, as shown on MARIETTA MANUFACTURING COMPANY'S detailed sheets, or can be suspended from the front stile. All necessary drilling for securing hardware to be done by the Structural Glass Contractor. Wood or metal doors and hardware to be furnished under another contract.

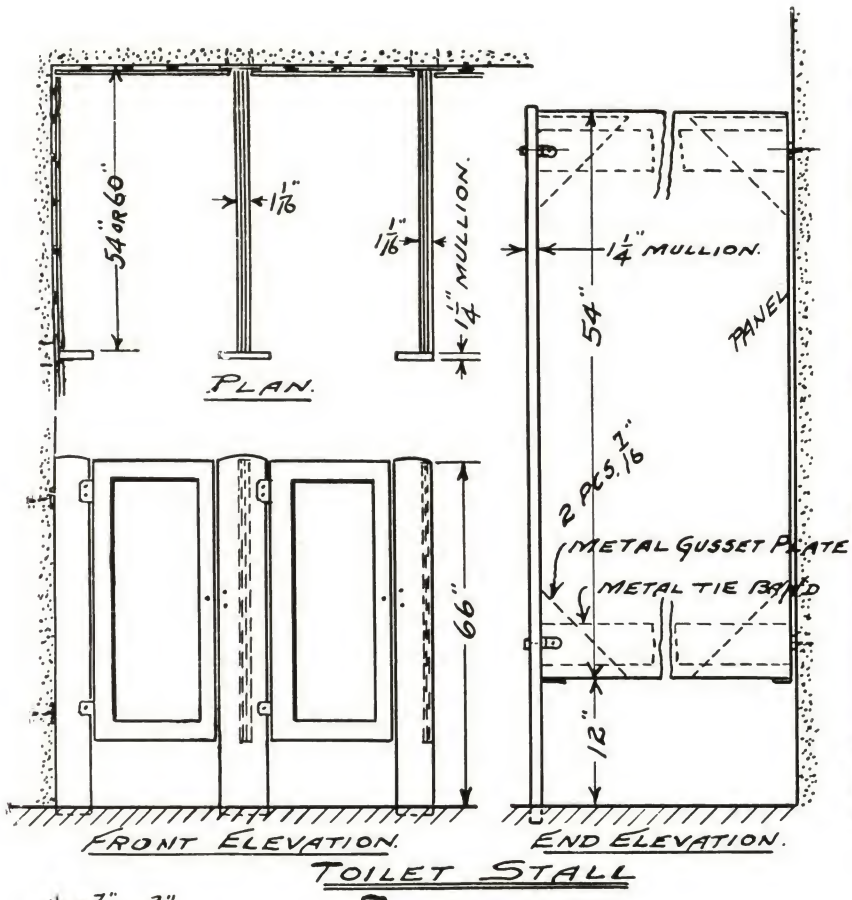
Organization Facilities

We maintain a large sales force at the office, and also have agents and construction houses in all the principal cities throughout the United States, Canada and foreign countries.

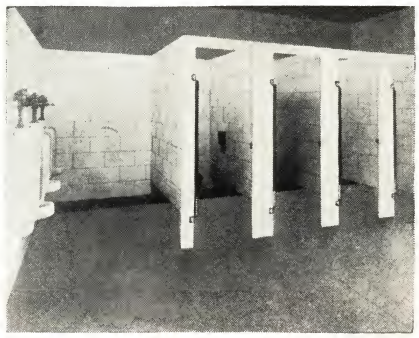
Engineering Co-operation

Our Engineering Department at our main office will be glad to co-operate with architects and builders either direct or through any of our construction agents in planning Structural Glass installations.

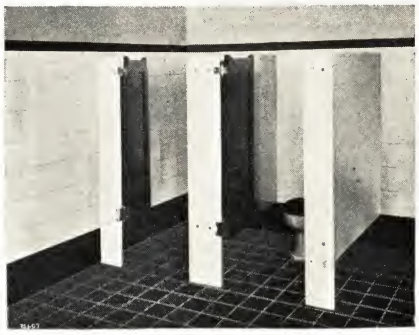
This department will furnish detail blue prints and working drawings for any specified installation of any size. This co-operation is freely offered to any one interested.



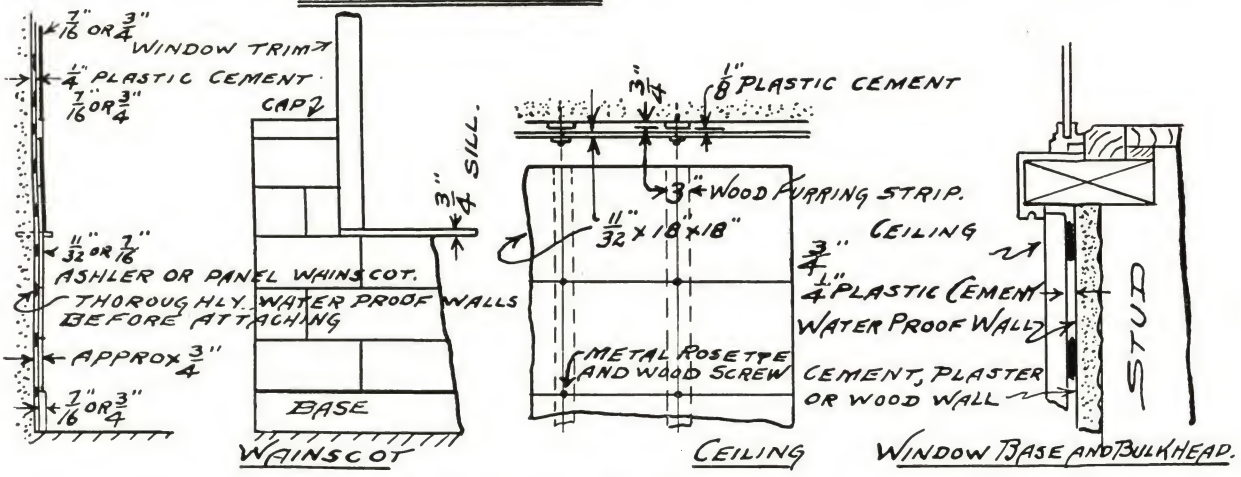
TOILET STALL



Toilet Stalls



Low Type Toilet Partitions





Distinctive Bathroom



Modern Store Front



Dressing Room in Bathhouse

THE NURRE COMPANIES, INC.

HOME OFFICE AND PLANTS 1 AND 2
BLOOMINGTON, IND.

BRANCH PLANTS
BURLINGTON, IOWA ST. LOUIS, MO. KANSAS CITY, MO. MEMPHIS, TENN.

REPRESENTATIVES IN ALL LARGE CITIES

Nuralite

NURALITE
BEAUTY *with* PERMANENCE

A structural glass made of rock ingredients fused at 2600° F. It possesses unusual beauty, great tensile strength, and is easily installed. It is more durable than marble. No trace of discoloration, deterioration, dullness, crazing or fading can ever mar the color and perfection of Nuralite. It has rocklite permanence, presents an easily cleaned, sanitary, frictionless surface that is practically indestructible. No variation of climate nor chemical compounds in the air can affect its freshness, color or gloss. It is impervious to all acids, except hydrofluoric.

Color—Nuralite is made in changeless basic colors, plain or in lovely designs that give delightful variegated effects. Colors available are as follows: Moonbeam Blue, Silver Green, Marbled Orchid, Salmon, Ivory, Black, Gray and White. In Variegated Nuralite unlimited decorative effects and color harmonies are possible.

Patterns—Nuralite conforms readily to unusual modernistic or conventional pattern. Any one interested may have a portfolio containing many beautiful full color illustrations of Nuralite installations in many patterns, arrangements and color schemes.

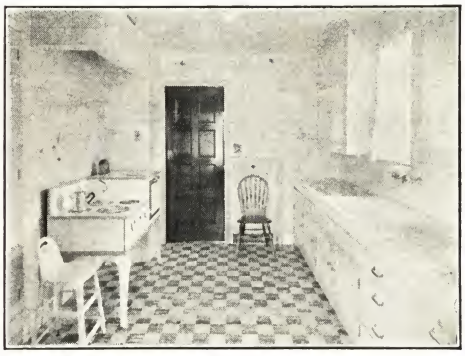
Application—Nuralite is used for wainscoting, ceilings, bulkheads, table tops, window seats, shelving, and for hundreds of other purposes. It is ideal for all appropriate uses because it never disintegrates and retains its finish permanently. Wherever structural glass can be used you will find Nuralite a material giving real satisfaction at less cost. It is available in all surface textures.

It can be installed directly over old plaster in remodeling work. There is no muss, no maintenance cost, and the cost of application is low.

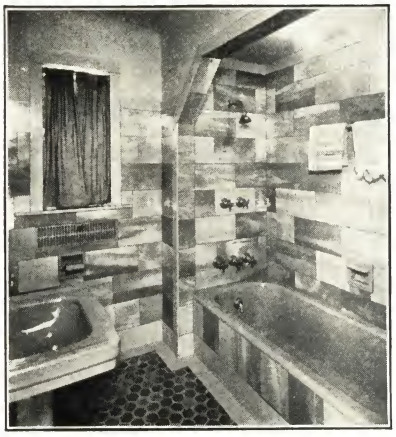
Plain colors furnished in all thicknesses. Variegated material is available to ¾ in. thick.

Co-operation

We maintain an Engineering Department at the Home Office in Bloomington, Indiana for your convenience, as well as distributing plants at Memphis, Tennessee, Burlington, Iowa, St. Louis and Kansas City, Missouri. We have a representative in practically every large city. A card addressed to us will bring detailed information and beautifully illustrated literature giving practical information that you need in planning your work.



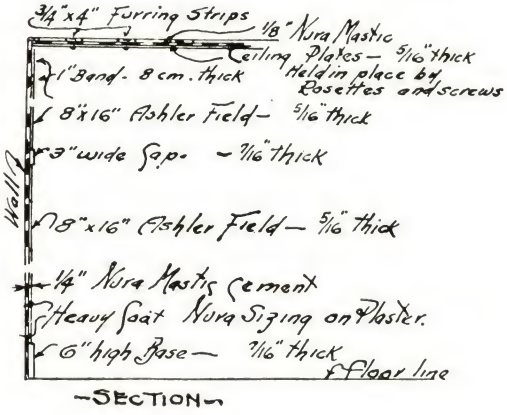
Kitchen



Bathroom



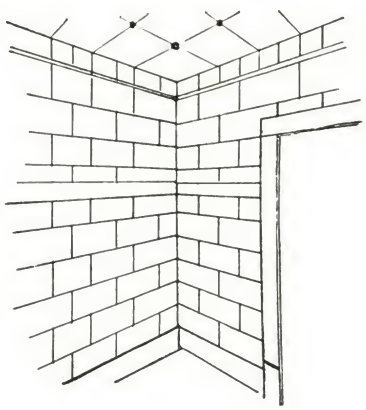
Store Front



Variegated Nuralite

Here is a New-Day material. Something unusual in beauty—something different.

Variegated Nuralite is available in every conceivable harmonious blending of colors. It makes effects possible that have never before been seen in any decorative material. Send for samples of Variegated Nuralite at once, for you will find it extremely useful in achieving distinctive architectural effects. Variegated Nuralite comes in the following colors: Variegated Cream, Orchid, Gray, Blue, Salmon and Green.



VITROLITE

CONSTRUCTION DETAILS

A FUSED ROCK SLAB MATERIAL FOR WALLS • CEILINGS AND TOILET PARTITIONS • FOR INTERIOR AND EXTERIOR CONSTRUCTION AND DECORATION.

THE VITROLITE COMPANY
120 S. LA SALLE ST., ROOM 1100, CHICAGO, ILL.
FACTORY—PARKERSBURG, WEST VIRGINIA

THE VITROLITE COMPANY

Vitrolite—A Fused Rock-Slab Material

EXECUTIVE AND SALES OFFICES
120 So. La Salle Street
CHICAGO, ILL.

LOCAL REPRESENTATIVE

FACTORY
PARKERSBURG,
WEST VIRGINIA

OFFICES IN ALL PRINCIPAL CITIES IN UNITED STATES AND CANADA

Vitrolite Structural Details

VITROLITE
"BETTER THAN MARBLE"

In recent years Vitrolite has set the pace for all structural glass materials. It is the answer of science to the modern demand for sanitation, combined with beauty. Vitrolite has long been considered a standard material for all purposes having to do with sanitation and cleanliness. With the variety of colors and textures now available, the architect has come to recognize in Vitrolite a means of securing the highest degree of beauty and architectural character.

Especially since the modern trend in design has become so widespread has Vitrolite come into favor as a material of first importance for such purposes as fine office buildings and theatre lobbies. The list of prominent buildings in which it has been used by leading architects is an imposing one.

Vitrolite requires distinctively different structural methods and detailing than marble or tile. To make it easier to work out projects in Vitrolite, the information and details on the following pages are presented to the architectural profession with the assurance that in Vitrolite they will find a material that not only meets the most exacting requirements of service, but will prove a source of increasing interest and fascination to the designer who is striving to interpret this modern age in terms of directness, simplicity and beautiful color.

Facts About Vitrolite

Composition—Vitrolite is an opaque and impervious fire polished, vitreous slab material. In its manufacture, Feldspar, Fluorspar, China Clay, Sand, Kryolith, Manganese and about ten other minerals are fused under tremendous heat, rolled into slabs of various thicknesses and tempered in annealing ovens. Each slab of Vitrolite is trade marked on the back.

Qualities—Vitrolite is non-porous and non-absorbent, consequently it is impervious to moisture, grease, or even to the effects of all acids except hydrofluoric which is used to etch glass. It is stainproof even after years of service. Its hard, fire polished surface will never disintegrate and will retain its luster indefinitely. It will never become marred by surface cracks or crazing. It cannot warp, swell, or pull apart. It is very difficult to write or mark upon and any marks that might be made can be easily wiped off. It is particularly easy to keep clean, the stroke of a damp cloth being sufficient in most cases.

Strength—Vitrolite has a minimum tensile strength of 937 lb. per sq. in. and crushing strength of 31,658 lb. per sq. in., which is about 40% greater than marble. It has a very high resistance to abrasion. Under laboratory tests for staining, a solution consisting of concentrated hydrochloric acid, concentrated sulphuric acid and 50% sodium hydroxide solution was poured on the surface of Vitrolite and allowed to stand for twenty-four hours and at the end of that time no staining occurred or deterioration of surface. Another regular staining test was used, with a solution of 5% potassium permanganate, 5% iodine and 5% crystal violet (an organic dye) and no staining resulted. Under either of these tests marble will stain very badly. Vitrolite is impervious to fruit acids, lactic acid, uric acid and red ink.

Weight—Actual weight, lb. per sq. ft.: $\frac{1}{32}$ in., 4 lb.; $\frac{7}{16}$ in., 5¼ lb.; ¾ in., 9½ lb.; 1 in., 11 lb.; 1¼ in., 14½ lb.

Packed weight, lb. per sq. ft.: $\frac{1}{32}$ in., 5 lb.; $\frac{7}{16}$ in., 6½ lb.; ¾ in., 12 lb.; 1 in., 14 lb.; 1¼ in., 18 lb.

Surfaces and Textures

Fire Polished—Vitrolite is rolled with a fire polished surface that is extremely dense and smooth and has a very high polish. The surface is very slightly wavy and is preferred for most purposes because of the interesting quality of the reflections produced.

Satin Finish—Black and jade are also rolled with a semi-matt stippled surface called "satin finish."

Mechanically Polished—A mechanically perfect mirror-like surface is only produced by mechanically polishing and can be supplied in Vitrolite at extra cost. This surface should be used with considerable discretion as it imparts an effect of empty space and unreality that is very effective in confined panels but gives an effect of inconsistency when used on structural members or regular wall surfaces, the fire polished surface being preferable in most cases.

Sandblast—Where greater richness or effects of scale are desired the various degrees of sandblast, especially on black, can be used to produce a type of ornament of lustrous beauty, which takes its quality not only from the pattern produced but also from the various modifications of light reflection. The sandblast may be used to produce effects of modeling; signs of all kinds and grilles may be had by penetrating entirely through slabs.

Dendric Surface—This is done by the glass process of glue chipping. The resulting surface is an irregular pattern effect similar to frosting on glass, giving a very interesting quality of reflection.

Acid Etching—Various surface effects may be produced by acid etching but they are difficult to control on opaque glass and are not in general use.

Colors—Vitrolite is produced regularly in white, black, ivory, jade (a light green), orchid, gray and blue. These are plain colors, uniform in shade. Recent additions are orchid-agate, ebony-agate, emerald-agate and

walnut-agate. These are variegated colors combining a number of shades of the basic colors in agate effects. Flashed-jade Vitrolite consists of a layer of about 1/8 in. jade fused over a base of black Vitrolite. Flashed-jade makes beautiful table tops. Two color signs and cameo effects can be produced by sandblasting through the jade, exposing the black as a background.

Reinforced Vitrolite—Vitrolite reinforced with expanded metal is a new development that offers wide possibilities in exterior work. It makes the use of Vitrolite practical for the entire surfacing of office buildings and many other types of structures. Reinforced Vitrolite is made in the standard Vitrolite colors and at present only in 3/4 in. thickness.

Decoration—Arrangement and Color Combination—There has become such a widespread recognition among architects of the beauty of the highly polished surface of Vitrolite that it is being increasingly used for the finest kinds of interiors, such as entrance ways, vestibules, main lobbies and elevator lobbies of office buildings and theatres. It is advised that decorative effects be confined as far as possible to the wall arrangements and color combinations obtained by the use of different sizes, shapes and colors in the fire-finished or mechanically polished surface, or in combination with metals and mirrors.

Inlaid Enamels, Lacquers, etc.—Vitrolite may be used as a background for colored ornamentation, decorative panels, insignia, etc., by sandblasting patterns to a certain depth and then inlaying colored enamels or lacquers. Bronze colors and gold or silver leaf can also be used in this way. Mosaic inlay combined with black Vitrolite as a background may be used effectively for theatre and other types of decoration. It is advised that these decorative processes be used with discretion and that designs be carefully studied with reference to the processes.

Sizes and Thicknesses—Vitrolite is rolled in the form of large sheets or slabs which are cut up and finished to required sizes. Plain colors are produced in thicknesses of 1/32, 7/16, 3/4, 1 and 1 1/4 in. White Vitrolite only may also be had in thicknesses of 1/4 and 1/2 in. The different colors of agate-Vitrolite are made only in 1/32 in. thickness. The sizes and thicknesses to use in actual installations are dependent on the location and construction, and the purpose for which it is used. Table and counter tops, and window stools are generally 3/4 in. thick or over; base, door, and window trim, pilasters, caps, borders, 7/16 or 3/4 in. thick or more where greater reveals are desired. Ashlar panels from 8x12x1/32 in. thick to 12x24x1/32 in. thick are generally used for wainscoting. Large panel wainscoting should be not less than 7/16 in. thick and should not exceed 2 ft. 6 in. x 7 ft. 0 in. Vitrolite ceiling plates are generally 1/32 in. and not to exceed 24x24 in. These are held in place by screws, metal rosettes, or metal moldings, screwed to wood furring strips.

Working of Edges, etc.—Vitrolite may be furnished with cut, ground, polished, rounded, mitered, or beveled edges. It may be notched, drilled or cut to special shapes, but not molded.

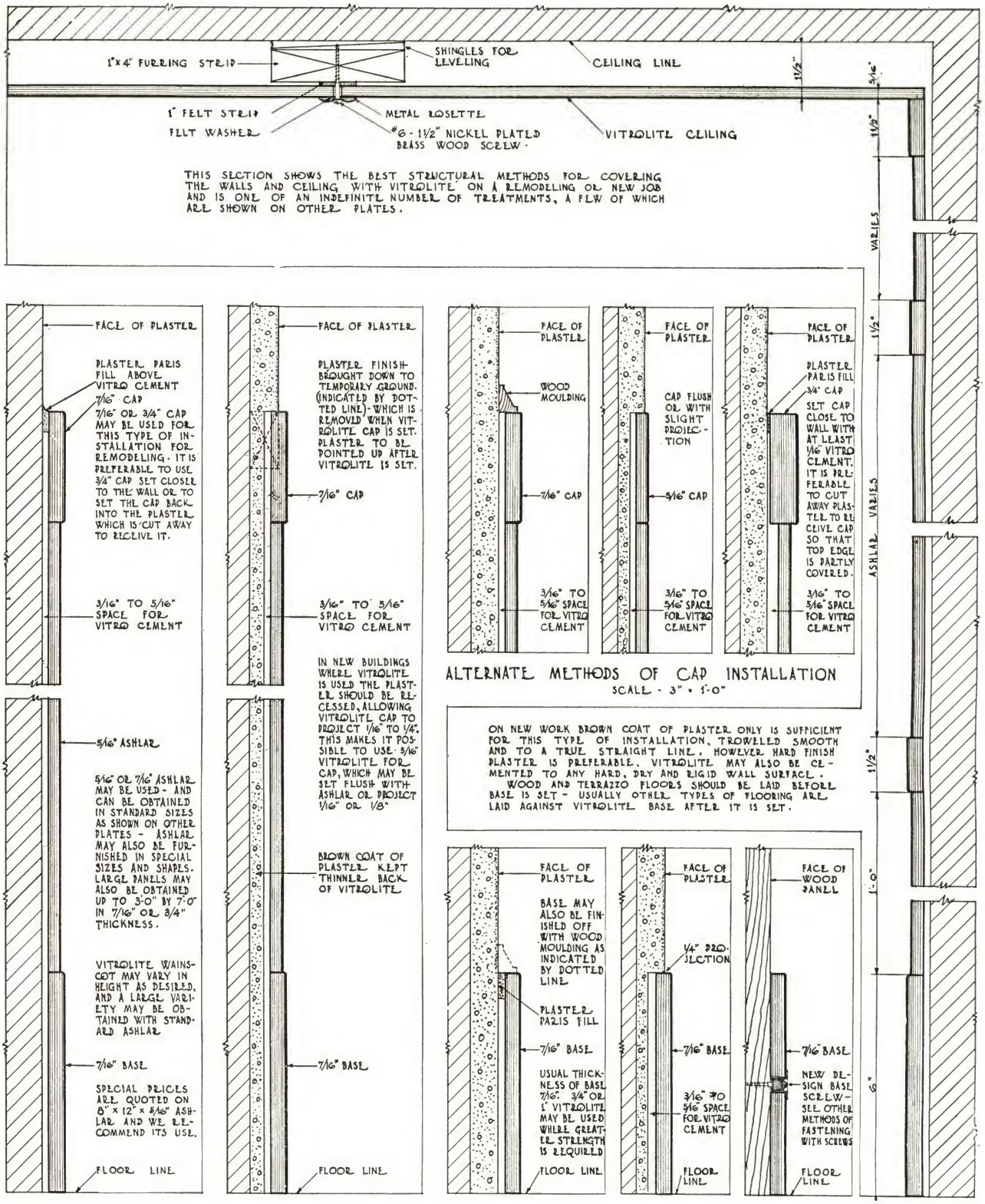
Preparation of Walls, Installation, etc.—Vitrolite may be applied to any hard, dry, rigid wall surface. Generally it is applied to walls with a brown coat of plaster, finished smooth, although hard finish plaster makes an ideal surface to cement to. The wall is first painted with waterproof sizing compound, then the Vitrolite is applied with a special non-hardening plastic cement 3/16 to 5/16 in. thick. All joints are hairline contact joints and are pointed and sealed with a cement compound in colors to match the Vitrolite, or in contrasting colors that contribute to the decorative effect.

Construction—Vitrolite being a vitreous material must be considered with respect to the construction technique required to take advantage of its desirable qualities. It should not be subjected to structural strains nor to sudden extremes of temperature. Edges in contact with other materials should always be cushioned with felt or elastic cement. On wall work, small slabs not to exceed 12x24x1/32 in. or 2 ft. 0 in. x 3 ft. 0 in. x 7/16 in. are preferable to larger slabs and are very rarely broken. Exposed edges subject to severe usage should be rounded or protected with metal moldings. On store front work it must be detailed so that moisture will not get back of it, and so that it is not subject to a crushing load from the deflection of structural beams or other members. Every few courses on exterior work should be supported on the bottom edge with concealed sheet metal angles fastened to the wall. Bulkheads should have ample clearance between metal construction and sidewalk or the sidewalk should be caulked in front of Vitrolite. It is advisable to consult with THE VITROLITE COMPANY'S representative concerning special construction problems. As Vitrolite can be applied directly to present plaster or other solid wall surfacing, it is especially adaptable for remodeling work in comparison with tile or marble, which require costly preparatory work.

Uses—Vitrolite is in general use the world over for wainscoting and partitions in wash rooms, toilet compartments and shower baths of public and private buildings. In industrial plants, especially those handing foods, it is used for walls and ceilings of laboratories, bakeries, dairies, and industrial lunch rooms, also for work tables. In hospitals it is used for many purposes, the satin finish jade being especially favored for operating room walls. In restaurants and confectioneries it is used for wall facing, lunch counters, soda fountains, and table tops. It is in general use for barber shops, meat markets and other shop interiors. It is especially effective for modern store front work and is being increasingly used for the facing of entire buildings. Corridors of office buildings are frequently faced with Vitrolite. In the home Vitrolite is unexcelled for wainscoting of bathrooms, kitchens, and breakfast rooms, also work table tops and splash backs. Tops for the finest furniture, especially in connection with metal work, are most appropriate in Vitrolite.

Structural Organizations—Organizations representing THE VITROLITE COMPANY are maintained in the principal cities of this country and in many foreign countries. They have crews of expert workmen for installing Vitrolite and will supply information concerning Vitrolite or submit estimates for installations. In many cases they maintain shops for fabricating material from stock sheets, or carry ashlar and trim in stock for immediate service.

Service Departments—To co-operate with architects THE VITROLITE COMPANY has an Art Department employing expert designers especially trained in the use of Vitrolite and under the direction of Mr. Frank Sohn. They will prepare colored sketches suggesting arrangements and color schemes for work in Vitrolite, without obligation to the architect. There is also an Engineering Department to prepare working drawings and details, and to assist the architect in developing construction methods and details for new applications.



THIS SECTION SHOWS THE BEST STRUCTURAL METHODS FOR COVERING THE WALLS AND CEILING WITH VITROLITE ON A REMODELING OR NEW JOB AND IS ONE OF AN INDEFINITE NUMBER OF TREATMENTS, A FEW OF WHICH ARE SHOWN ON OTHER PLATES.

SECTION THRU WAINSCOT

ABOVE CONSTRUCTION RECOMMENDED FOR REMODELING WHEN CAP IS ABOVE EYE LINE. FOR LOW WAINSCOT USE WOOD MOULDING ABOVE CAP. (SEE ALTERNATE)

SCALE 3" = 1'-0"

SECTION THRU WAINSCOT

ABOVE CONSTRUCTION RECOMMENDED FOR NEW BUILDINGS

SCALE - 3" = 1'-0"

ALTERNATE METHODS OF CAP INSTALLATION

SCALE - 3" = 1'-0"

ON NEW WORK BROWN COAT OF PLASTER ONLY IS SUFFICIENT FOR THIS TYPE OF INSTALLATION, TROWELLED SMOOTH AND TO A TRUE STRAIGHT LINE. HOWEVER HARD FINISH PLASTER IS PREFERABLE. VITROLITE MAY ALSO BE CEMENTED TO ANY HARD, DRY AND RIGID WALL SURFACE.

WOOD AND TERRAZZO FLOORS SHOULD BE LAID BEFORE BASE IS SET - USUALLY OTHER TYPES OF FLOORING ARE LAID AGAINST VITROLITE BASE AFTER IT IS SET.

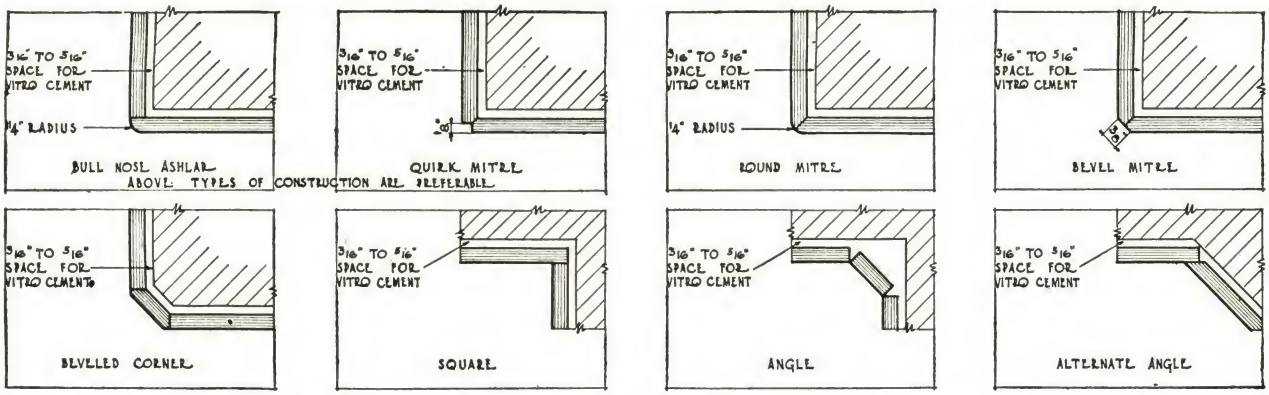
ALTERNATE METHODS OF BASE INSTALLATION

SCALE 3" = 1'-0"

TYPICAL WAINSCOT & CEILING SECTION

SCALE - 3" = 1'-0"

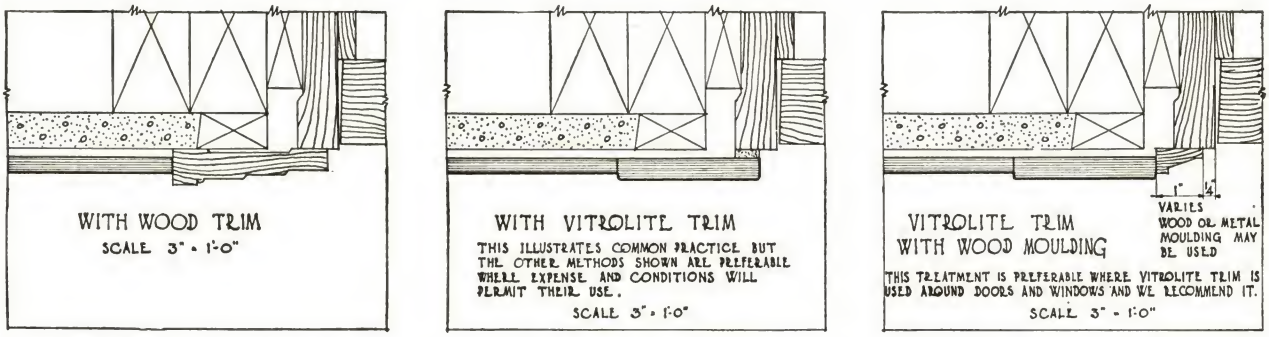
DETAILS SHOWING METHODS FOR INSTALLING BASE - CAP - WAINSCOT & CEILING — PLATE NO. 1

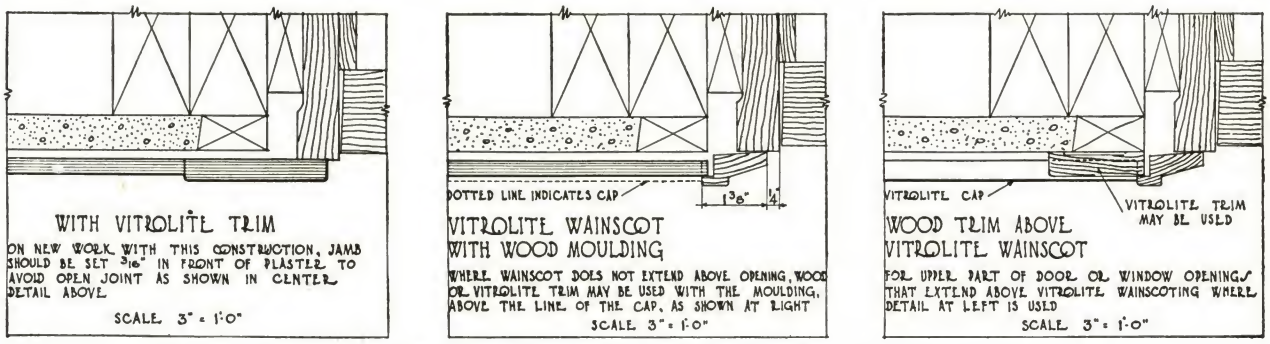


ABOVE TYPES OF CONSTRUCTION ARE PREFERABLE

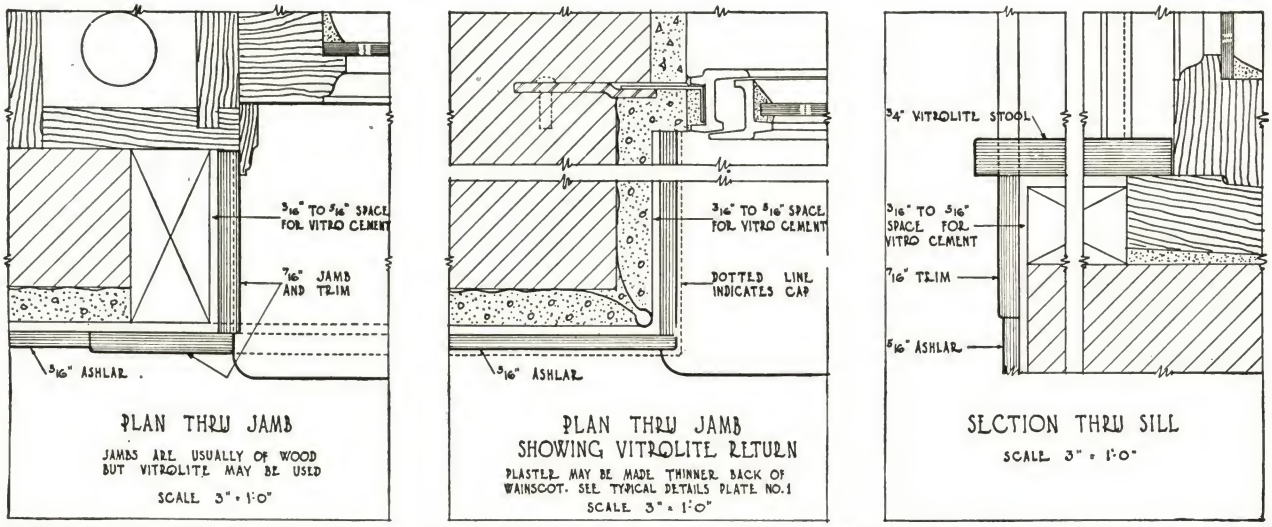
PLANS THROUGH EXTERIOR AND INTERIOR CORNERS

SCALE 3" = 1'-0"

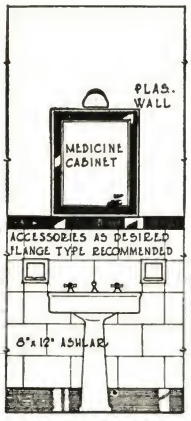




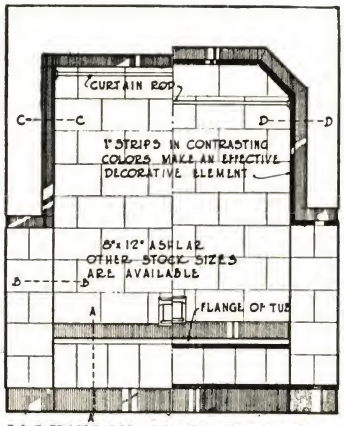
PLANS THROUGH DOOR JAMBS SHOWING VARIOUS TYPES OF CONSTRUCTION



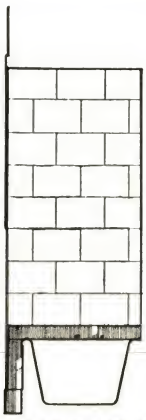
DETAILS SHOWING METHODS OF CONSTRUCTION FOR CORNERS - JAMBS & SILL PLATE NO. **2**



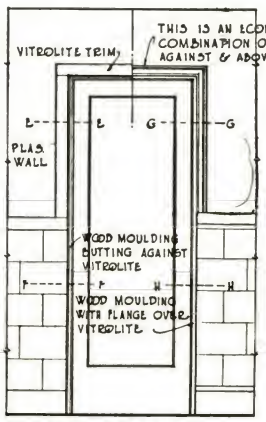
LOW WAINSCOT



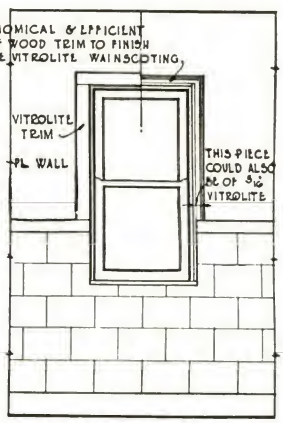
ELEVATION OF TUB RECESS
SHOWING TWO FINISHES FOR TOP OF RECESS. TUB MAY OR MAY NOT HAVE VITROLITE FACE



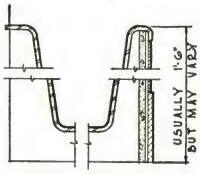
SECT. TUB RECESS
SCALE 1½"=1'-0"



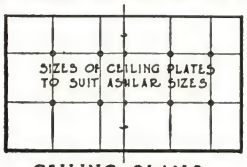
DOOR TRIM
SHOWING VITROLITE AND WOOD TRIM



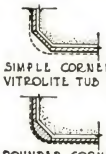
WINDOW TRIM
SHOWING VITROLITE & WOOD TRIM



SECTION A-A
SCALE ¾"=1'-0"

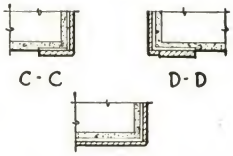


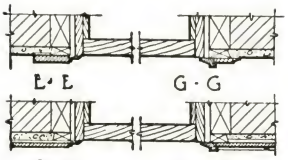
CEILING PLANS
SCALE ¼"=1'-0"



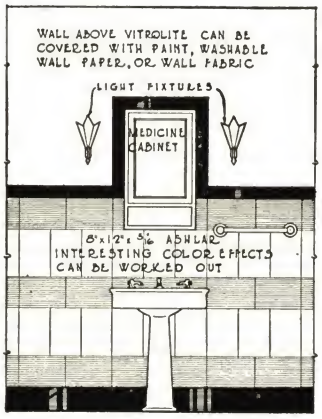
SIMPLE CORNER FOR VITROLITE TUB FACING

ROUNDED CORNER FOR VITROLITE TUB FACING

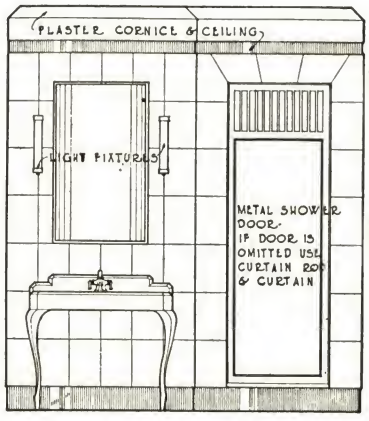




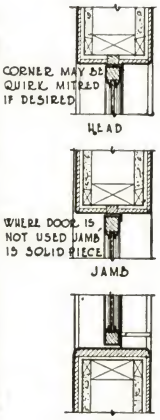
SCALE OF SECTIONS - ¾"=1'-0"



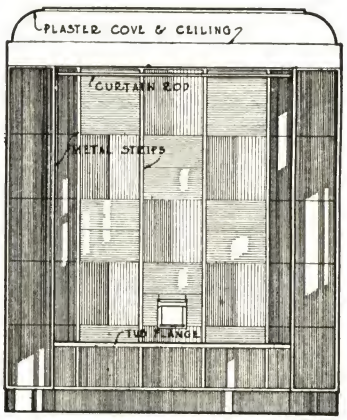
WAINSCOT SHOWING ALTERNATE COLORS



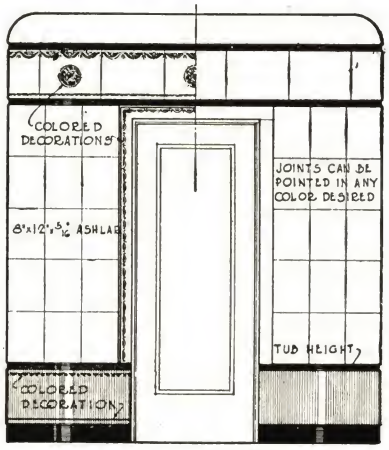
ELEVATION SHOWING SHOWER DOOR
SCALE - ½"=1'-0"



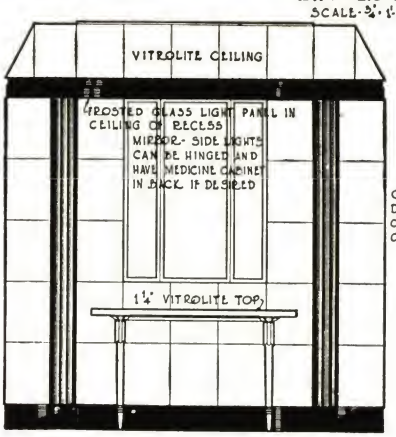
SECTION THRU SHOWER DOOR
SCALE-¾"=1'-0"



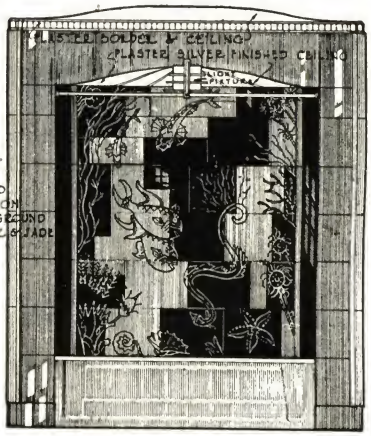
ELEVATION SHOWING TUB RECESS
METAL STRIPS COMBINE EFFECTIVELY WITH VITROLITE



DECORATIVE EFFECTS IN VITROLITE
MANY DIFFERENT PATTERNS AND COMBINATIONS ARE AVAILABLE

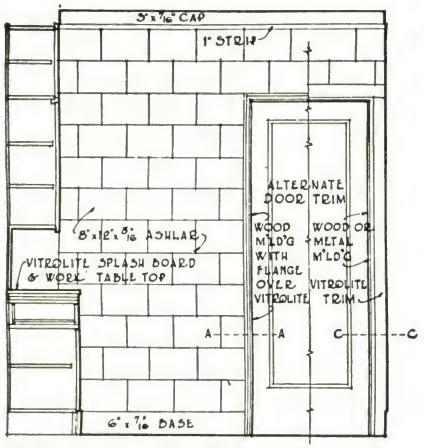


DRESSING TABLE RECESS
VITROLITE CEILINGS MAY BE USED WITH ANY WALL SCHEME SHOWN
SCALE- ½"=1'-0"



DECORATIVE PANEL IN TUB RECESS
AN ENDLESS VARIETY OF DECORATIVE EFFECTS IS POSSIBLE WITH VITROLITE COLORS & PROCESSES

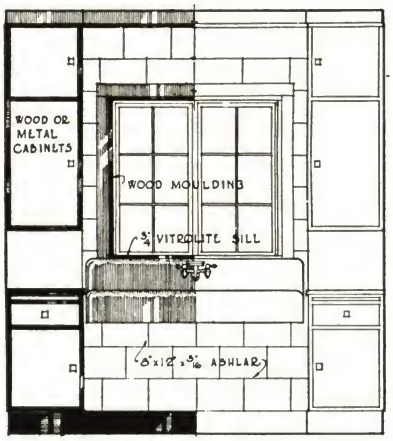
ELEVATIONS & DETAILS SHOWING USES OF VITROLITE IN BATHROOMS PLATE NO. 3



ELEVATION SHOWING DOOR TRIM

SCALE 1/4" = 1'-0"

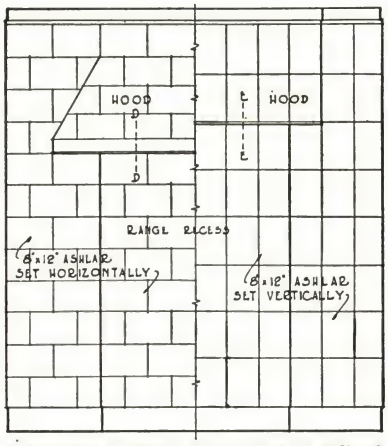
VITROLITE CAN BE CUT TO ANY SIZE, BUT CERTAIN SIZES, SUCH AS 8"x12", 8"x16", 8"x18" ASHLAR, 6" BASE, 1" STRIP AND 3" CAP ARE TURNED OUT IN QUANTITIES AT SPECIAL PRICES.



ELEVATION WITH SINK AND CABINETS

SCALE 1/4" = 1'-0"

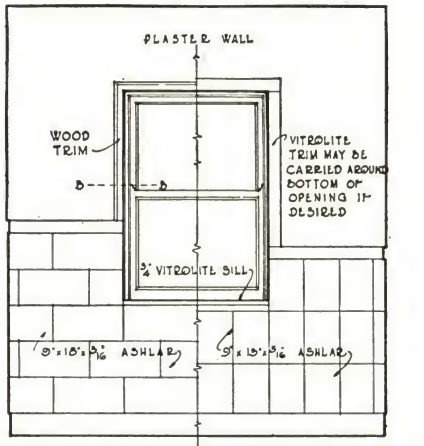
TO CONTROL COSTS CONSULT LOCAL VITROLITE REPRESENTATIVE AS TO SIZES CARRIED IN STOCK AND BEST METHODS OF CONSTRUCTION.



ELEVATION SHOWING RANGE RECESS & HOOD

SCALE 1/4" = 1'-0"

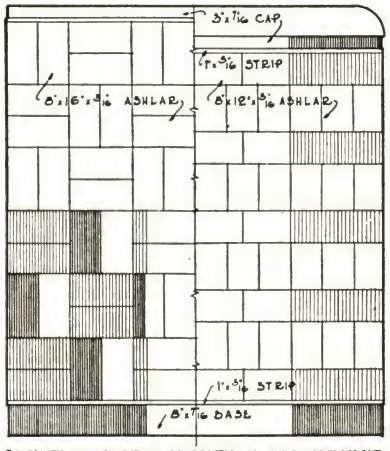
ASHLAR SET UP VERTICALLY COSTS A LITTLE MORE THAN HORIZONTALLY; RANGE RECESS CAN BE DEEP ENOUGH TO DISPENSE WITH HOOD OR HOOD CAN BE USED ALONE.



LOW WAINSCOTING SUGGESTIONS

SCALE 1/4" = 1'-0"

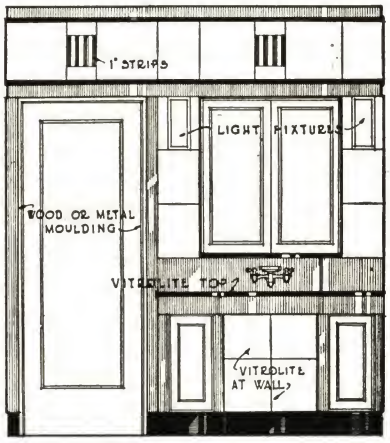
SHOWING ARRANGEMENTS USED IN MORE MODEST INSTALLATIONS. WALLS ABOVE WAINSCOT CAN BE PAINTED OR COVERED WITH WASHABLE WALL PAPER.



ELEVATION SHOWING VARIETY OF ARRANGEMENT

SCALE 1/4" = 1'-0"

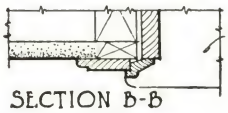
A WIDE VARIETY OF COLOR AND PATTERN EFFECTS IS POSSIBLE WITH VITROLITE EVEN WHEN ONLY STOCK SIZES ARE USED.



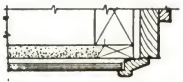
ELEVATION SHOWING DECORATIVE POSSIBILITIES

SCALE 1/4" = 1'-0"

WHILE SPECIAL SIZES COST A LITTLE MORE THEY OFFER THE ARCHITECT UNLIMITED POSSIBILITIES FOR DECORATIVE ARRANGEMENT.

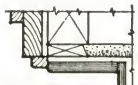


SECTION B-B



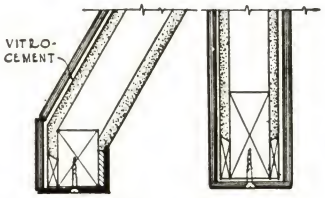
SECTION A-A

AN EFFECTIVE TRIM THAT MAKES POLISHED EDGE ON VITROLITE UNNECESSARY AT OPG'S & PROVIDES FINISH OVER WORK



SECT. C-C

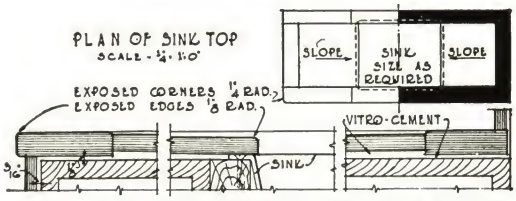
SIZE & SHAPE OF WOOD MOULDING MAY VARY TO SUIT REQUIREMENTS.



SECT. D-D SECT. E-E.

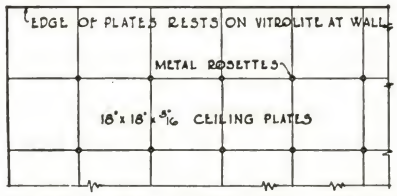
SCALE OF SECTIONS-1 1/2" = 1'-0"

A VARIETY OF ARRANGEMENTS IS POSSIBLE. INSIDE OF HOOD MAY BE FINISHED WITH PLASTER OR VITROLITE. BOTTOM MAY BE VITROLITE OR METAL.



SECTION THRU SINK TOP AND DRAIN BOARDS.

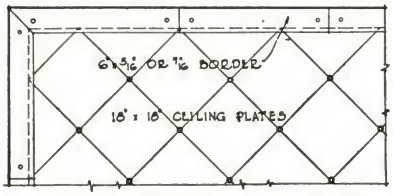
VITROLITE SINK TOPS IN ONE PIECE WITH HOLE CUT OUT ARE NOT PRACTICAL BUT THE ABOVE CONSTRUCTION IN SEVERAL PIECES IS WIDELY USED. THE SLIGHT SLOPE DRAINS EASILY. EFFECTIVE COLOR COMBINATIONS ARE POSSIBLE. SUPPORT SINK FLANGE INDEPENDENTLY OF TOP.



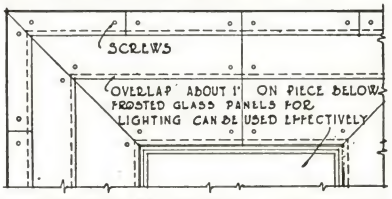
PLANS OF VITROLITE CEILINGS SUGGESTING A VARIETY OF ARRANGEMENTS

SCALE- 1/4" = 1'-0".

METAL ROSETTES ARE AVAILABLE IN A VARIETY OF COLORS & FINISHES. SPECIAL GLASS ROSETTES CAN BE USED EFFECTIVELY.



VITROLITE CEILINGS ARE IDEAL FOR MANY PURPOSES, BOTH FOR DECORATIVE EFFECT AND FOR PERFECT SANITATION AND EASE OF CLEANING



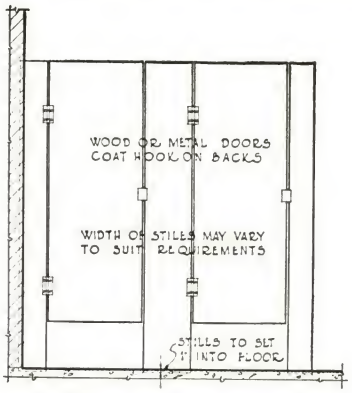
CEILING EFFECT WITH SERIES OF OVERLAPPING BORDERS WITH POLISHED EDGES. EXPOSED SCREWS MAY BE COUNTERSUNK WITH HOLES FILLED AND PAINTED OR WITH COLORED TACK HEADS. SEE PLATE NO. 7.

ELEVATIONS AND DETAILS OF VITROLITE FOR KITCHENS-CEILING PLANS PLATE NO. 4



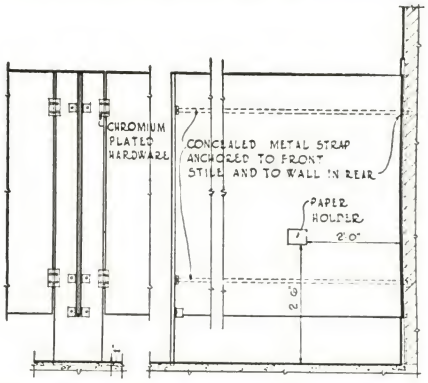
ELEVATION OF REAR WALL
SCALE ½"=1'-0"

VARIOUS SIZES OF ASHLAR, PATTERNS OF WALL ARRANGEMENT AND COLOR SCHEMES CAN BE WORKED OUT, BUT TO AVOID EXCESSIVE COST IT IS WELL TO CONSULT THE VITROLITE REPRESENTATIVE IN YOUR LOCALITY OR WRITE THE MAIN OFFICE OF THE VITROLITE COMPANY, CHICAGO.



FRONT ELEVATION
SCALE ½"=1'-0"

THIS IS THE STYLE OF PARTITION FAVORED BY THE MOST PROMINENT ARCHITECTS AND USED IN SUCH STRUCTURES AS THE EMPIRE STATE BUILDING, GRAYBAR BUILDING, WALL AND HANOVER BUILDING, IN NEW YORK CITY AND MANY OF THE FINEST BUILDINGS THROUGHOUT THE COUNTRY IT REPRESENTS THE ULTIMATE ACHIEVEMENT IN TOILET PARTITIONS.

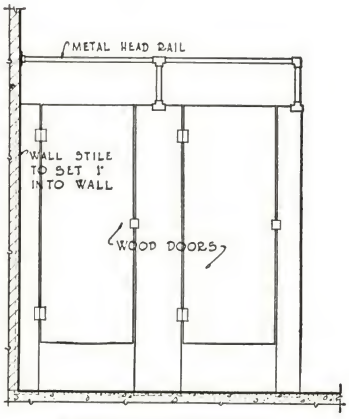


BACK OF CENTER STILE
SCALE ½"=1'-0"

STILE POLISHED ON SIDES, FRONT, AND BACK. USUAL THICKNESS-1 3/16".

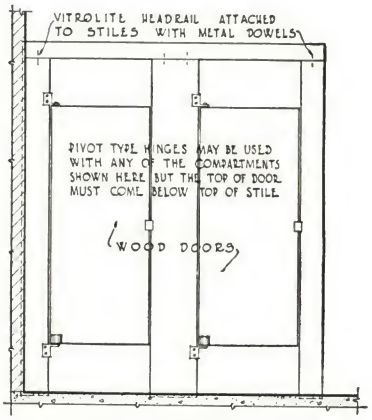
ELEVATION OF PARTITION
SCALE-½"=1'-0"

VITROLITE PARTITIONS CONSIST OF TWO 7/16" SLABS CEMENTED TOGETHER, BACK TO BACK WITH TWO METAL STRAPS CONNECTING STILE AND REAR WALL.



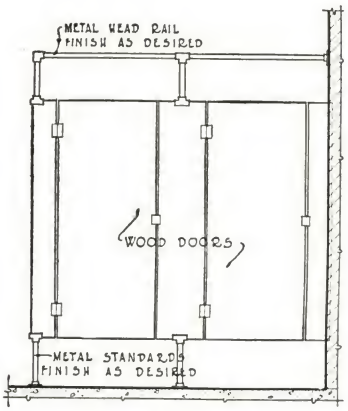
FRONT ELEVATION
SCALE ½"=1'-0"

METAL HEADRAIL TYPE SOMETIMES IS USED WHERE ARRANGEMENT OR CONDITIONS MAKE NECESSARY THE EXTRA STIFFNESS AND PROTECTION AFFORDED



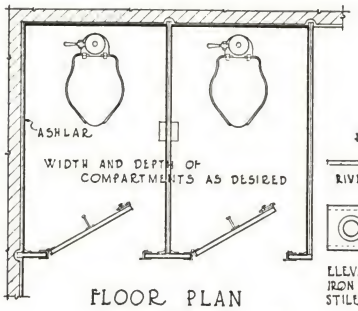
ELEVATION SHOWING HEADRAIL
SCALE ½"=1'-0"

USED ONLY WHERE SOME SPECIAL REQUIREMENT OF SERVICE OR DESIGN MAKES IT NECESSARY.

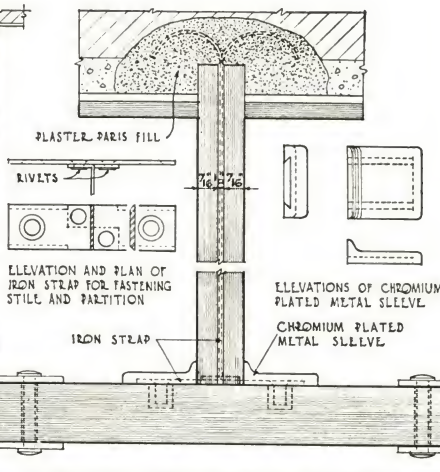


FRONT ELEVATION
SCALE ½"=1'-0"

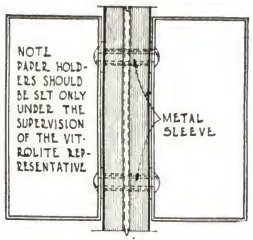
THIS TYPE OF CONSTRUCTION HAS BEEN DEVELOPED TO COMPLY WITH THE STANDARD SPECIFICATIONS OF THE SUPERVISING ARCHITECT OF THE TREASURY DEPARTMENT, U.S. GOVERNMENT, FOR USE IN POST OFFICES, FEDERAL BUILDINGS, ETC.



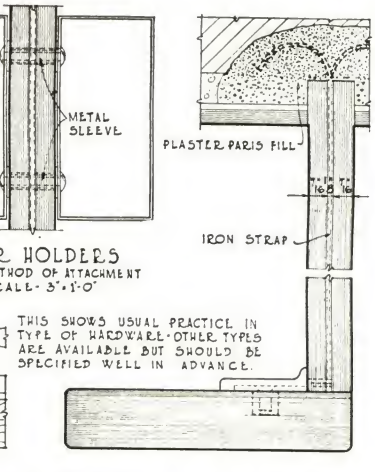
FLOOR PLAN
SCALE ½"=1'-0"



PLAN OF CENTER STILE AND PARTITION
SCALE 3"=1'-0"

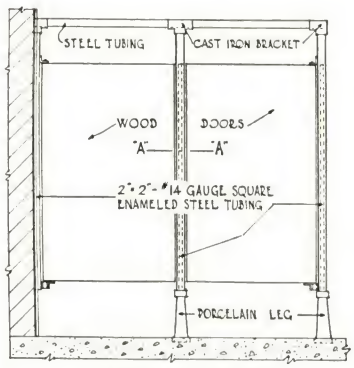


PAPER HOLDERS
SHOWING METHOD OF ATTACHMENT
SCALE-3"=1'-0"



PLAN OF END STILE AND PARTITION
SCALE-3"=1'-0"

DETAILS OF SOLID STILE TYPE OF VITROLITE TOILET COMPARTMENTS PLATE NO. 5

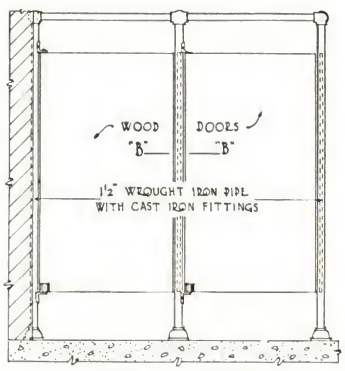


FRONT ELEVATION
SCALE 1/4" = 1'-0"

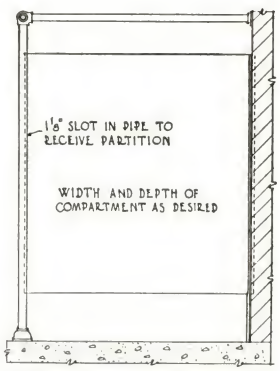


ELEVATION OF CENTER PARTITION
SCALE 1/4" = 1'-0"

THIS TYPE OF CONSTRUCTION DEVELOPED FOR SAN FRANCISCO SCHOOLS. MAY ALSO BE USED FOR COMMERCIAL BUILDINGS WHERE VITROLITE STILES ARE OMITTED. DOORS MAY ALSO BE OMITTED

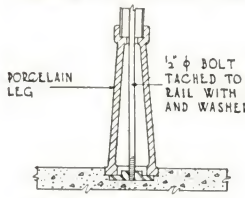


FRONT ELEVATION
SCALE 1/4" = 1'-0"

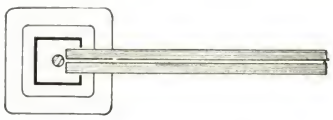


ELEVATION OF CENTER PARTITION
SCALE 1/4" = 1'-0"

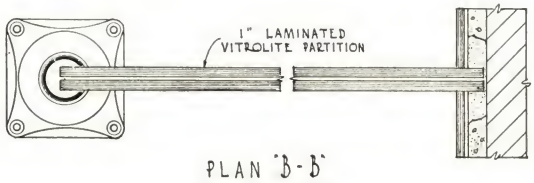
THIS CONSTRUCTION USING ROUND IRON PIPE HAS BEEN USED BY PROMINENT ARCHITECTS IN A NUMBER OF NEW ENGLAND ACADEMIES.



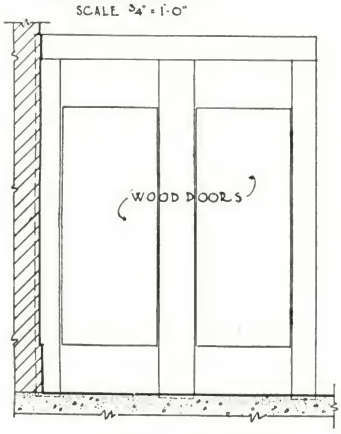
SECTION THRU LEG
SCALE 3/4" = 1'-0"



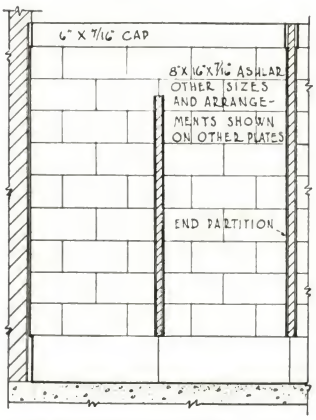
PLAN "A-A"
SCALE 1½" = 1'-0"



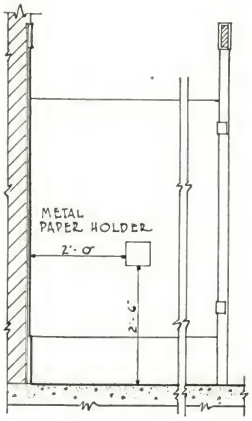
PLAN "B-B"
SCALE 1½" = 1'-0"



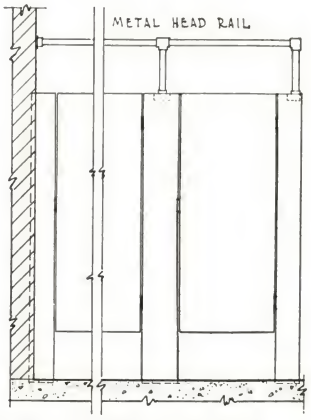
FRONT ELEVATION
SHOWING "BUILT-UP" TYPE WITH CORE TO WHICH SLABS OF VITROLITE ARE CEMENTED. VERY STRONG - PERMITS OF COLOR COMBINATIONS.



ELEVATION OF REAR WALL



ELEVATION OF CENTER PART'N

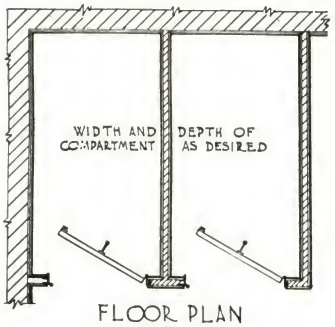


FRONT ELEVATION

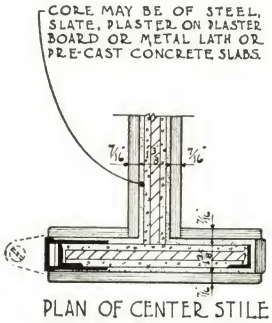
SCALE OF ELEVATIONS 1/4" = 1'-0"

THIS TYPE OF CONSTRUCTION WAS USED BEFORE SOLID STILE TYPE WAS DEVELOPED AND IS NOW USED MOSTLY WHERE SOLID STILES ARE NOT AVAILABLE.

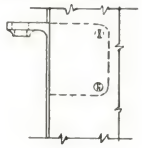
HEAD RAIL IS SOMETIMES USED ON SCHOOL CONSTRUCTION - METAL FOOT STANDARDS ARE SOMETIMES USED



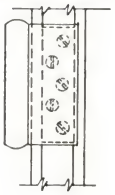
FLOOR PLAN
SCALE 1/4" = 1'-0"



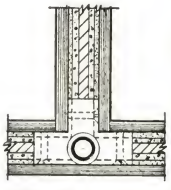
PLAN OF CENTER STILE
SHOWING PIVOT HINGE.



ELEV. OF PIVOT HINGE
THIS HINGE IS USED WHEREVER MINIMUM OF EXPOSED HARDWARE IS DESIRED.

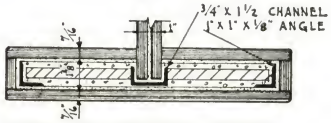


END ELEV. OF STILE
SHOWING EXPOSED TYPE OF HINGE

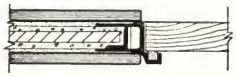


PLAN-TOP STANDARD

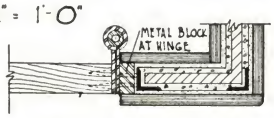
SCALE OF DETAILS 1½" = 1'-0"



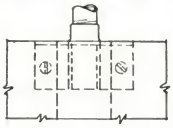
PLAN OF CENTER STILE
SHOWING DOUBLE-SLAB CEMENTED PARTITION WITHOUT CORE.



PLAN THRU JAMB
SHOWING DOOR STOP.

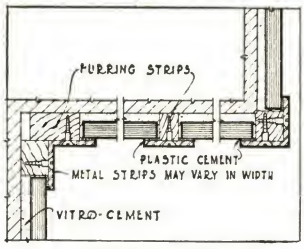


PLAN OF END STILE
SHOWING EXPOSED TYPE OF HINGE.



ELEV.-TOP STANDARD

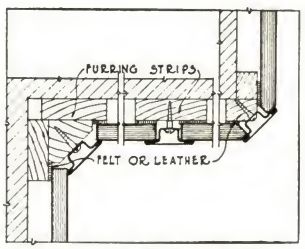
MISCELLANEOUS TYPES OF TOILET COMPARTMENT CONSTRUCTION PLATE NO. 6



METAL STRIPS

SCALE - 3" - 1'-0"

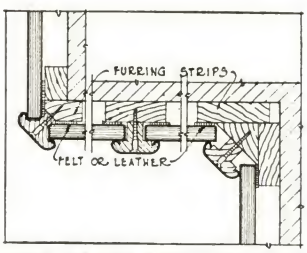
SIZE AND SHAPE OF METAL STRIPS AS REQUIRED METAL COMBINES BEAUTIFULLY WITH VITROLITE IN DECORATIVE EFFECT.



SNAP-ON METAL MOULDING

SCALE - 3" - 1'-0"

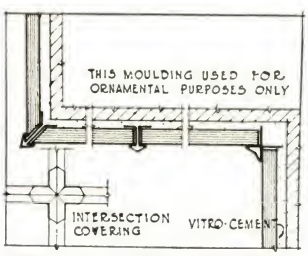
SPECIALLY DEVELOPED FOR USE WITH VITROLITE. HAS SPRING EFFECT AND LOOKS NEAT BECAUSE NO SCREW HEADS ARE EXPOSED.



METAL COVERED WOOD MOULDING

SCALE - 3" - 1'-0"

SEE CATALOGUES FOR VARIOUS SHAPES AND SIZES. METAL CAN BE FINISHED AS REQUIRED.



ART GLASS METAL MOULDING

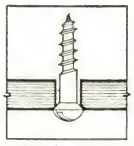
SCALE - 3" - 1'-0"

CONSIDERABLE VARIETY OF SHAPES AVAILABLE. MAKES AN EFFECTIVE AND INEXPENSIVE DECORATION.



ROUND HEAD WOOD SCREW

HEAD WITH DOUBLE GROOVE MAKES BEST APPEARANCE. AVOID DRAWING SCREWS UP TOO TIGHT.



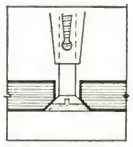
OVAL HEAD WOOD SCREW

CLEARANCE ALWAYS MUST BE LEFT BETWEEN VITROLITE & SURFACE TO WHICH IT IS SCREWED



FLAT HEAD WOOD SCREW

CAN BE COUNTERSUNK DEEP ENOUGH TO BE PUTTIED UP & COLORED SAME AS VITROLITE



FLAT HEAD EXPANSION ANCHOR

SCALE

LOCATION MUST BE DETERMINED PROPERLY TO AVOID STRAIN.



EXPANSION ANCHOR IN ¾" VITROLITE

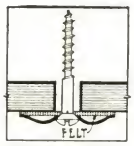
OF DETAILS - 6" - 1'-0"

CONCEALED ATTACHMENT. USE ONLY AFTER CONSULTING VITROLITE AGENT.



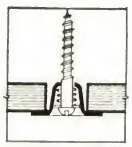
FLAT HEAD SCREW WITH TACK HEAD

MAKES NEAT EFFECT. ENAMELLED HEAD WITH STUD FITTING INTO HOLE IN SCREW HEAD



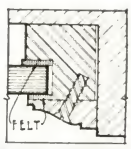
SCREW & METAL ROSETTE

METHOD USUALLY USED FOR FASTENING CEILINGS. GLASS & SPECIAL ROSETTES ALSO USED.



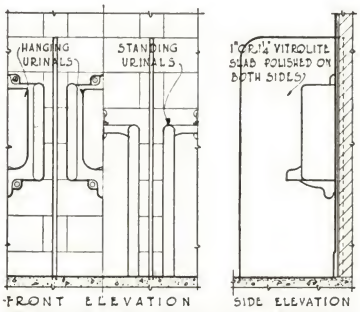
SPRING SCREW

SPECIALLY MADE TO FASTEN VITROLITE & MINIMIZE BREAKAGE.



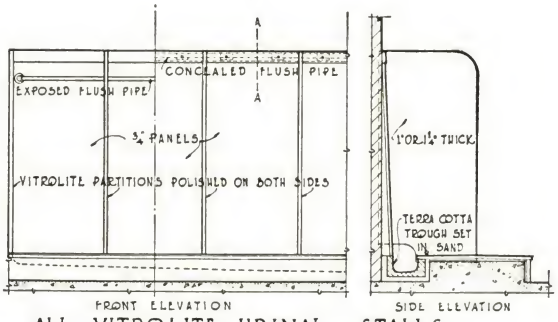
METAL MOULDING

FOR SIGNS, SPANDRELS, ETC. AVOID SCREWING MOULDING TIGHT AGAINST VITROLITE.



URINALS WITH VITROLITE WAINSCOT AND PARTITION SLABS.

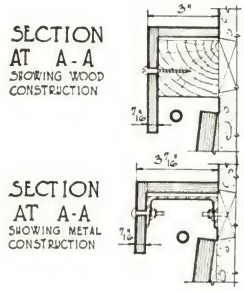
SCALE - ¼" - 1'-0"



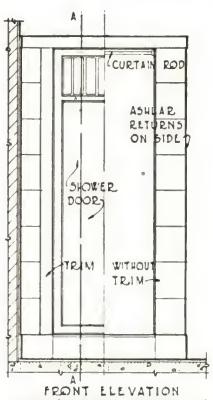
ALL-VITROLITE URINAL STALLS

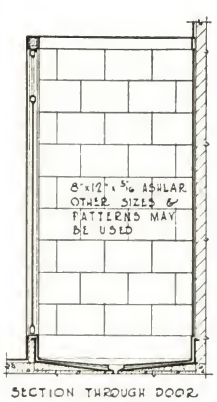
SCALE - ¼" - 1'-0"

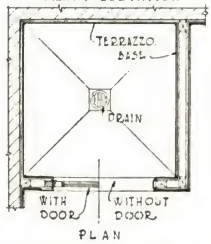
USED IN STADIUMS, FACTORIES, INSTITUTIONS, ETC.

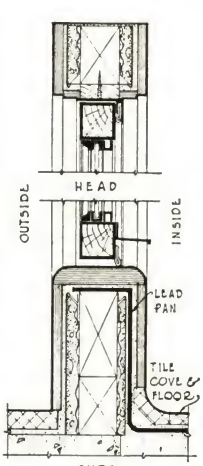


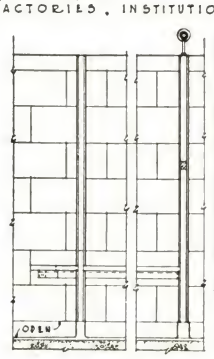
SCALE OF DETAILS - 1½" - 1'-0"

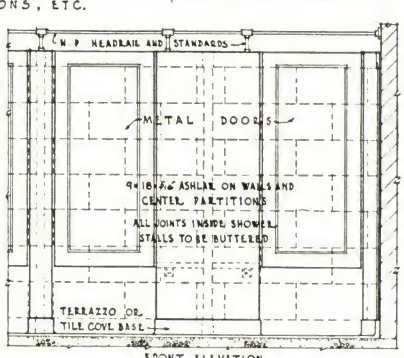


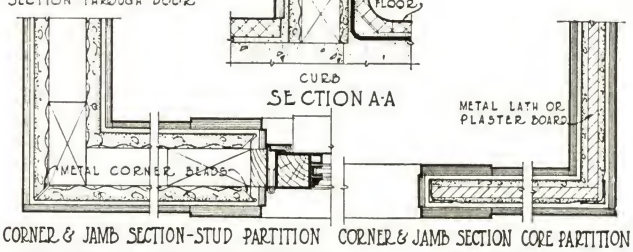


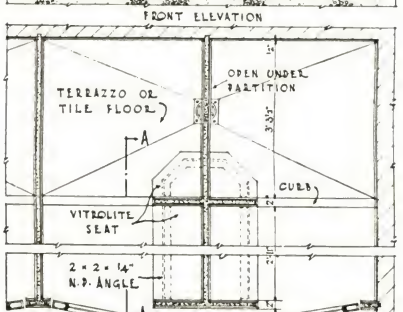












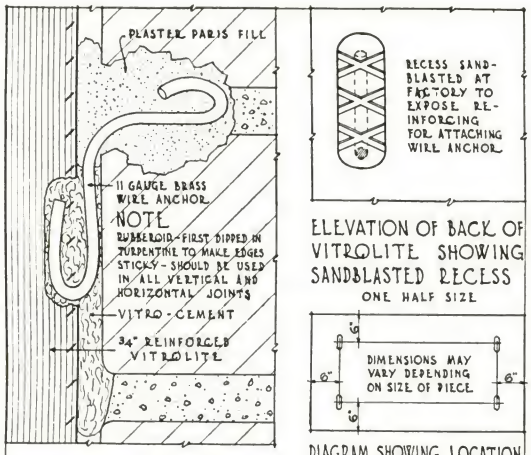
SHOWER STALLS OF ASHLAR ON STUD PARTITIONS

SCALE OF PLANS & ELEVATIONS - ¼" - 1'-0"

SHOWER STALLS OF RE-ENFORCED CONCRETE CORE CONSTRUCTION

SCALE OF DETAILS - 1½" = 1'-0"

METHODS OF FASTENING VITROLITE WITH SCREWS & METAL MOULDINGS URINAL & SHOWER STALL DETAILS · PLATE NO. 7

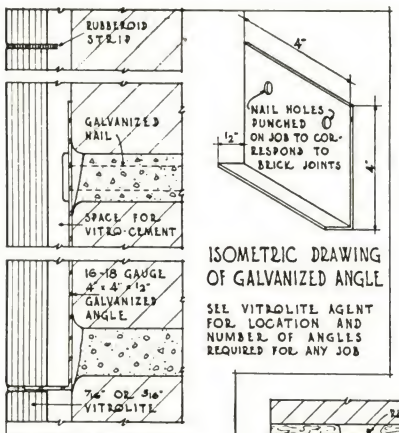


SECTION SHOWING ANCHOR
ONE HALF SIZE

ELEVATION OF BACK OF VITROLITE SHOWING SANDBLASTED RECESS
ONE HALF SIZE

DIAGRAM SHOWING LOCATION OF SANDBLASTED RECESSES

DETAILS SHOWING METHOD OF ATTACHING REINFORCED VITROLITE TO BUILDING FACE

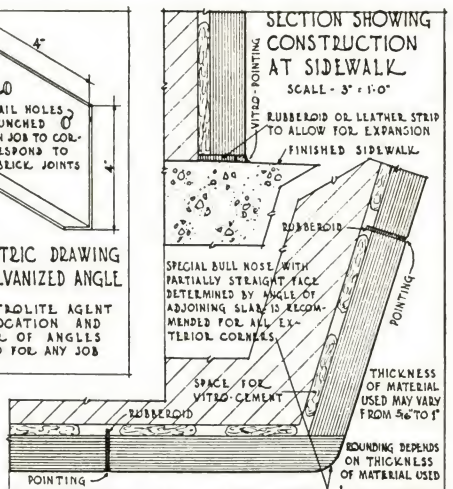


SECT. SHOWING ANGLE
ONE HALF SIZE

ISOMETRIC DRAWING OF GALVANIZED ANGLE

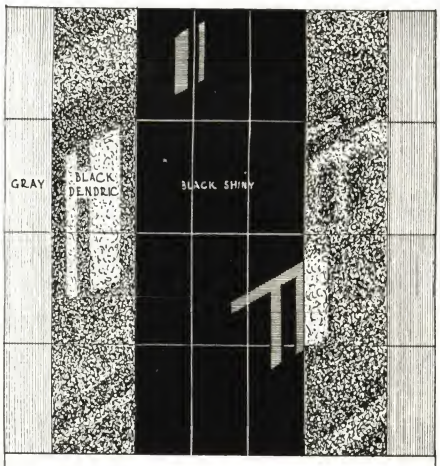
SEE VITROLITE AGENT FOR LOCATION AND NUMBER OF ANGLES REQUIRED FOR ANY JOB

METHOD OF ATTACHING VITROLITE TO BLDG. FACE WITH GALVANIZED ANGLES



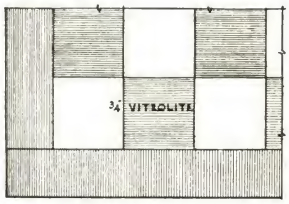
PLAN SHOWING SMALL CORNER PIECES & BULL NOSE
SCALE - 3" = 1'-0"

DETAIL SHOWING BULKHEAD CONSTRUCTION

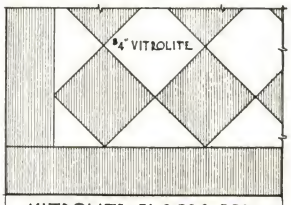


VITROLITE SHOW WINDOW BACKING
SCALE ½" = 1'-0"

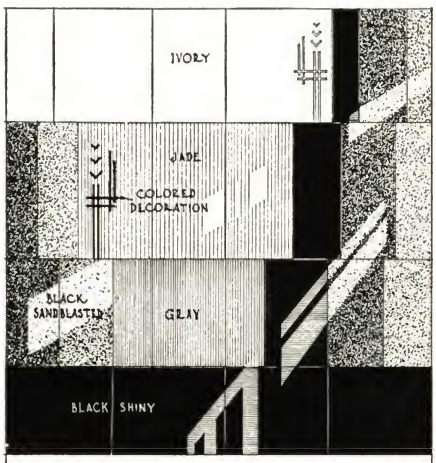
MANY SIMPLE AND EFFECTIVE WINDOW BACKINGS ARE POSSIBLE BY COMBINING THE VARIOUS COLORS AND TEXTURES OF VITROLITE.



ARRANGEMENTS FOR SIMPLE FLOORS. ELABORATE DESIGNS MAY BE EXECUTED IN A VARIETY OF COLORS.

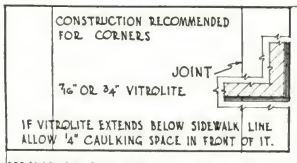


VITROLITE FLOORS FOR SHOW WINDOWS
SCALE ½" = 1'-0"

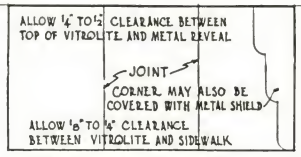


VITROLITE SHOW WINDOW BACKING
SCALE ½" = 1'-0"

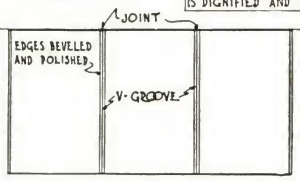
A MODERN TREATMENT FOR WINDOW BACKING OF VITROLITE WHICH IS DIGNIFIED AND SPARKLING.



ARRANGEMENT FOR SIMPLE BULKHEAD - CORNER PIECES SHOULD BE FROM 4" TO 6" WIDE AND CORNERS ROUNDED OR BEVELLED



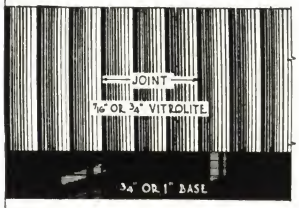
AVOID LARGE SLABS WHICH ARE IMPRACTICAL BECAUSE OF EXPANSION OF ADJOINING MATERIALS.



BEAUTIFUL EFFECT THAT IS SPARKLING AND ATTRACTIVE BECAUSE OF REFLECTION ON BEVELLED EDGES.



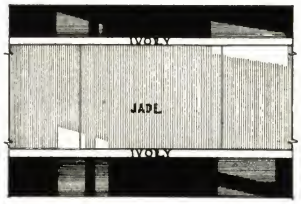
LETTERING MAY BE SANDBLASTED ONLY,— SANDBLASTED AND COLORED OR METAL. IF METAL LETTERS ARE USED VITROLITE MUST BE DRILLED AND LETTERS FASTENED WITH SCREWS



A REALISTIC EFFECT OF FLUTING IS SECURED BY SHADED SANDBLASTING. WIDTH OF FLUTES AS REQUIRED



EFFECTS OF FLUTING AND V-GROOVES PRODUCED BY SANDBLASTING. GREAT VARIETY OF EFFECTS IS POSSIBLE.



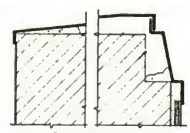
COLORFUL ARRANGEMENTS MAY BE MADE BY COMBINING THE VARIOUS COLORS AND TEXTURE OF VITROLITE.



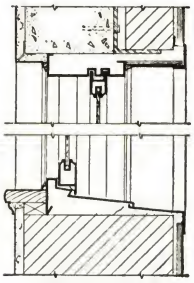
A RICH EFFECT IS SECURED BY USING VITROLITE DENDRIC SURFACE AS ACCENTS TO POLISHED BLACK.

ELEVATIONS OF VITROLITE BULKHEADS SHOWING VARIETY OF DESIGNS AND CONSTRUCTION
SCALE ½" = 1'-0"

ELEVATIONS AND DETAILS OF EXTERIOR CONSTRUCTION - SHOW WINDOW BACKING AND BULKHEADS PLATE NO. 8



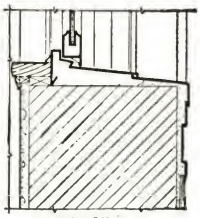
SECTION A-A
ALLOW AT LEAST ¼" CLEARANCE OVER TOP OF VITROLITE



SECTION B-B
DETACHABLE MOULDINGS MAY ALSO BE USED



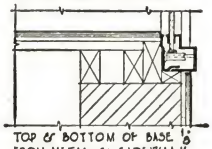
SECTION C-C
ALLOW ⅛ JOINT POINTED WITH PLASTIC CEMENT BETWEEN VITROLITE AND METAL



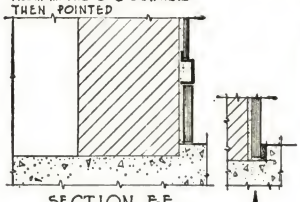
SECTION D D
ALLOW AT LEAST ¼ CLEARANCE OVER TOP OF VITROLITE



SECTION E-E
SET STRIP OF RUBEROID ROOFING UNDER VITROLITE AND ¼ BACK FROM FACE TO ALLOW FOR POINTING

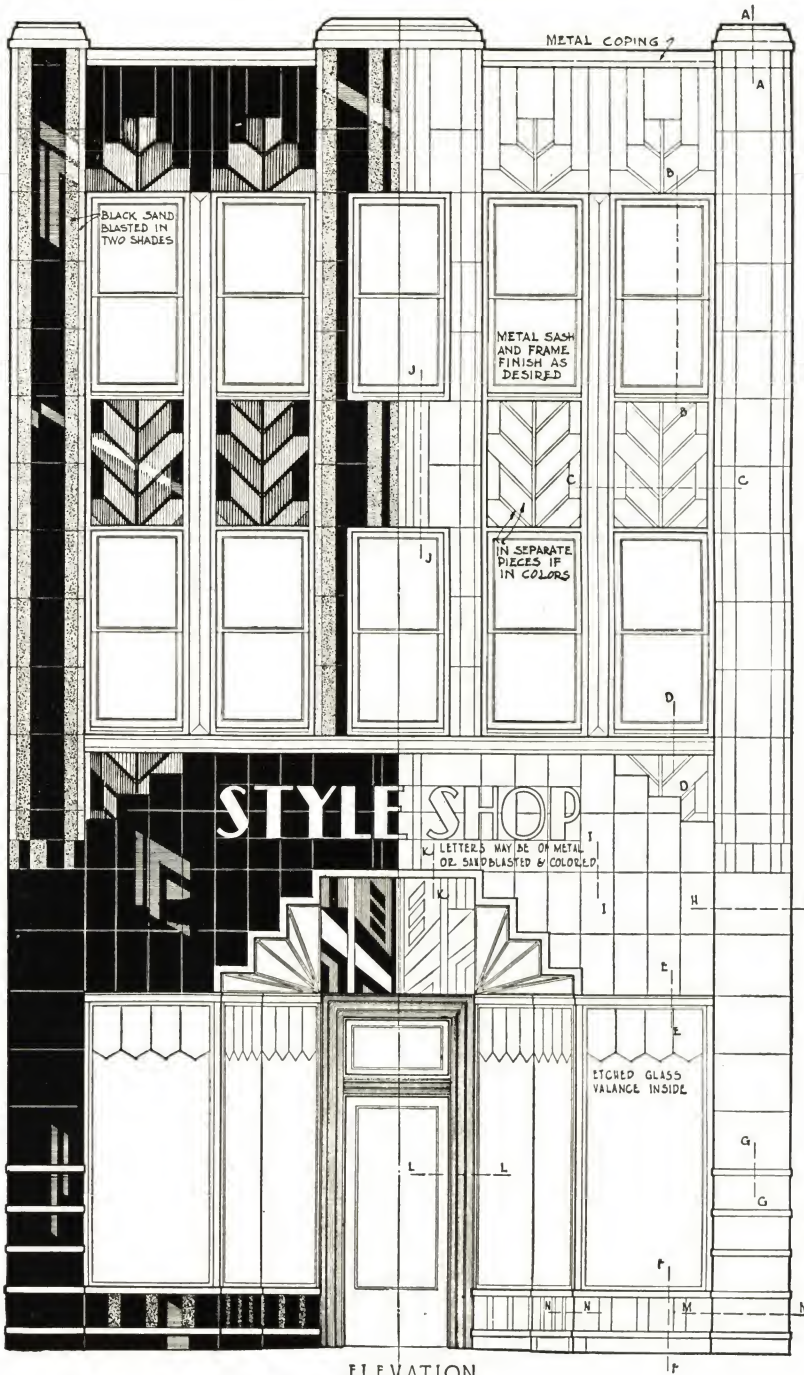


TOP & BOTTOM OF BASE ⅛ FROM METAL & SIDEWALK THEN POINTED

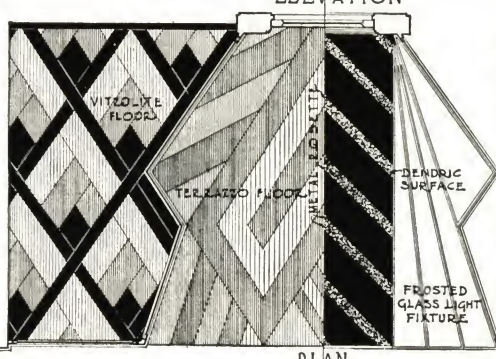


SECTION F-F
IF BOTTOM IS BELOW SIDE WALK LEVEL SET ON A STRIP OF RUBEROID AND ALLOW ½ TO ½" CAULKING SPACE IN FRONT OF VITROLITE.

SCALE OF ELEVATION ⅜" = 1'-0"
SCALE OF DETAILS ¾" = 1'-0"



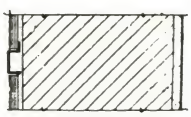
ELEVATION



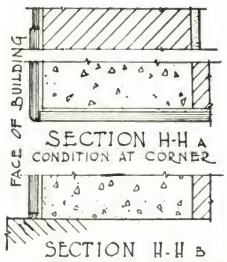
PLAN

CLEARANCE ALWAYS MUST BE LEFT WHERE VITROLITE IS HELD BETWEEN OTHER MATERIALS TO ALLOW FOR EXPANSION OF OTHER MATERIALS OVERLAPPING FRAMES OR OTHER METAL SHOULD NOT TOUCH VITROLITE BUT A THIN LAYER OF POINTING CEMENT SET BETWEEN THEM. ⅜ & ½ VITROLITE USED AND SET WITH VITRO-CEMENT. DONT SCREW VITROLITE TO STORE FRONTS. HORIZONTAL JOINTS WHERE ANGLE IS NOT USED SHOULD HAVE A THIN NARROW STRIP OF RUBEROID SET BACK ⅛ TO ¼ FROM FACE & POINTED UP. AVOID LARGE SLABS.

REINFORCED VITROLITE AS SHOWN ON PLATE No 8 MAY BE USED INSTEAD OF CONSTRUCTION SHOWN HERE

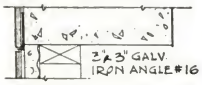


SECTION G-G
⅛ POINTED JOINT BETWEEN VITROLITE AND METAL

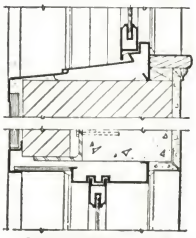


SECTION H-H A
CONDITION AT CORNER

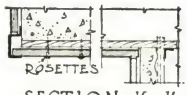
SECTION H-H B
CONDITION AT ADJ. BUILDING
ALLOW ¼ TO ½" POINTED JOINT BETWEEN VITROLITE AND ADJOINING WALL.



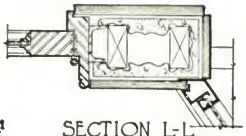
SECTION I-I
USE ANGLE EVERY SECOND HORIZONTAL JOINT KEEP BACK ¾" FROM FACE TO ALLOW FOR POINTING.



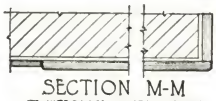
SECTION J-J



SECTION K-K
4"x1⅛ WOOD STRIP TO RECEIVE SCREWS. OUTER EDGE RESTS ON METAL FRAME OF LIGHT FIXTURE.



SECTION L-L
½" CLEARANCE BETWEEN VITROLITE & METAL OF SHOW WINDOWS.



SECTION M-M
IF VITROLITE BUTTS AGAINST ADJOINING WALL, LEAVE ¼ TO ½ POINTED JOINT



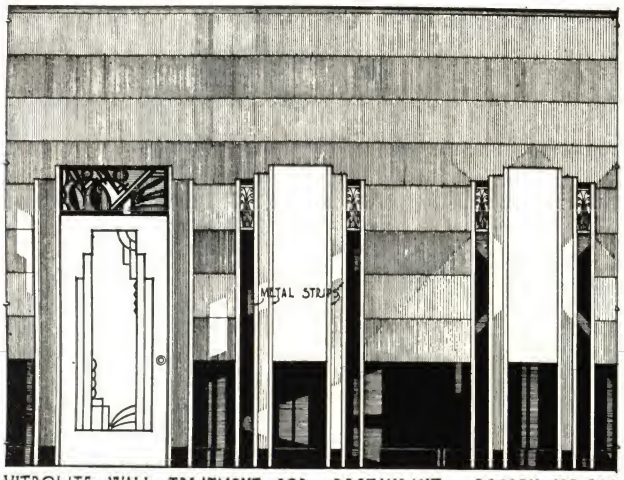
SECTION N-N
EXPOSED CORNERS ON BULKHEADS TO BE ROUNDED SEE OTHER DETAILS FOR MITERING IF DESIRED

STOCK METAL MOULDINGS MAY BE USED INSTEAD OF ANY SPECIAL MEMBERS SHOWN.

STORE FRONT AND EXTERIOR VITROLITE CONSTRUCTION.

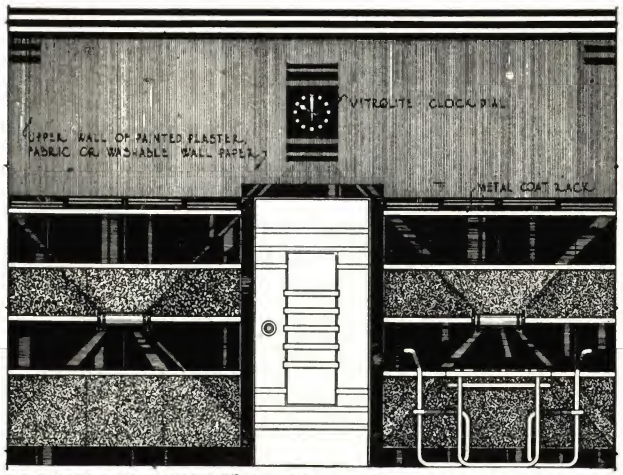
SHOWING ONE OF MANY POSSIBLE TYPES OF CONSTRUCTION, BUT SAME PRECAUTIONS MUST BE OBSERVED

PLATE NO. 9



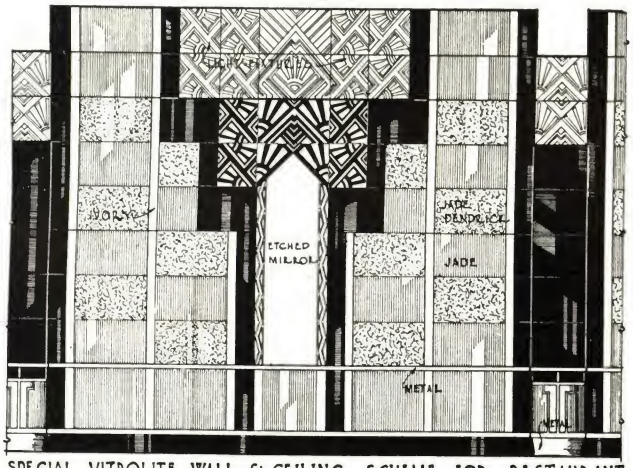
VITROLITE WALL TREATMENT FOR RESTAURANT. DESIGN NO.300
SCALE 3/16"-1'-0"

SET WITH VITRO-CEMENT OR CAN BE ATTACHED WITH METAL STRIPS & SCREWS TO WOOD FRAMEWORK IN BACK THUS BECOMING A MOVABLE FIXTURE.



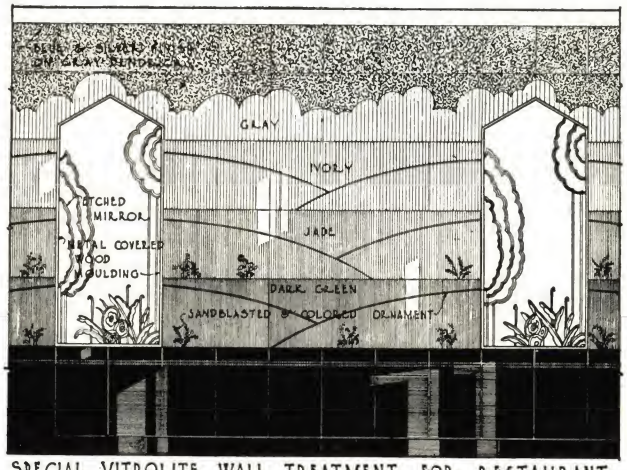
VITROLITE WAINSCOTING FOR RESTAURANT. DESIGN NO.400
SCALE 3/16"-1'-0"

FOR CEMENTED OR SCREWED ON TREATMENT. SEE BOOKLET 'VITROLITE IN THE RESTAURANT' FOR ADDITIONAL WALL AND WAINSCOT TREATMENT



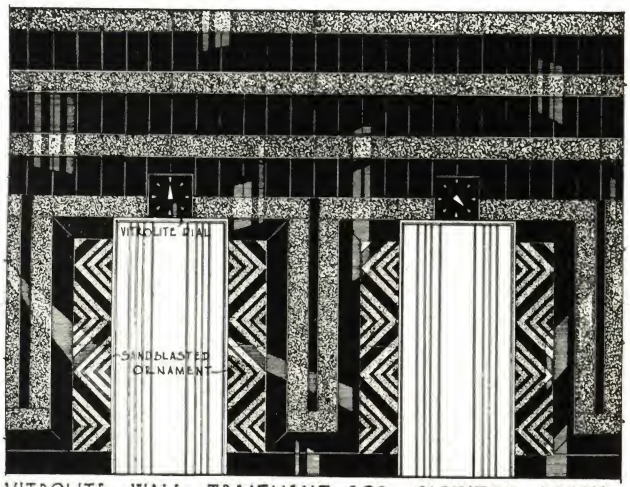
SPECIAL VITROLITE WALL & CEILING SCHEME FOR RESTAURANT
SCALE 3/16"-1'-0"

THE POSSIBILITIES FOR INTERESTING EFFECTS IN VITROLITE ARE UNLIMITED. RECENT INSTALLATIONS HAVE BEEN SENSATIONAL SUCCESSES IN ATTRACTING PUBLIC PATRONAGE.



SPECIAL VITROLITE WALL TREATMENT FOR RESTAURANT
SCALE 3/16"-1'-0"

EFFECT OF DISTANCE GIVEN BY HORIZONTAL BANDS OF DIFFERENT COLORS INCREASES APPARENT SIZE OF ROOM.



VITROLITE WALL TREATMENT FOR ELEVATOR LOBBY.
SCALE 3/16"-1'-0"

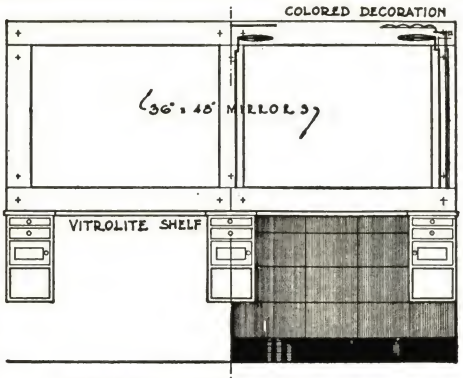
DISTINCTIVE DESIGNS ARE READILY OBTAINED WITH DIGNIFIED BLACK IN ITS VARIOUS TEXTURES OCCASIONALLY RELIEVED BY COLORFUL ORNAMENT.



VITROLITE WALL TREATMENT FOR ELEVATOR LOBBY
SCALE 3/16"-1'-0"

A SPARKLING AND DRAMATIC EFFECT MAY BE SECURED BY COMBINING SHINY BLACK WITH DENDRIC FINISH AND METAL MOULDINGS WITH COLORED PANELS.

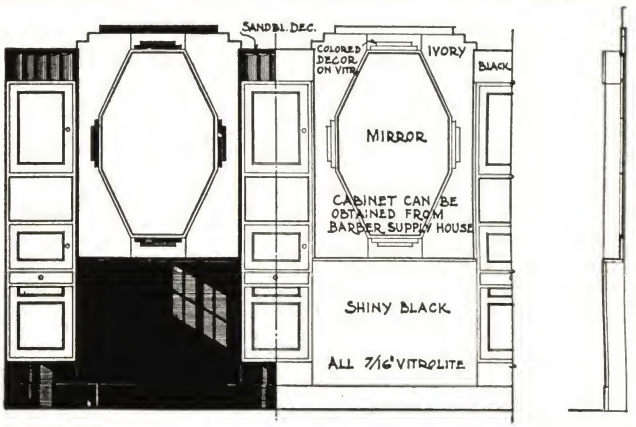
VITROLITE INSTALLATIONS IN RESTAURANTS AND LOBBIES PLATE NO. 10



MIRROR CASE WITH SHELF

SCALE - ¼" - 1'-0"

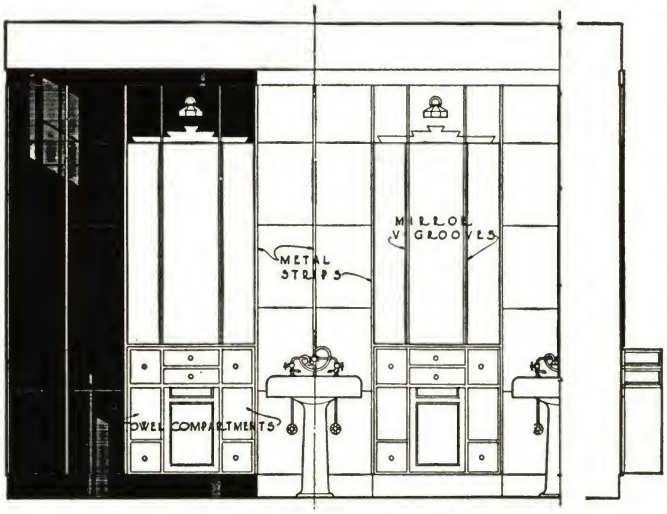
SIMPLE & ELABORATE MIRROR CASES OF VITROLITE ARE CARRIED IN STOCK BY LEADING BARBER SUPPLY Co's.



THE BOUL MICH NO 1007 SECTION

SCALE - ½" - 1'-0"

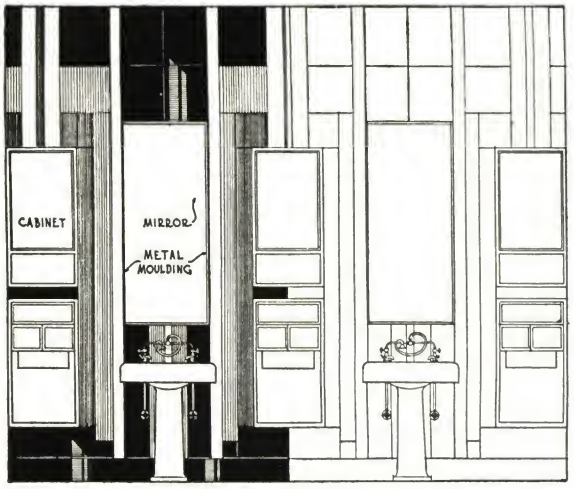
MANY ATTRACTIVE & NOVEL DESIGNS SUITABLE FOR A GREAT VARIETY OF CONDITIONS ARE AVAILABLE. ASK FOR CATALOGUE ON BARBER CASES.



TYPICAL BARBER SHOP SECTION

SCALE ¼" - 1'-0"

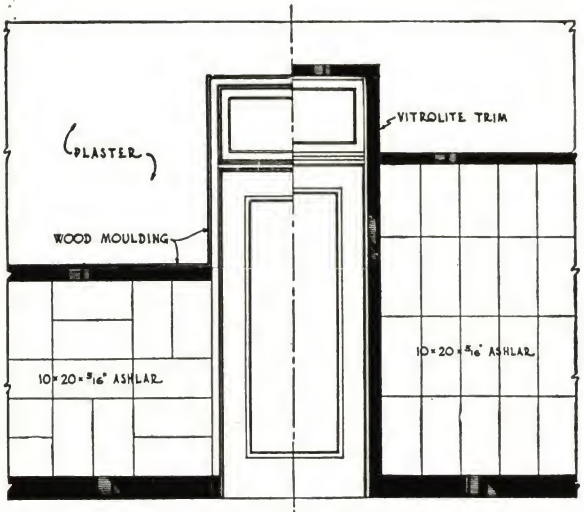
THE ART DEPARTMENT OF THE VITROLITE COMPANY WILL FURNISH SPECIAL DESIGNS INCORPORATING THE LATEST TRENDS IN DECORATIVE STYLES.



MODERN BARBER SHOP INSTALLATION

SCALE ¼" - 1'-0"

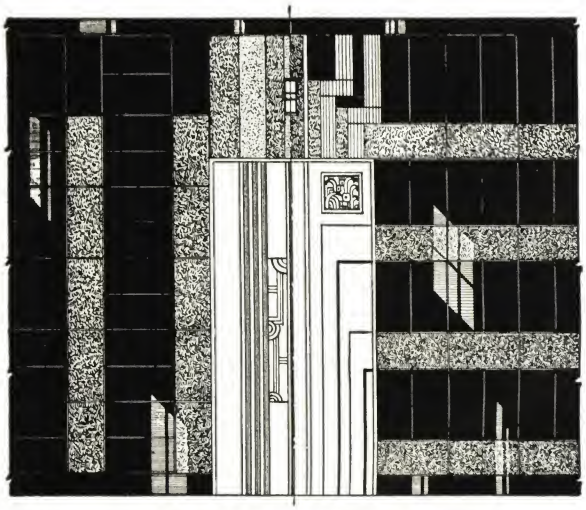
VITROLITE IS UNUSUALLY ADAPTABLE FOR DESIGNS OF MODERN CHARACTER AND MAY BE OBTAINED IN A GREAT VARIETY OF DESIGNS AND COLOR COMBINATIONS.



VITROLITE WAINSCOT IN CORRIDOR

SCALE ¼" - 1'-0"

SIMPLE AND INEXPENSIVE CORRIDOR TREATMENTS OF ANY DESIRED HEIGHT MAY BE OBTAINED BY THE USE OF VITROLITE ASHLAR IN VARIOUS STOCK SIZES - SEE AGENT FOR INFORMATION.

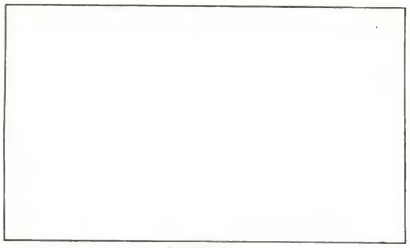


VITROLITE WAINSCOT IN CORRIDOR

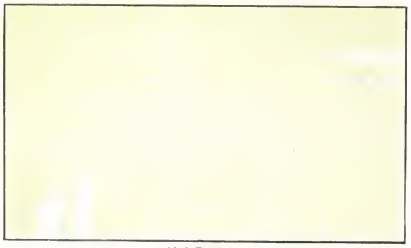
SCALE ¼" - 1'-0"

A RICH AND STRIKING EFFECT MAY BE OBTAINED BY COMBINING VARIOUS TEXTURES OF BLACK VITROLITE AS ILLUSTRATED BY THE DESIGNS ABOVE.

ELEVATIONS OF MIRROR CASES - BARBER SHOP INSTALLATIONS AND CORRIDOR WAINSCOTS PLATE NO. 11



WHITE



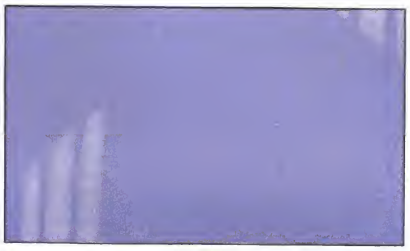
IVORY



JADE



GRAY



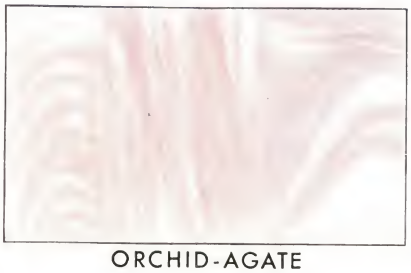
BLUE



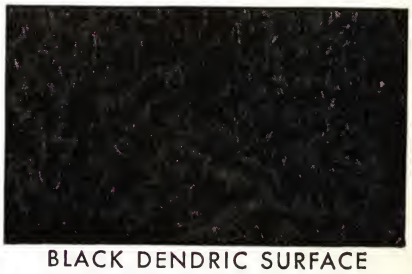
ORCHID



BLACK



ORCHID-AGATE



BLACK DENDRIC SURFACE



EMERALD-AGATE



WALNUT-AGATE



EBONY-AGATE



BLACK TWO-TONE SANDBLAST



BLACK COLORED DECORATION

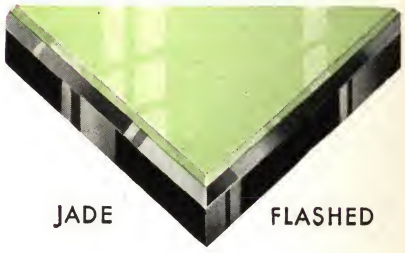


BLACK SHADED SANDBLAST

COLORS AND DECORATIVE PROCESSES

THIS CHART illustrates standard Vitrolite colors and the principal decorative processes. The agate colors will show a considerable variety in the veinings. Samples will be furnished upon request.

THE VITROLITE COMPANY
120 South La Salle Street CHICAGO, ILLINOIS



JADE FLASHED

VITROLITE

CONSTRUCTION DETAILS

A FUSED ROCK SLAB MATERIAL FOR WALLS • CEILINGS AND TOILET PARTITIONS • FOR INTERIOR AND EXTERIOR CONSTRUCTION AND DECORATION.

THE VITROLITE COMPANY
120 S. LA SALLE ST., ROOM 1100, CHICAGO, ILL.
FACTORY—PARKERSBURG, WEST VIRGINIA

CARRARA STRUCTURAL GLASS

MANUFACTURED BY
PITTSBURGH PLATE GLASS COMPANY

Grant Building, PITTSBURGH, PA.

For Warehouses and Branch Houses, see our pages on Vista Plate Glass
For our Other Products, see Manufacturers' Index

CARRARA STRUCTURAL GLASS—MADE IN FLAT SLABS

FOR TOILET ENCLOSURES, SHOWER ENCLOSURES, WAINSCOTS, STORE FRONTS, BULKHEADS, COUNTERS, TABLE TOPS, DEAL PLATES and WINDOW SILLS

CARRARA
MODERN
Structural Glass

Carrara does not deteriorate. It is not easy to break, nor does it check or craze. In fact, we have developed a formula which gives Carrara just the characteristics it should have. For example, when subjected to temperature changes, it expands and contracts less than other materials with which it might be compared.

These slabs come in a full range of practical sizes up to 10 ft. long, but should not exceed a total area of 45 sq. ft.

Sanitation

Carrara is of extremely dense homogeneous structure. This is one of its most valuable qualities. Moisture or liquids cannot penetrate it. It cannot absorb odors. Salt water, acids or strong chemicals do not affect it. It is impervious to pencil marks. It is not easy to deface in other ways.

Its hard, highly polished surface may be kept spotlessly clean with little effort. It saves cleaning work and cleaning expense. No abrasive preparations, powders or chemicals are ever needed for Carrara. This explains its wide and highly satisfactory use in toilet rooms, where no other material of like nature has ever surpassed Carrara in service.

Surface Accurately Ground and Polished

Its rich, lustrous surface is obtained by grinding and polishing processes similar to those used in making fine plate glass. This means that the surface is always free from imperfections, warps or twists and that lights and reflections are always true and undistorted.

Polished Carrara is obtainable in both white and black, with either one or both sides polished, and in six thicknesses: ¼, ⅜, ½, ¾, 1 and 1¼ ins.

Frostex

This is a form of White Carrara whose surface, instead of having a mirror finish, is slightly rippled, producing a soft sheen or luster. But it is free from the distorted reflections seen in ordinary fire-finished materials. With walls of Frostex, a room takes on a soft, gentle glow, without glare. Frostex is often contrasted with cap, base, stiles and other trim of Black Carrara, or a very harmonious effect is obtained when these members are of White Carrara, whose polished surface accentuates the rippled texture of Frostex. Frostex is made in white only. Three thicknesses: ⅜, ½ and $\frac{13}{16}$ in.

Laminated Frostex—The regular grades of Frostex are finished on one side only. For sheets thicker than $\frac{13}{16}$ in., or sheets finished on both sides—toilet partitions, for instance—Laminated Frostex is generally used. This consists of two sheets of regular thickness Frostex joined securely together, forming a slab remarkable for strength, elasticity and conservative cost. The laminating process is done at the factory, with special equipment that produces permanent, uniform, durable results. Six thicknesses: from ¾ to 1⅝ ins.

Helpful Data on Installation

Carrara is easy to install. It is handled similarly to marble. To insure installations being made according to our standards, we maintain our crews of experienced marble setters.

Carrara may be installed over any wall surface, but an allowance should be made of 1 to 1¼ ins. from the face of the glass to the wall to provide space for setting.

In the case of ashlar wall treatment, where small pieces are used, we recommend setting with our plastic cement, which bonds permanently with the glass and the wall—yet allows for settling, shrinkage and expansion.

We provide all hardware necessary for the erection of our material and will have the slabs drilled for any hardware or fixtures which we do not supply, such as hinges, strikes, etc., provided we are furnished their location and dimensions, so that the drilling may be done at the factory.



Ideal for Toilet and Shower Rooms

Lasting attractiveness and durability of toilet and shower rooms in modern buildings are insured by installations of Carrara.

Carrara is of extremely dense homogeneous structure. This is one of its most valuable qualities. Moisture or liquids cannot penetrate it and it cannot absorb odors. Salt water, acids or strong chemicals do not affect it. It is impervious to pencil marks. It is not easy to deface in other ways.

Its hard, highly polished surface may be kept spotlessly clean with little effort. It saves cleaning work and cleaning expense.





Refined Exterior Settings

Black Carrara Glass, with its true ground and polished surface, gives to the merchandise a setting that has obvious refinement and richness.

Furthermore, the setting is permanent, because the many agencies which so often discolor or harm other materials have no effect upon the surface or polish of Carrara.

Adaptable to Varied Uses

Carrara can be fabricated to meet any reasonable demands. The large circles illustrated were made from single slabs with the centers cut out and notched to fit the metal bars





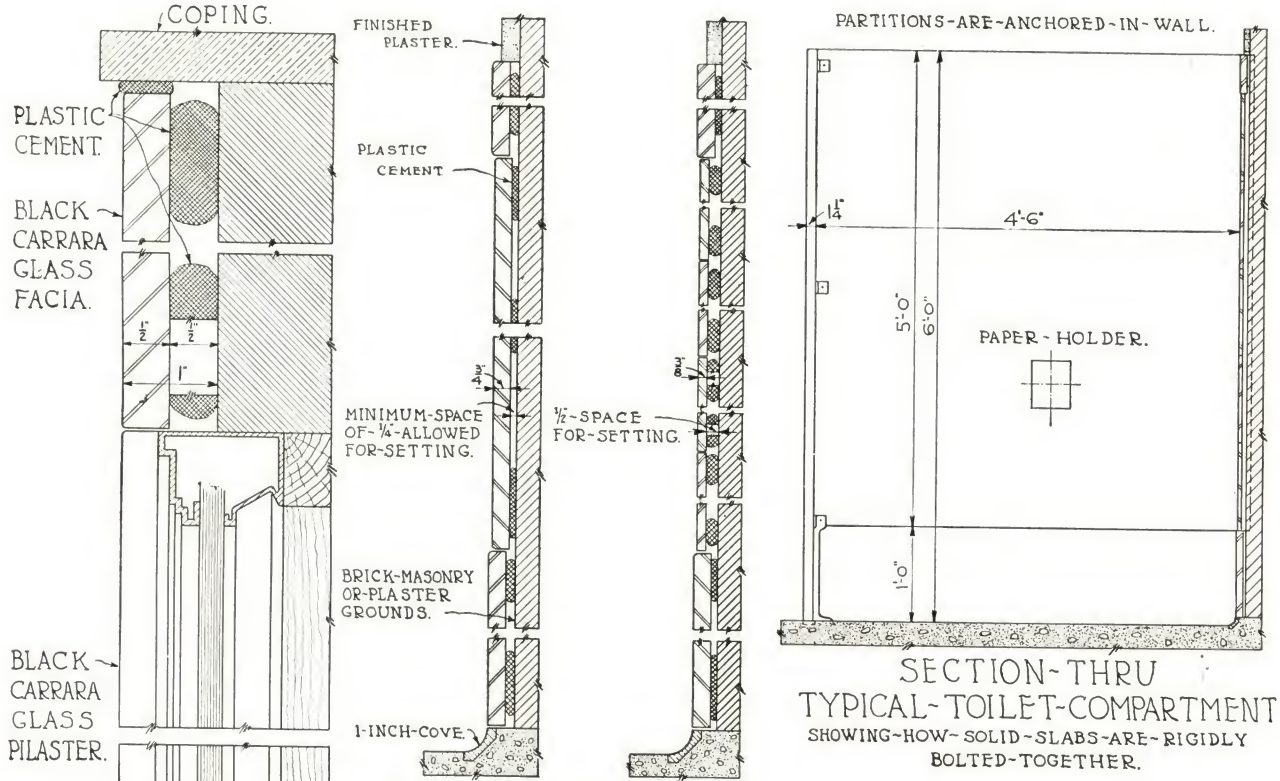
Stainproof and Clean

After years of service, Carrara shows no evidence of absorption or stain, nor is its polish dulled. It presents an appearance of newness and cleanliness unsurpassed by any other material.

High Degree of Light Reflection

The highly polished surface of White Carrara is useful as a reflector of light for interiors that otherwise would seem dim.





SECTION-SHOWING-TYPICAL STOREFRONT-CONSTRUCTION
WITH-NECESSARY-ALLOWANCES-FOR-SETTING-CARRARA-STRUCTURAL-GLASS.

SECTION-THRU-¾"-PANEL AND-⅜"-ASHLAR-WAINSCOTS.
SCALE-1½"-1'-0"

SECTION-THRU TYPICAL-TOILET-COMPARTMENT
SHOWING-HOW-SOLID-SLABS-ARE-RIGIDLY BOLTED-TOGETHER.

SUGGESTED SPECIFICATIONS FOR CARRARA

This contractor is to furnish all labor, material, equipment and service necessary for properly installing all Structural Glass as indicated on the drawings.

Contractor shall verify all dimensions at building, prepare shop drawings and furnish the architect with three sets of prints for approval. Doors, equipment and all hardware not necessary for erection of Structural Glass will be furnished and installed by other contractors.

Other contractors will prepare walls, furnish and set wood grounds—also wood blocks for fixtures.

All Structural Glass shall be Carrara as made by the PITTSBURGH PLATE GLASS COMPANY of size and thickness indicated on the drawings. Finish of face side to be either polished or Frostex as indicated, and all exposed edges polished.

The polished finish will be obtained by grinding the surface until a true plane is produced and then mechanically polishing it to a high lustre. Installation will be made according to the best standard erection practice and to the satisfaction of the architect.

All pieces shall be set plumb and true and with even flush joints which shall be filled with an approved type of pointing compound.

This contractor shall do all cutting and drilling of Carrara for other contractors provided they furnish him with accurate layouts so that it may be done at the factory.

At the completion of his work, this contractor shall remove all rubbish and carefully clean the Carrara and leave it in a satisfactory condition.

Actual Weight of Carrara

⅜ in.	5.13 lb. per sq. ft.	1⅛ in.	11.12 lb. per sq. ft.
½ in.	6.84 lb. per sq. ft.	1 in.	13.68 lb. per sq. ft.
¾ in.	10.25 lb. per sq. ft.	1¼ in.	17.10 lb. per sq. ft.

Type and Thickness of Carrara Recommended for Various Members

Wainscot, panel	¾ in.	Bulkheads	¾ in.	Stiles	1¼ in.
Partitions	⅞ in.	Base	¾ in.	Ceiling	⅜ in.
Partitions, Laminated Frostex	¾ in.	Lintel	1¼ in.	Shower Seat	1¼ in.
Wainscot, Ashlar	⅜ in.	Cap	¾ in.	Deal Plates	1 in.
Counter Tops	1¼ in.	Door and Window Trim	1 in.		

THE STRUCTURAL SLATE COMPANY

PEN ARGYL, PA.

BRANCH OFFICES IN ALL PRINCIPAL CITIES

For other catalogues of The Structural Slate Company, see Manufacturers' Index

WINDOW SILLS

Although not a new use for slate, many architects have only recently appreciated the unusual advantages of this unique product of nature for window sills. The Structural Service Bureau has prepared a 32-page publication with 46 illustrations and 24 detail drawings showing the use of slate for these purposes.

Interior Sills—The many advantages of natural slate for interior window sills, either with or without a radiator beneath, are obvious when the material is considered. Slate is impervious to moisture; it resists blows, abrasion and wear; it does not discolor under ordinary acids and caustics and it will not contract or expand. It may be left in its natural state with any of the various surface finishes described, may be treated with paint or stain or given a "Struco" finish.

Exterior Sills—The same characteristics which make slate such an ideal material for use as interior sills are especially valuable for exterior sills. Here conditions of abuse are even harder because of the action of direct sunlight and frost. There is a rapidly growing tendency among architects to use exterior sills as thin as possible in buildings of brick or stone. This is done to make sills inconspicuous and to eliminate projections beyond plane of the wall which give undesired shadows.

Suggested Form of Specification

General Conditions—In offering the following specificational paragraphs it is assumed that the General Conditions of the general specification will also govern; also that sills will be but one item of the slate work required and that there will be general clauses governing characteristics of slate, etc. In that case, the General Conditions of the "Basic Specification for Structural Slate Work" in Volume One of the Series issued by The Structural Slate Company might either be incorporated in full or merely referred to as follows:

Short Form General Conditions—

Note: As this Specification is being given wide circulation among architects and slate contractors, and is copyrighted by and registered with the Structural Service Bureau, it is suggested that the following brief form be used wherever desired.

The General Conditions, Paragraphs 1 to 14, inclusive, as printed in Sweet's Architectural Catalogues, 1932 Edition, and in Volume One on Structural Slate, copyrighted by and registered with the Structural Service Bureau of Philadelphia, are hereby made to constitute the General Conditions of this specification except as they may be herein specifically modified.

Slate Sills—In case the particular slate installation embraces sills only, the following extracts from the 14 paragraphs referred to are suggested for inclusion as governing the slate itself—the same and all other paragraphs which follow being based upon slate sills, whether interior or exterior, even in plane and thickness with machined finishes and squared, rounded, or moulded edges or nosings, returns, etc. If split-face surfaces or planed-face surfaces are to be used, and if sawed edges or split edges and other characteristics of craftsmanship and of the inherent qualities of this product of nature are to be in evidence, then the specification should be modified according to the discrimination of the designer.

Slate—All slate hereafter specified shall be dark blue-gray (black if oil finished) in color, hard and non-absorbent, whole, sound and free from irregularities in production or defects in manufacture, and of the commercial grading known as Ribbon Stock, except where Clear Stock may be specifically called for, or is customarily furnished. All slate used shall be branded with the trade-mark "Pyramid," exposed surfaces shall be smooth and free from depressions, loose pieces, cracks, or chipped edges, and all shall be left in true alignment and in every respect thoroughly neat and satisfactory. If so required, typical samples, each marked as to grade and finish of slate proposed to be used, shall be submitted to the architect for approval, and left with him, before material is ordered.

Finish and Workmanship—All exposed surfaces, unless honed finish is specifically called for, shall have standard sand-rubbed finish. All interior slate sills shall have the arrises of exposed edges or corners slightly rounded and all exterior slate sills shall have sharp arrises, unless otherwise shown on drawings, or specified. Sills for single or double windows shall generally be in one slab. Sills to wider windows shall be in pieces of longest practicable length with neat butted joints, the same to occur at approximately the center of mullions or boxes. All joints shall be filled and made tight and flush, those on the interior with an approved compound of the same color as the slate, those on the exterior with the same mortar as used for bedding. Contractor for slate shall do any cutting or fitting and drilling of slate necessary for proper installation of the sills. All pieces of slate shall be set in a first class manner and be left secure, whole, sound and complete.

Interior Sills—Furnish and securely bed or set slate sills, or stools, to all windows throughout, except (here state exceptions). The same shall be in accordance with the typical detail drawings and shall be ..... (here stipulate whether to be left in their natural state or to be oiled [by the contractor for slate work]; or to be left ready for paint or stain [by the painting contractor]; or to be of "Struco" Slate [by the slate contractor —if so, name the color or effect desired.])

(If any sills over radiator recesses involve special features or require metal work, etc., so state here and appropriately specify the metal work here or elsewhere. If radiator recesses are to be slate lined, they may be called for to be in accordance with *Figure 38 in the book on window sills* and need not be separately detailed.)

Note 1: As to Detailing—If a typical detail is not furnished with the estimating drawings, the thickness of the slate, the projection and kind of nosing, returns, etc., should be described in the specifications and statements made about the proper bedding of the slate and that the slate sills shall be long enough to extend to the masonry jamb, wood buck, etc. (according to the types of the construction—see details throughout the book). If wide windows (long sills) or windows with recessed radiators are included, the increased thickness of such sills should be called for.

Note 2: As to Oiling—If oiled finish is to be included, the specifications should require the slate contractor to clean the sills and to furnish and properly apply the finish.

Note 3: As to Painting—If slate sills are to be painted or stained, the requirements for cleaning of slate and furnishing and applying the finish should be incorporated in the Section of the Specifications relating to Painting.

Note 4: As to Plastering—When slate sills are to be installed in windows with plastered jambs, the specifications for slate should require that the sills shall be installed before the plastering is done. As there is great likelihood of the plasterer's spotting up the sills, specifications for plaster work should require the plastering contractor to either protect or clean off the sills.

Note 5: As to Masonry Specifications—When the masonry wall would, if left by the mason at the height of the leveling off for the sills of the window frames, present an abnormal amount of space for the bedding of interior slate sills (if the sills are to be bedded), it is recommended that a clause similar to the following be inserted in the masonry specifications: "All walls between interior window jambs are to be carried up to within ½ in. of the underside of interior slate sills."

Note 6: As to Calking—When metal window frames are included and are calked on the interior, it is suggested that the Specifications for Calking provide for calking between metal frames and slate sills, and that a note to this effect be inserted in the slate specification to eliminate possible duplication of work or costs.

Exterior Sills—Furnish and set slate (slip) sills to all windows throughout, except (here state exceptions). The same shall be in accordance with the typical detail drawing and of the proper lengths and widths required for the respective openings and shall be of "Clear" stock, left natural.

Each sill shall be firmly and solidly bedded in cement mortar and each end, any joints and the back of each sill shall be thoroughly filled and pointed with the same mortar. Mortar to be composed of (here state materials and proportions to assure a rich mix). On completion of the building all slate shall not only be left whole and sound but clean and free of stains, etc.

Note 1: As to Detailing—If a typical detail is not furnished with the estimating drawings, the thickness, or thicknesses, should be stated above—also the overhang (if any) and the amount of coverage that the sill of the frame shall have over the slate—assuming that the plans will indicate the reveals of all windows.

Note 2: As to Slate Contractor or Mason—If the slate is to be set by the mason contractor the first paragraph above should be changed accordingly, and the second paragraph be inserted in the specifications for masonry.





Mutual Benefit Life Insurance Building, Newark, N. J.

J. H. and W. C. Ely, Architects

Designers of this modern office building were quick to appreciate advantages of single slabs of smooth slate for interior sills that must withstand a more-than-average amount of wear and tear

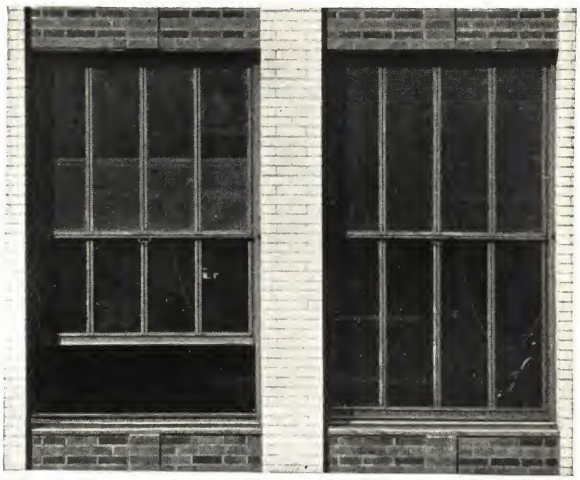
Note 3: As to Painting—It is assumed above that the sand rubbed finish will be left "natural" without painting and it is suggested that in the specification for painting a sentence be incorporated to the effect that "exterior slate sills are to remain unfinished and shall be left free of paint spots, etc."

Note 4: As to Calking—It is assumed above that where the sills of the window frames are to be calked (or set in mortar on the slate), the same will be specified elsewhere.



Slate Sills for Kitchen Windows

Kitchen window sills become efficient household aids when made of slate. They cannot stain. They are unaffected by household acids and the "spilled things" that sooner or later play havoc with ordinary sill material. They will not absorb moisture, cannot burn, and may be scoured as often as desired without a sign of marring



Exterior Slate Window Sills, News Building, New York, N. Y.
RAYMOND M. HOOD, New York, Architect
The practical window sills that make the economical job which "Outlasts the Building"

WAINSCOT, CAPS, BASES, PLINTHS AND THRESHOLDS

Information

Of the two grades into which slate is divided, Clear and Ribbon Stock, the latter is almost exclusively used for structural purposes.

Unless otherwise specified, it will be furnished in Ribbon Stock. If Clear Stock is desired, it must be distinctly called for.

For use in wainscoting, caps, bases and plinths the standard sand rubbed finish is most desirable, furnishing an even texture surface capable of resisting wear and tear. Where a particularly fine, smooth finish is desired the honed finish should be specified, although this is unusual.

All slate as furnished by the producer has no oil or other finish. A finish is placed on the slate by the slate contractor after erection, consisting of raw linseed oil thinned with turpentine. Slate thresholds are not oiled, requiring no finish other than being thoroughly cleaned upon the completion of all work.

Data Regarding Drawings—The sizes and details, shown on the various drawings below on this page, are suggestive only. In each case the sizes and arrangements are best left to the judgment of the architect or contractor for the special purpose for which the material is to be used. Designs and arrangements may be called for by letter or especially detailed in each instance.

The drawings shown for plinths, thresholds, angle coves, wainscot caps and bases are suggestions showing a few of the many designs which may be executed in slate for these purposes. In each case the slate is cut and fitted to suit the spaces in which it is to be placed. Specifications should clearly state the width and thickness of the slate to be used. The design should be detailed or, if desired, one of the types shown may be selected and called for as described in the suggested specifications.

Note: Thresholds should be of sufficient length to properly butt into, receive or return against plinths or finish of openings.

Suggested Form of Specification

General Conditions—(a) The General Conditions, paragraphs 1 to 14, inclusive, as printed in the 1932 Edition of SWEET'S ARCHITECTURAL CATALOGUES, and in Chapter 3 on Structural Slate copyrighted by and registered with the Structural Service Bureau of Philadelphia, and hereby made to constitute the general conditions of this specification, except as may be herein especially modified.

Floors, Bases, Plinths and Thresholds—(49) The floors, bases and plinths in (here enumerate) shall be of Ribbon Stock [Clear Stock] [laid alternating] slate.

(50) The floor slate shall be 1 in. thick and about 12 in. square (or other size desired, and 1¼ in. thick if over 24 in.) cut in uniform lengths and widths to fit the spaces.

(51) The bases at all walls and partitions shall be 1 in. thick ..... high above floors and extending 1 in. below the floor. (If base is to be coved, specify it to be 6 in. high above floor, from 2-in. stock with 1-in. radius cove cut on bottom, returned on itself at all openings, and cut with solid returns at all interior and external angles.) All bases to be slightly rounded [bullnosed] on top. (Details or specifications should indicate whether or not base projects full thickness beyond face of wall finish above.)

(52) All trimmed openings where bases occur shall have plinths ..... high conforming by beveled or straight angled faces to the profile of the trims (and of jambs if door is not hung on slate finished side), in accordance with the detail drawings.

(53) Saddles, or thresholds of slate, 2 in. thick, beveled two sides shall be provided at all doors or at openings where floor materials change; the same to be, on the flat surface, the full width of the door or jamb of opening, and, in length, to either extend under plinth or return on same.

(54) *Note:* The above contemplates a sand rubbed floor for interior use. If natural split surfaces of irregular or random sizes, for either interior or exterior use, are desired, so specify, and in any case provide for proper firm and solid foundation in another part of specification. (See Preparatory Work, Paragraphs 6 to 19.)

(55) All slate and the concrete bed beneath shall be thoroughly cleaned and drenched with clear water immediately before slate is laid. Spread a full bed of mortar, from ½ to ¾ in. thick, composed of one volume of portland cement and two volumes of well graded, clean sand, and thoroughly tamp each piece of slate as laid.

(56) The joints of floors shall be tight butt joints grouted in with cement mortar, colored same as slate (or wide joints with light colored mortar, pointed, in which case so specify). Leave floors clean and flush and true at all joints, with each piece of slate solidly bedded.

(57) The bases (whether straight or coved) shall be in pieces of the longest practicable length, thoroughly bedded on cement foundation and against walls, in same mortar as floors, and pointed tight.

(58) In addition to the cement backing, the plinths shall be held in place by nickelplated brass, round head screws into the door bucks. (If concealed screws are desired, state that galvanized screws are to be used with heads countersunk and flushed with "slater's wax.")

(59) *Note:* According to location and intended use, state whether above slate is to be oiled or left unfinished.

Wainscoting—(60) Where shown or specified, furnish and set slate slabs to form wainscoting .... high, not less than ⅞ in. thick at edges, and in widths between 3 and 4 ft. to divide with approximate regularity into the various space lengths. Each slab to have (two brass or bronze dowels into base, if any, and) two anchors of brass or bronze into wall at back (at top if above eye line or covered with mould).

(61) *Note:* State whether wainscot height includes caps, if any, and whether slabs shall be cut long enough to extend 1 in. into a cement floor, will have a tile or cement cove or a wood scotia, etc. If slate base is desired, use Paragraphs 51, 57 and 63.

(62) Moulded top, or wainscot cap, shall be thoroughly anchored into wall and mortared against same, bedded to slabs and be cut true to full size details. Joints in interior and external angles and at all openings shall be cut with solid returns and not mitered.

(63) All bases, if of slate, to be thoroughly bedded, set and anchored in cement mortar (as specified for floors).

(64) All butt joints of slabs (and mouldings) to be thoroughly backed up with plaster of paris, filled and pointed with same, colored, and left close, neat and true.

(65) *Note:* Under "Plastering" in new work, state that behind all slate wainscot, plaster is to be omitted.

(66) In Existing Buildings—For the application of slate wainscots in existing buildings, with or without bases, specify the slabs to be secured through from the face, either with round head screws or with countersunk screws, concealed with "slate-wax," the screws in masonry to be inserted into expansion sockets or spot grounds and not into wood plugging.

Bases (without Slate Floors or Wainscots)—*(67) Against Masonry Backgrounds*—In all halls, corridors, passages or other portions of the building so indicated run a slate base ..... thick and ..... high at each wall or partition, pilaster, etc., same to be ..... (to complete, refer to Paragraphs 51, 57 and 63).

(68) Against Wooden Backgrounds—In other portions so noted (or here specified) run a plain ⅞x16-in. base (or other height as may be required by local ordinance) with slightly rounded top [bullnose]. To be set and applied in same manner as specified for wainscoting under Paragraph 65, except that it shall be screwed directly into wood supports.



Slate Base in the Mayview Hospital, Pittsburgh, Pa.
ERIC FISHER WOOD, Pittsburgh, Pa., Architect
"Pyramid" Slate Base makes a sanitary installation that may be cleaned as often as necessary without harm to the slate

ASBESTOS LIMITED INC.

Manufacturers of "Newmarble"—Asbestos Panels Simulating Marble

8 West 40th Street, NEW YORK, N. Y.

WORKS: MILLINGTON, N. J., U. S. A.; LACHINE, CANADA; GENOA, ITALY

Product

"NEWMARBLE" ASBESTOS PANELS Simulating Marble. For "Newtile" Asbestos Tiling in sheet form, see Manufacturers' Index.

"Newmarble"

"Newmarble" is made from asbestos in panel form with a beautiful and lustrous finish that simulates marble. It is fire and water resisting; it is sanitary and easy to keep clean and it may be quickly installed by any carpenter. Its lovely, colorful surface; depth of finish; long life and surprising economy qualify it for the many purposes where the use of marble is indicated. Being light in weight, approximately 2 lbs. to the sq. ft., it may be used where real marble would not be desirable on account of weight and bulk.

Uses

Architects have found an almost unlimited field of adaptations for "Newmarble." A few of the classes of installations rapidly gaining favor are:

(1) Apartment house foyers. (2) Theatre lobbies. (3) Office building lobbies and hallways. (4) Hospitals. (5) Department stores.

Installations are also being made in restaurants, drug stores, barber shops, beauty parlors, bathrooms and kitchens.

It is being used on soda fountains, counter bases and display windows.

"Newmarble" is effective for the treatment of store front exteriors. Its durable and weather-resisting qualities make it excellent for this purpose and with proper care it will give satisfaction for years.

Colors

"Newmarble" is made in the following attractive colors:

Black and gold
Light Italian
French black and white
Verde antique (green)
Belgium black
Spanish rose
Chinese red
Plain white

How Furnished

"Newmarble" Standard Panels—Regularly furnished in panels, size 32x48 ins., $\frac{3}{16}$ in. thick.

"Newmarble" Trim—For effective results "Newmarble" trim should be used wherever trim is necessary. Striking and harmonious effects can be produced by the use of trim different in color from the wall panels.

Cap moulding and base are made in all "Newmarble" finishes, the standard stock widths being 4 and 6 ins., respectively. One edge rabbetted to receive the panels. Length 48 ins. Other widths up to 12 ins. can be procured on special order.

Method of Application of Panels and Trim



"Newmarble" Panels Are Easy to Handle

Cutting Panels—Standard sheets size 32x48 ins. should be used wherever practical, and where cutting is necessary the following methods are recommended:

Where an electric hand saw is available, this method of cutting is preferable over all others, substituting a thin carborundum wheel for the steel saw. If carborundum wheels are unobtainable we can furnish them at a nominal cost. It has been found that grades equivalent to Carborundum Redmanol 36C8T are best adapted to this work.

Sheets can be cut with a carpenter's saw or can be broken in a straight line by scoring deeply on both sides with a pointed instrument and laid over the edge of a table and broken in much the same manner that glass is cut. Edges can be made true by the use of a file or sandpaper, making sure, however, to use a block under the sandpaper if the latter method is used.

Mitering can be done by filing the edges of the sheet to the proper bevel.

Where rounded cuts are necessary the use of a compass saw is recommended, filing the edges after cutting. If a compass saw is not available the curve can be cut with a nail set, punching holes along the line to be cut and breaking the piece out, the rough edge can be smoothed with a file. A hacksaw blade with an improvised handle of electricians' tape is also very good for cutting curves.

"Newmarble" trim is best cut with a hacksaw.

Attaching Panels—"Newmarble" may be attached using any of the following methods. If requirements are not fully covered by these directions, our Service Department will be glad to give you additional information.







Three Typical Applications of Newmarble

With Wood Screws—*To wood studs and furring, using 1-in. No. 4 flat head screws:* Drill holes with E-I combination countersink and drill, and touch up the screwholes with the proper shade of putty.

Using oval head nickelplated screws: Allow the screwheads to show. Care should be exercised in placing the screws so as to present a well balanced appearance.

To masonry walls with screws and lead anchors or equivalent: First drill holes in the "Newmarble" sheets, then place the sheet in the position it is to occupy on the wall, and mark the location of the screw anchors on the wall. Drill holes suitable for anchors, with star drill, place the anchors in the holes, put sheet in position and screw fast to the wall.

With Nails—To wood studs, board walls and furring, using 4d finishing nails, drilling holes with No. 45 twist drill and carefully setting the nailhead. Touch up nailholes with proper shade of putty.

With Plastic Compound—To masonry walls with Newmarble Plastic Compound following the directions with the material. Temporary shoring to hold sheets in position should be used and not removed for at least 12 hours and preferably 24 hours.

Where Newmarble Plastic Compound is used on painted surfaces, it is important that the surface of the wall be scratched or scarred sufficiently to secure a good bond between the wall and the plastic compound.

Filling Joints and Touching Up—The best way to fill joints is to place a small quantity of Newmarble Joint Filler along the edge of the sheet in place, and then when fitting the next sheet, to fit it close and allow the joint filler to squeeze out. Remove the excess joint filler and clean the surface of the sheet *immediately* with naphtha or gasoline.

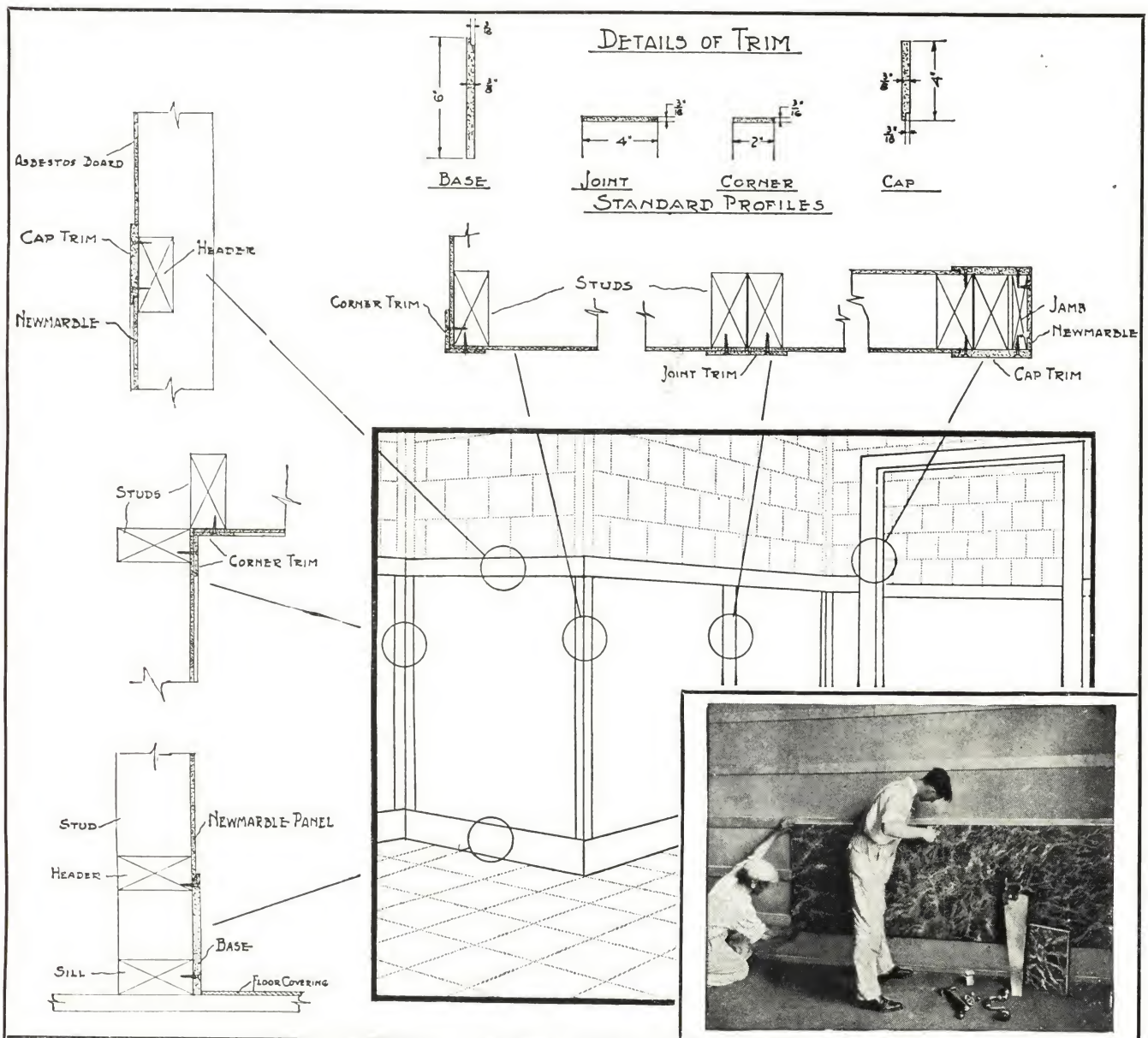
When it is not possible to use this method, crack filler can be inserted in the places to be touched up with the fingers, *and cleaning up as explained above.*

Use the same method to point up all nailholes and scars caused by erection.

Attaching Trim—"Newmarble" trim is to be used wherever necessary and any of the foregoing methods of attachment may be used.

Caution—It is important to have all surfaces, where "Newmarble" is to be attached, reasonably true before proceeding with the work of installing. Studs and framework should be so placed as to furnish support under each edge. Furring strips on masonry walls should be plumb and faced true.

Do not attempt to install "Newmarble" over wet plaster.



"NEWMARBLE" INSTALLATION DETAILS

G. BAGATTA

Artificial Marble, Scagliola, Travertine and Caen Stone

447 East 68th Street
NEW YORK, N. Y.

Products and Services

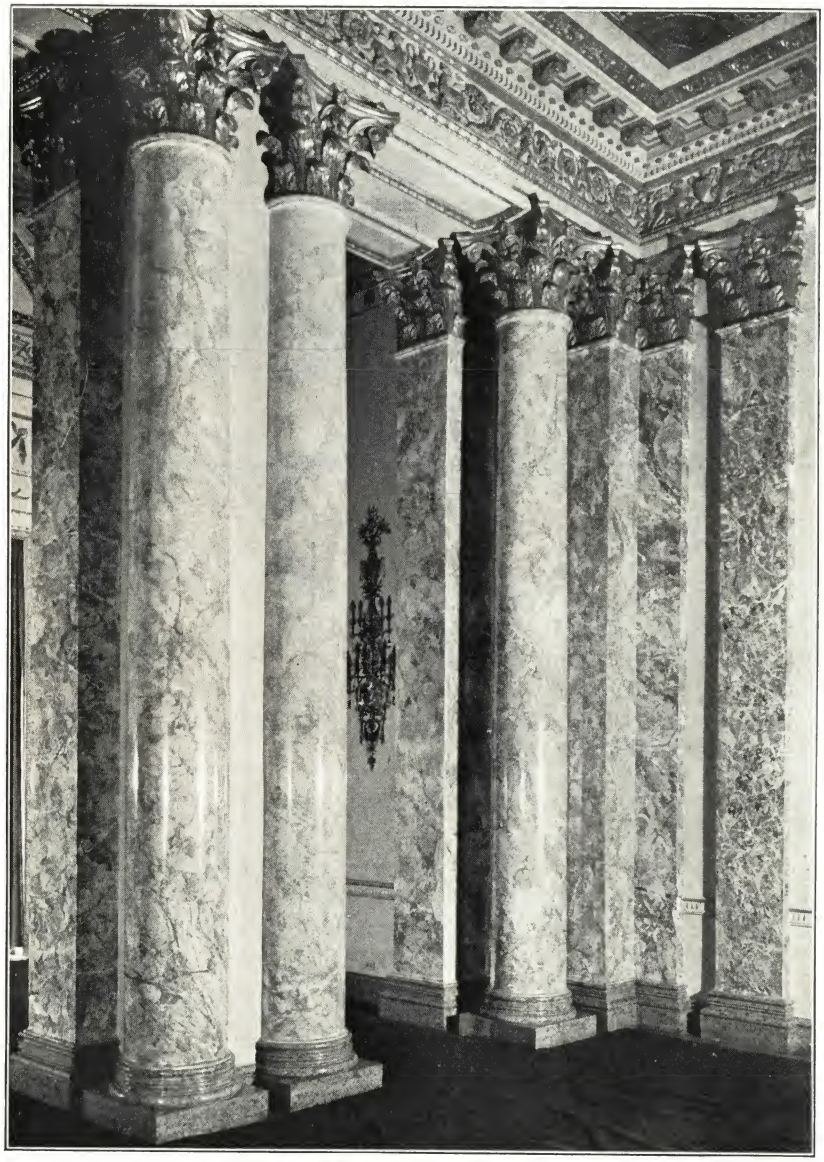
Synthetic reproductions of all imported and domestic stones and marbles for interior decorative purposes such as Artificial marble (Scagliola), Roman Travertine, St. Quinten, Rockwood, Caen Stones, etc. Specializing in Churches, Banks, Theatres, Schools and all public and private residences where fine architecture is the Keynote.

Estimates cheerfully given for work from coast to coast. No job too large or too small.

Craftsmanship and Materials

We employ skilled craftsmen in the many years experience and executing work of a very high character.

Materials are imported so that work equal to the finest done abroad can be reproduced.



Ball Room, Pierre Hotel, New York, N. Y.
SCHULTZE & WEAVER, Architects
GEO. A. FULLER CO., Contractor C. H. MEYN, Plaster Contractor

Recent Contracts Completed by Us

Bloomingdale Dept. Store, New York, N. Y.
Turner Const. Co., General Contractor
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Central Trust & Savings Bank, Rock Island, Ill.
Cervin, Horn & Stuhr, Architects
Down Town Athletic Club, New York, N. Y.
Thompson Starrett, General Contractor
Starrett & Van Vleck, Architects
Drovers Mechanics Bank, York, Pa.
Gemmill & Billmeyer, Architects
Elks Club, New Haven, Conn.
A. W. Boylen, Architect
Erlanger Theatre, New York, N. Y.
Warren & Wetmore, Architects
Erlanger Theatre, Buffalo, N. Y.
Warren & Wetmore, Architects
First National Bank, Altoona, Pa.
J. F. Dempwolf, Architect
Grand Silver Stores, Lowell, Mass.
Sheppard & Stern, Architects
Hoboken Bank for Savings, N. J.
John Lowry, General Contractor
Ludlow Peabody, Architect
Hooker Electrochemical Co., New York, N. Y.
McKim, Meade & White, Architects
Holy Innocents Church, W. 37th Street, New York, N. Y.
Home of the Little Flower, Wading River, L. I.
Murphy & Lehman, Architects
Hotel Pierre, New York, N. Y.
C. H. Meyn, Plastering Contractor
Schultze & Weaver, Architects
Hotel Waldorf Astoria, New York, N. Y.
James J. Conroy, Plastering Contractor
Schultze & Weaver, Architects
Jaffa Temple, Altoona, Pa.
Columbia Const. Co.
Hersle & Shollar, Architects
Loews Journal Square Theatre, Jersey City, N. J.
C. W. & Geo. Rapp, Architects
Lawrence Trust Co., New Castle, Pa.
W. G. Eckles, Architect
La Salette Seminary, Enfield, N. H.
McCrory Store, Toledo, Ohio
W. Simpson, Architect
McCrory Store, Brooklyn, N. Y.
W. Simpson, Architect
McCrory Store, Jamaica, N. Y.
W. Simpson, Architect
Mary Immaculate Hospital, Jamaica, N. Y.
W. J. Boegel, Architect
Masonic Temple, Plainfield, N. J.
Wigton Abbott, General Contractor
C. A. Ware, Architect
Monastery of the Precious Blood, Brooklyn, N. Y.
W. J. Boegel, Architect
New York County Court House, New York, N. Y.
Guy Lowell, Architect
New York University, New York, N. Y.
W. Gregory, Architect
Our Lady of Mt. Carmel, Ware, Mass.
J. Jackson, Architect
Our Lady of Mt. Pompeii, New York, N. Y.
M. Del Gaudio, Architect
Our Lady of Mt. Carmel, Worcester, Mass.
R. Gorrani, Architect
Polis Palace Theatre, Worcester, Mass.
Thos. Lamb, Architect
Polis Hyperian Theatre, New Haven, Conn.
Thos. Lamb, Architect
Plaza Hotel, New York, N. Y.
Schultze & Weaver, Architects
Rochester Savings Bank, Rochester, N. Y.
McKim, Meade & White, Architects
Seaman's Y. M. C. A., New York, N. Y.
John Lowry, General Contractor
Shreve, Lamb & Harmon, Architects
St. Andrew's Church, Pasadena, Cal.
Ross Montgomery, Architect
St. Leo's Church, Irvington, N. J.
Jas. Jackson, Architect
St. Mary's Church, Torrington, Conn.
Jas. Jackson, Architect
St. Charles' Church, Woonsocket, R. I.
J. F. Hogan, Architect
St. Peter Claver's Church, Brooklyn, N. Y.
Murphy & Lehman, Architects
St. Mark's Church, Sheepshead Bay, N. Y.
Thos. O'Reilly, General Contractor
P. McGovern, Architect
St. Joseph's Church, Attleboro, Mass.
W. Fontaine, Architect
Schulte United Store, Lincoln, Nebr.
Hoffman, Architect
Schulte United Store, Hartford, Conn.
Hoffman, Architect
Temple, 169th St., Grand Concourse, New York, N. Y.
Morgan & Glazer, Architect
York Water Co., York, Pa.
Genwell & Billmeyer, Architect

ART MARBLE

FLOOR-TILE
STAIRWAYS
WAINSCOTS
PARTITIONS
ENCLOSURES
RECEPTORS
FOUNTAINS
BANK SCREENS
NON-SLIP STEPS,
TREADS, RAMPS

PRODUCTS OF
CHICAGO ART MARBLE COMPANY

CHICAGO ART MARBLE COMPANY

Contractors and Manufacturers—Art Marble Products

OFFICE AND FACTORY

2883-87 Hillock Avenue, CHICAGO, ILL.

THE COMPANY

CHICAGO ART MARBLE COMPANY is a pioneer in the Art Marble industry in America. For over thirty-seven years the Company has devoted its entire resources to the manufacture of products known to the industry as Art Marble and Non-Slip Art Marble.

The Company's financial rating, together with its long record of satisfaction to architects, contractors and owners is an assurance of faithful performance and continuous responsibility.

The important services of estimating, designing, drafting, detailing, manufacturing and installation of Chicago Art Marble products, and research work, are entrusted only to men of technical training and specialized experience. Constant contact with every phase of building enables the company to keep apace with modern requirements.

OUTSTANDING ADVANTAGES

- Durability with beautiful satin-honed finishes.
- Unlimited color combinations in plain and non-slip.
- All Art Marble colors resist wear uniformly.
- One-piece steps (tread and riser cast integral).
- Sanitation because of dust free surfaces.
- Permanence, low maintenance, no replacements.
- Non-slip products permanently prevent slipping.
- Forty years' experience guarantees all products.
- Financial Responsibility.

NATIONAL SERVICE

Complete service is guaranteed to architects and contractors regardless of location.

The factory, covering several acres, is located on the main lines of the Chicago and Alton and Santa Fe Railroads, providing direct rail connections for national service.

The buildings were designed and built exclusively for the manufacture of Art Marble and Non-Slip Art Marble.

In addition to being manufactured and installed nationally by the company, Chicago Art Marble products are also sold throughout the country to reliable, experienced contractors for local installation.

Estimates, samples, shop drawings, sketches or suggestions will be submitted by the Company upon request.

CHICAGO ART MARBLE COLORS, FINISHES AND TEXTURES

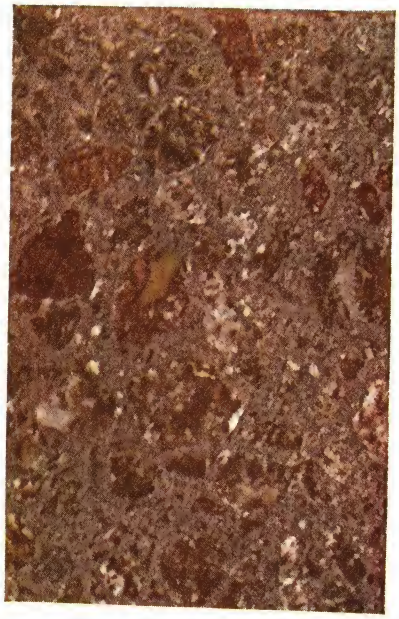
In Chicago Art Marble products the architect may carry out his color harmony to the fullest extent because Art Marble has a wider color range than natural products. Not only can different color marbles be combined, but the cement colors can be changed without limit. The few sample colors shown here represent the standard satin-hone finish and the average texture produced by the gradation of the marble chips. Chips can be made any size and colors varied to suit any requirement.

Color Combinations—Sharp contrasts, modern motifs or soft harmonies are easily obtainable. Any colors may be used in flooring without fear of uneven wear.

Color Sketch Service—Original color sketches and recommendations made independently or in collaboration with architects or designers may be obtained at no charge.

Non-Slip Art Marble—The color range for this material is practically the same as for standard Chicago Art Marble—the only difference is that the abrasive aggregate added to prevent slipping slightly changes the color, but the general tone remains the same. Color harmony is available in CHICAGO ART MARBLE COMPANY'S Non-Slip products because the abrasive is skillfully blended with the marble chips and colored cement.

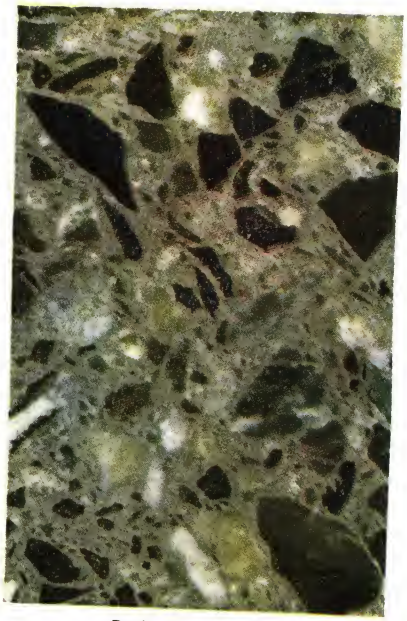
Special Color Requirements—Certain jobs require special aggregate mixtures or treatments of cements to take care of unusual conditions, such as extremely heavy traffic, exposure, matching natural stones, protection against chemicals. Suggestions for the proper handling of such conditions and samples are available.



Cedar Tennessee No. 15



Botticino No. 2



Dark Green No. 3

CHICAGO ART MARBLE AND NON-SLIP ART MARBLE

General Description and Process of Manufacture

Description of Products—Chicago Art Marble and Non-Slip Art Marble are special (precision process) precast products composed of marble chips, portland cement and mineral color pigments, and are manufactured according to definite controlled formulæ. Art Marble should be clearly differentiated from precast terrazzo as both the process of manufacture and the finished products differ in many details.

Process of Manufacture—*Art Marble and Non-Slip Art Marble*— In the manufacture of Chicago Art Marble products the plastic material is placed in moulds together with proper steel reinforcement. This mix is tamped, air pressed or otherwise agitated to eliminate air voids. Top face of material finished on both sides such as partitions is troweled smooth before it sets in the moulds. Top face of materials such as wainscot, steps, base, floor slabs is finished with a rough scored backing to assure bond when installed. All material is made face down against an absolutely smooth water level surface.

After the material has obtained a sufficient set in the moulds, requiring twenty-four to forty-eight hours, the moulds are stripped. Then the material is put through a series of water curing, rubbing, filling, re-filling and finishing operations. Normally, the curing operation alone requires two weeks and the other processes an additional week. To assure best results, specifications should always allow a minimum of three weeks for the proper manufacture of Chicago Art Marble products.

All Chicago Art Marble products, except standard size floor tile, are made as above. Standard size floor tile are manufactured in steel moulds, in specially constructed presses designed by CHICAGO ART MARBLE COMPANY, that in successive operations automatically receive the plastic material, vibrate, compress and eject the tile. Curing and finishing operations are the same as for other products.

USES OF CHICAGO ART MARBLE AND NON-SLIP ART MARBLE

Art Marble Floors—***(a) Regular Art Marble***—For any room in any type of building, on either concrete or wood construction. Sizes available permit working out to scale in either plain or intricate designs. *See Plate No. 1 for details.*

(b) Non-Slip Art Marble—For interior and exterior uses throughout building where permanent protection against slipping is essential. *See plates Nos. 1, 2, 3, 6, 7 for details.*

Art Marble Wainscot (Base, Die and Cap)—Base, die and cap available in either plain flat faces or moulded members. *See plates Nos. 4, 5, 8, 9 for details.*

Art Marble Stairways (Plain and Non-Slip)—Used for any stairway in any location or type of building on either steel or concrete substructure. Strings, fascia, balustrades, step-ends and other items are available in Art Marble for plain or ornamental stairways. *See plates Nos. 2, 3 for details.*

Art Marble Enclosures (Toilet, Shower and Bath)—Partitions, wainscot, receptors (one piece), shelves, seats. Structural durability is assured because of thickness and end mullions cast integral with partition. *See plates Nos. 4 and 5 for details.*

Art Marble Inlaid Wainscot—For all wainscot purposes where decorative motifs are desired. Motifs inlaid either with or without metal strips. *See Plate No. 9 for details.*

Non-Slip Art Marble Ramps—For railroad stations, subways and other structures in which slopes between floor levels are required. *See Plate No. 7 for details.*

Art Marble Window Stools—For all types of windows.

Art Marble Thresholds—*See plate No. 1 for details.*

Art Marble Radiator Tops—Made for all types of radiators. Plain or moulded nosings. With or without color inserts.

Art Marble Radiator Mats—These are slabs under radiators. Particularly adapted to hotel and club rooms as they are fireproof, decorative and sanitary and save carpet.

Art Marble Swimming Pools—*See Plate No. 8 for details.* For interior or exterior pools of any shape or size. No walls required in back of slabs. Material is self-supporting. Beautiful finishes are combined with smooth, sanitary surfaces.

Cement Slayte—Contour and color similar to natural slate, available in many sizes for terraces, walks and floor areas.

DECORATIVE ART MARBLE

Art Marble is especially suitable where curved or moulded detail is required. Some uses are free standing or wall fountains, bank screens, columns, benches, radiator enclosures.

ART MARBLE EXTERIORS

Art Marble suggests many possibilities for exterior uses such as store fronts, base, wainscot, non-slip vestibules, benches, fountains, terrace and porch floors and steps, swimming pools.



Art Marble Bank Screen of Interesting Design



Modern Use of Art Marble Wainscot for a Store Front



Life Size of Fountain Executed in Art Marble

CHICAGO ART MARBLE COMPANY'S OUTLINE SPECIFICATIONS

General

1. Material (The Composition of Art Marble)—All Art Marble shall be manufactured from marble chips of colors selected, color pigments, and white or gray portland cement, according to color desired.

Art Marble Floor Tile shall be manufactured by the compression and vibratory process, shall be thoroughly seasoned in wet room for at least two weeks, then rubbed. After rubbing all pin holes are to be filled and tile again seasoned. Tile shall then be given final finish.

All other Art Marble shall be air compressed, vibrated and go through same curing process as mentioned in previous paragraph.

2. Quality—All Art Marble shall be equal to the product of the CHICAGO ART MARBLE COMPANY.

3. Scope of Work—(General Description and Room Schedule.)

4. Measurements—Shall be taken at building.

5. Samples—Shall be submitted for approval.

6. Shop Drawings—Shall be submitted to Architect for approval before executing any work.

7. Workmanship—Details shall be accurately followed in manufacture and installation. Colors shall be uniform.

8. Finish—Art Marble shall be thoroughly satin hone finished.

9. Joints—All Art Marble shall be joined as detailed.

10. Size—All Art Marble shall be of correct size and thickness to properly execute substantial work.

11. Setting—All Art Marble shall be set by experienced marble setters after plastered walls and ceilings are in place. Material must be set straight to lines. When completed shall be free from stains or defects.

12. Cutting and Fitting—Where required, co-operating with other trades.

13. Anchors and Supports—Furnish concealed metal anchors or dowels where needed for proper securing and fitting. Structural supports by others.

14. Reinforcement—All Art Marble Products shall be adequately reinforced according to the requirements of each respective use.

Specific Items

15. Partitions and Wainscot—Toilet and Shower shall be made and assembled as detailed. All stalls shall be put together by a concealed system of grooves, dowels and clamps. All work shall be rigidly constructed and shall be of heights indicated. End mullions shall be cast integral with end partition. All exposed surfaces to be finished.

16. Shower Receptors—Bottoms of all shower stalls shall be provided with a monolithic receptor exact size of stall. Receptor to have a 1-in. cove on all sides and a proper pitch to center for drain. Curb shall be provided at opening. Where Sheet Lead pans are desired, under receptor, same shall be furnished and installed by plumber.

17. Hardware—For Toilet and shower stalls shall be furnished and installed by this contractor.

18. Thresholds (or Saddles)—Shall be furnished and installed at all doors. Same shall be full width of finished jamb and extend full width of door. They shall be installed prior to finished jamb.

19. Floors—On concrete construction, slab shall be left 2½ in. below finished floor level; on wood a depth of 3 in. from rough to finish is required. Concrete surfaces shall be clean and wet before depositing bedding for tiles. On wood construction heavy building paper shall be laid under concrete bedding, by this contractor. Bedding shall consist of 1-3 cement mortar. Mortar shall be evenly spread on rough floor in area sufficient for one tile. Tile shall be tamped until proper level and uniform bearing is secured. Tile shall be laid level with hairline joints.

Floor shall be grouted with suitable colored cement, within twenty-four hours after laying. Final finishing shall be given after all trades have completed their work.

20. Base, Plain Straight Base, Sanitary Cove Base (1 in. radius, Standard), **Moulded Base**—(with or without cove)—Shall be furnished and installed where shown. Base shall be set after plaster is dry with projection from wall as detailed; shall be securely fastened with concealed metal anchors.

24. Combination Base and Border—To be furnished and installed where required.

Heights and widths as detailed with 1-in. cove at intersection. Base and Border to be cast integral in suitable lengths. At door openings, base shall have ends finished or butt against Art Marble plinths and border strips placed tightly between ends of border portion. A depth of 2½ in. from rough to finished floor shall be allowed for proper bedding.

22. Stairs—Where shown shall be furnished and installed. The contractor for sub-structure shall allow 2½-in. from rough to finished tread and 2 in. from rough to finished riser.

(Step) Tread and Riser shall be cast integral as detailed. Riser shall have minimum thickness of 1¼ in., Treads 1½ in. Steps to have nosing as detailed. Steps to set on mortar bed, and securely anchored to sub-structure, and fit tightly between strings. Joints between intersection of Tread and Riser to be not more than ⅛ in. and pointed when steps are set.

23. Treads—Treads shall be furnished and installed where required. Same shall be securely anchored and bedded. Minimum thickness 1½ in. with ½ in. underneath for bedding. Treads shall fit tightly between strings. Nosing as detailed.

24. Strings—Wall String, Inside String, Fascia shall be furnished and installed where shown. Strings and Fascia shall follow details of design, shall be of proper thickness, and reinforced. Strings shall be made in suitable lengths with hairline joints at intersection of Tread and Riser. Strings shall be set prior to steps. They shall have perfect alignment with walls and shall show protection as detailed.

25. Balustrades, Newel Bases, Newel Posts, Curbs, etc.—Where shown shall be furnished and installed. All these items to be made as detailed and reinforced.

26. Window Stools—Where shown shall be furnished and installed; same to have nosing as detailed, minimum thickness 1½ in. Stools to be securely set after plaster is dry, and to run under finished jambs. Where openings are required for metal radiator grilles, same shall be correct size to receive grilles. Grilles to be furnished and installed by others.

27. Ashlar Wainscot—To be furnished and installed where shown. Size of piece and joints as detailed; joints to be ⅛ in. either square or vee. Joints both vertical and horizontal to show perfect alignment.

28. Caps, Cornices, Frieze, Architrave, Trim—All these items to be made as detailed and securely set where shown.

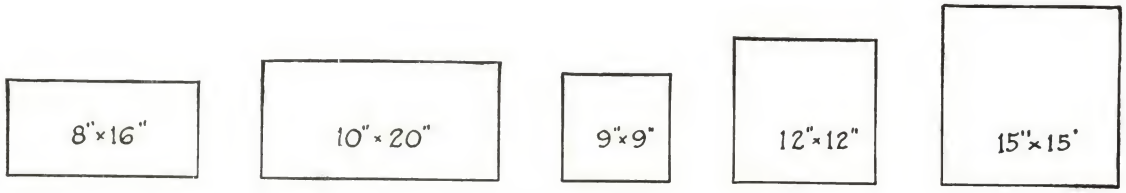
29. Non-Slip Art Marble Floors, Steps, Treads, Ramps, Inserts—Same conditions as to manufacture and installation apply as designated in previous paragraphs under respective heads, except that an approved abrasive shall be used in proper proportion in connection with marble chips; color of abrasive and color of marble chips to harmonize.

Steps or Treads to have abrasive surface as detailed throughout entire tread.

Non-Slip Nosing Inserts 6 in. wide to be installed where shown in treads of other materials.

Ramps (Design Patented), Non-Slip Ribbed Art Marble ramps shall be installed where shown. Pieces to be bedded in mortar as for regular floor work. Center to be crowned to give proper pitch. Sides at wall to be plain tile pitched to form gutter.

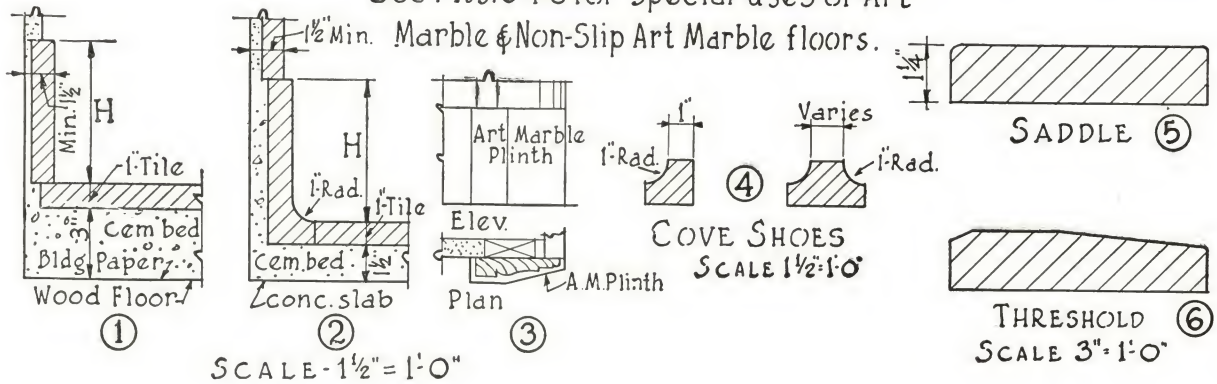
30. Swimming Pools (Patent Applied For)—Wainscot, gutters, Non-Slip nosings and steps shall be manufactured and installed in accordance with details. All slabs shall be 3 in. thick reinforced two ways. Expansion joints shall be provided where indicated and all slabs firmly anchored and grouted so as to assure a water-tight job.



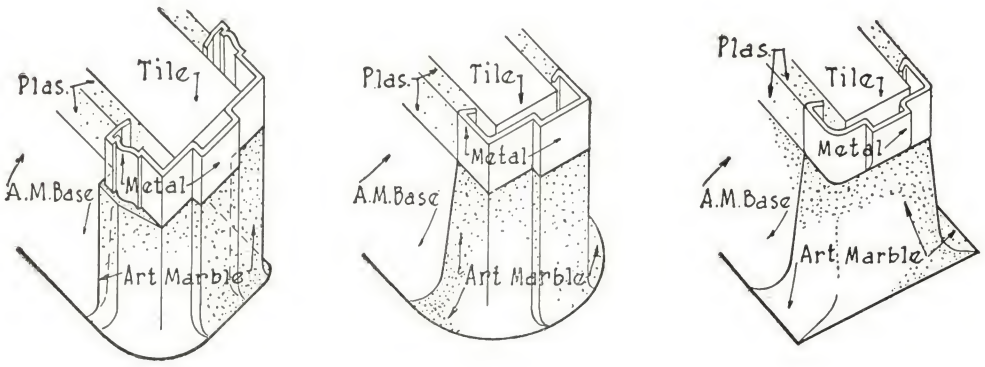
· FLOOR · TILE · SCALE 3/4" = 1'-0" ·

Chicago Art Marble Floor Tile, regular and non-slip are manufactured in standard shapes and sizes shown. Adherence to these standards assures economy. Many other shapes or sizes if desired are obtainable. Floor Designs and suggestions available free upon request.

See Plts. 6-7-8 for special uses of Art Marble & Non-Slip Art Marble floors.



① Section Thru Art Marble Straight Base and Floor-Wood Const. "H" = Any height.
② " " " " " " Cove " " " Conc. " " "H" = " " "
③ Plinths made any Height or Profile for all Types of Base.
④ Section Thru Cove Shoes for Toilet Room Wainscot and Partitions.
⑤ " " " Flat Saddle ⑥ Sect. thru Bevelled Threshold for all Door openings.

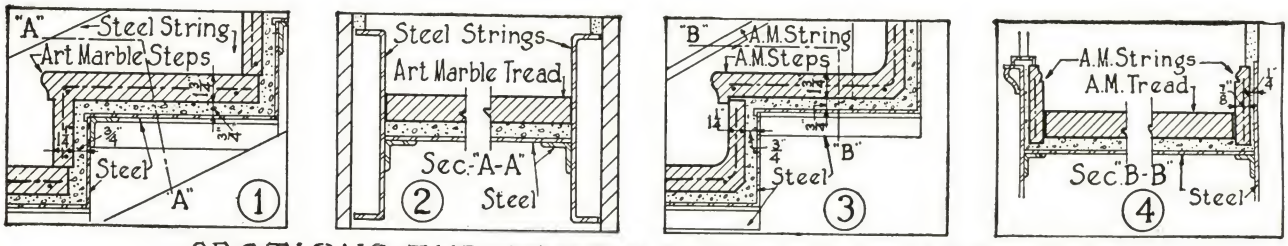


Jamb Blocks made in Art-Marble assure the utmost sanitation at door openings.

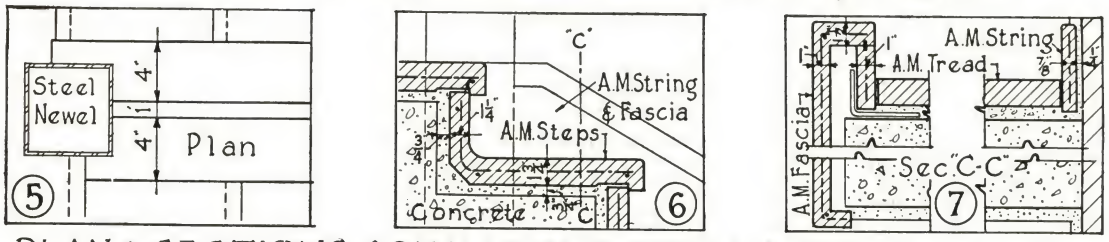
Drawings at left show three applications as used in Hospitals and Public Buildings.

· ART · MARBLE · JAMB · BLOCKS · SCALE 1½" = 1'-0"

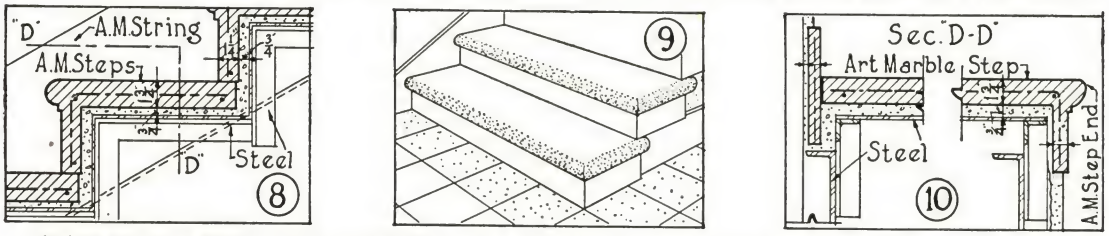
CHICAGO ART MARBLE CO.	CHICAGO ART MARBLE NON-SLIP AND PLAIN FLOOR TILE, & BASE	SCALE AS SHOWN	PLATE ①



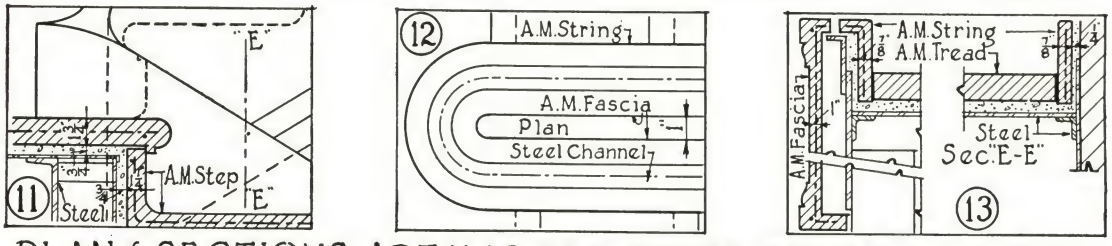
·SECTIONS·THRU·ART·MARBLE·STEPS & STRINGS·



·PLAN & SECTIONS·ART·MARBLE·STEPS·STRINGS & FASCIA·

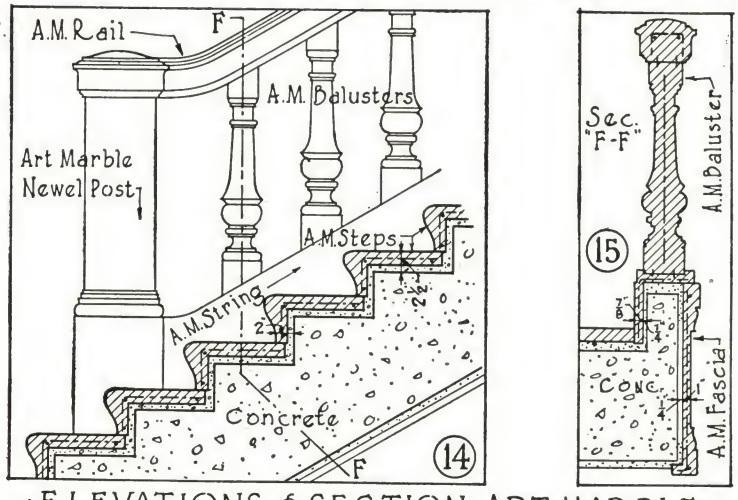


·SECTIONS & ISOMETRIC·VIEW·ART·MARBLE·STEPS & ENDS·



PLAN & SECTIONS ART MARBLE STEPS STRINGS & FASCIA

No. 1 TO 13 - SCALE - 1" = 1'-0"



·ELEVATIONS & SECTION·ART·MARBLE·
·STEPS & BALUSTRADE· SCALE ½"=1'-0"

NOTES

Min. thickness Risers 1" Treads 1¼" Strings ⅞"
Standard " " 1¼ " 1¾ " 1"
Nosings-Fascia-Strings made any profile.
All material reinforced with steel rods.
⅜" required back of A.M. for setting. Max. ¾".
Steps have tread & riser cast integral.
A.M. weighs about 12# per sq ft. - 1" thick.
Steps weigh about 35# per lin. foot.
Steps made up to 12 ft. long in one piece.
Strings & Fascia made about 3 ft. long.
No stock carried. All items made to order.

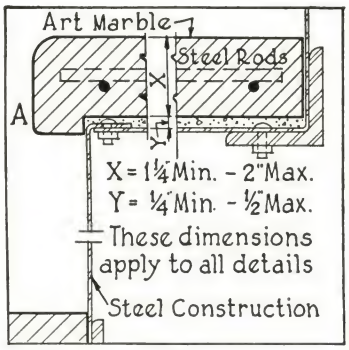
If your stair construction problems involve details or data not shown on this plate, additional information is available upon request. Please refer to details by number shown.

See plate #3 for Tread details.

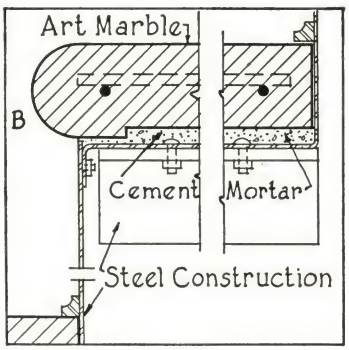
A.M. in above notes = Art Marble.

These details apply to either regular or non-slip (Alundum-aggregate.) Art Marble steps.

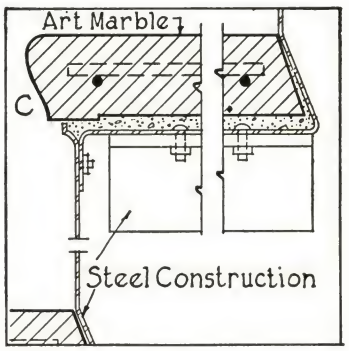
CHICAGO ART MARBLE CO.	CHICAGO ART MARBLE NON-SLIP & PLAIN STAIR DETAILS	SCALE AS SHOWN	PLATE 2



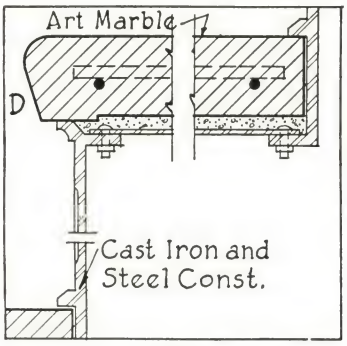
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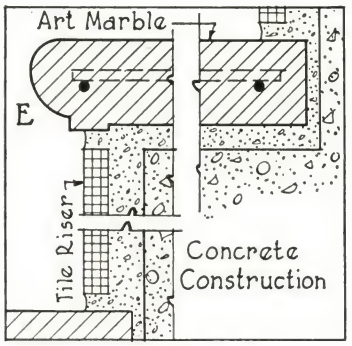
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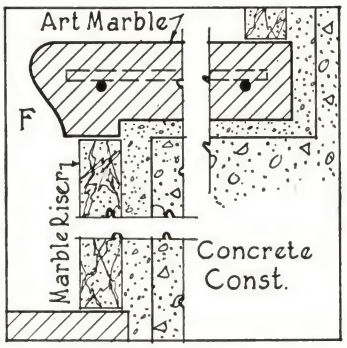
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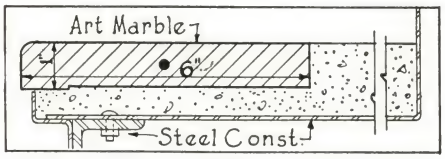
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(20)

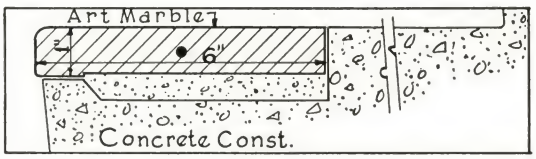


(21)



(22)

SCALE-3"=1'0"



(23)

· SECTIONS · THRU · ART · MARBLE · TREADS ·

NOTES

Details 16 to 21 Show Practicable Applications Of Art Marble and Non-Slip Art-Marble (Alundum Aggregate.) Treads for All Ordinary Conditions.

Details 22 & 23 Show Practicable Applications Of Art Marble and Non-Slip Art-Marble (Alundum Aggregate.) Nosing Inserts For Very Economical Construction....

Minimum Tread Thickness - 1¼". Average Recommended - 1½". Maximum - 2".

Minimum Bed (Cement Mortar) Under Treads - ¼" Maximum - ½".

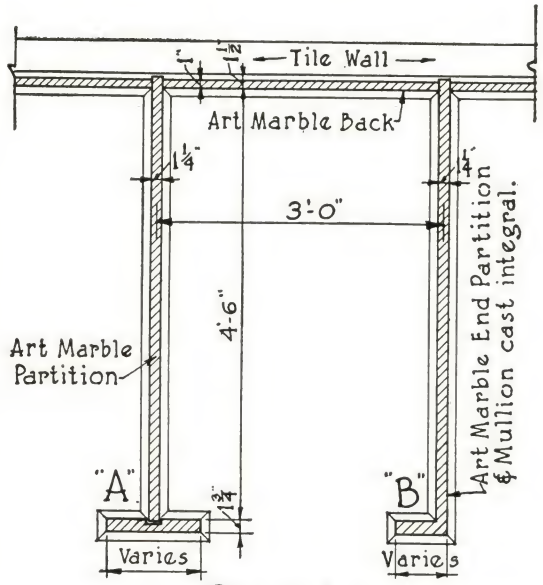
Nosings Made To Any Profile Or Depth. Types A to F are Illustrated Above .....

All Treads Are Made To Order. No Stock Sizes Are Carried.

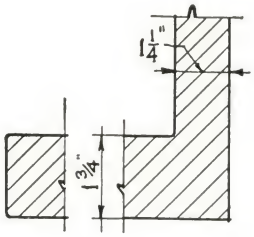
Tread Weights Vary According To Widths and Thickness Required. Average Weights Of Tread 12" Wide Overall, - 1½ - Thick is 20 Pounds.

All Treads Are Re-inforced With Steel Rods As Shown in Sections Above ...

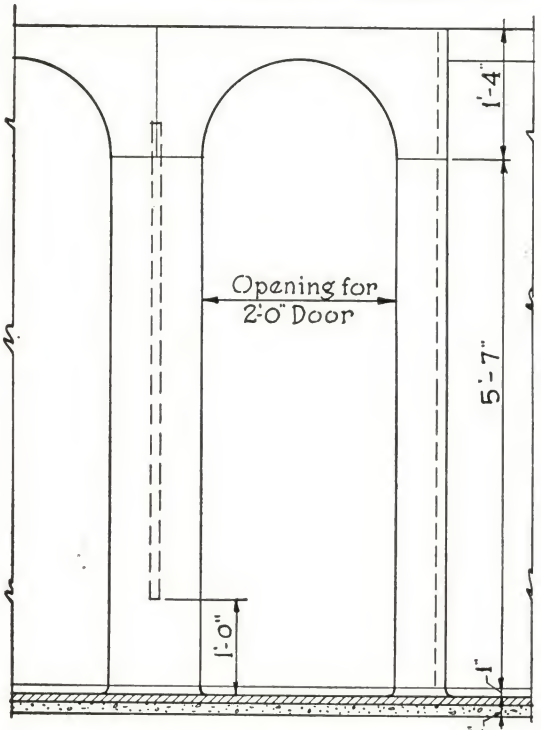
CHICAGO ART MARBLE CO.	CHICAGO ART MARBLE NON-SLIP & PLAIN TREAD DETAILS	SCALE AS SHOWN	PLATE ③



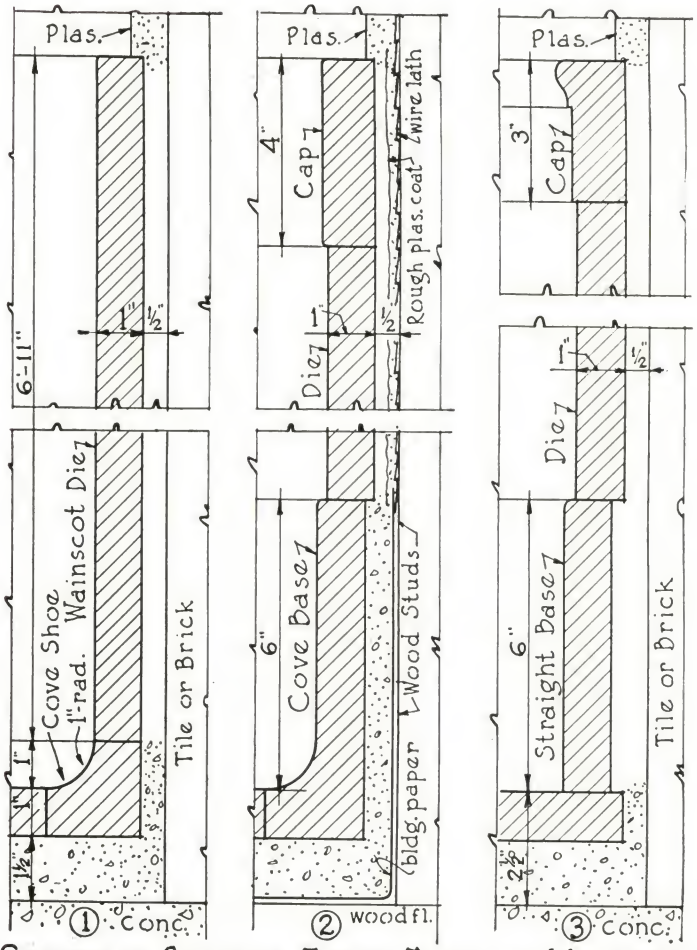
· PLAN · SCALE ½"=1'-0"



· END MULLION DETAIL "B" ·
SCALE · 3"=1'-0"



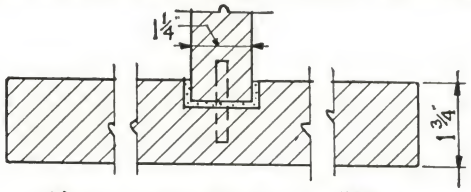
· ELEVATION · SCALE ½"=1'-0"



· SECTIONS SHOWING THREE TYPES OF WAINSCOT ·

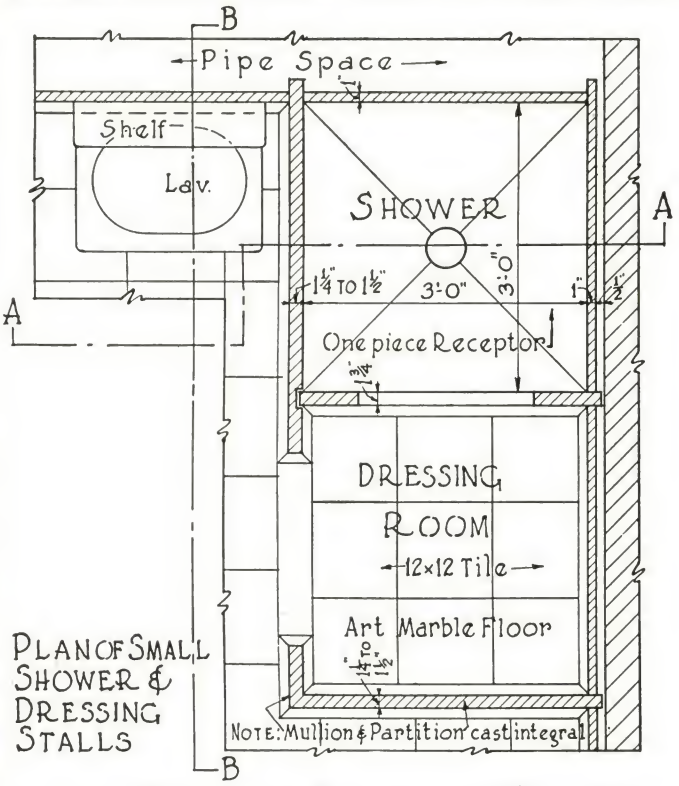
· NOTES ·

Head Rails over Doors may be Arched as shown or the usual 4" or 6" Flat Cap Piece.
Hardware for Doors either furnished and installed by Art Marble Contractor or furnished by others. All drilling by A.M.Contr.
Stall sizes shown are standard.

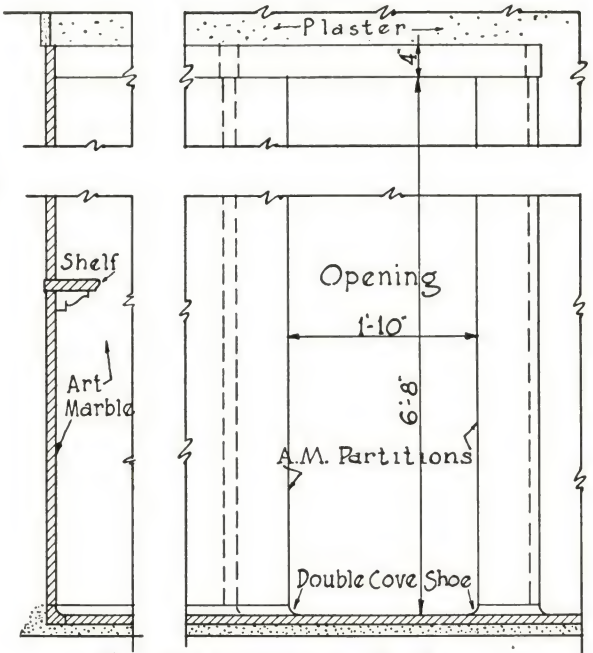


· MULLION DETAIL "A" SCALE 3"=1'-0"

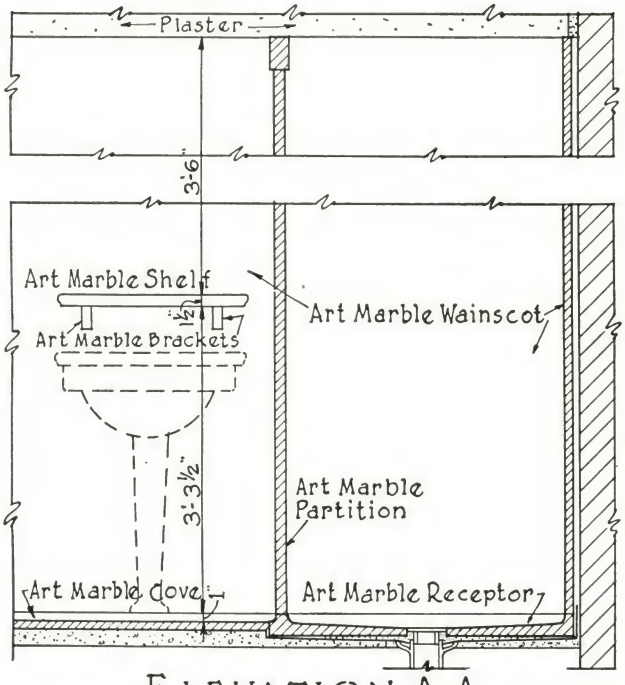
CHICAGO ART MARBLE CO.	CHICAGO ART MARBLE TOILET STALL DETAILS	SCALE AS SHOWN	PLATE ④



PLAN OF SMALL SHOWER & DRESSING STALLS

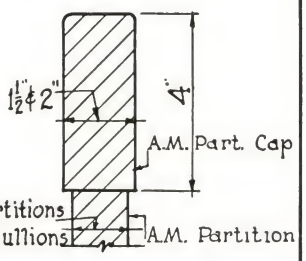


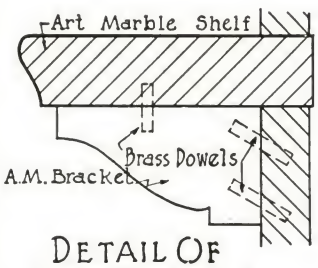
· ELEVATION · B-B
SCALE ½"=1'-0"



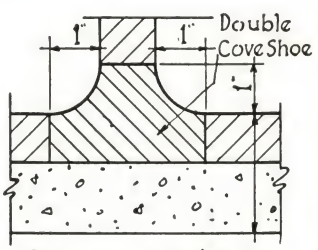
· ELEVATION · A-A SCALE ½"=1'-0"

NOTE.
Art Marble Shower Receptor can be made any practicable size, or shape. Data shown is standard.

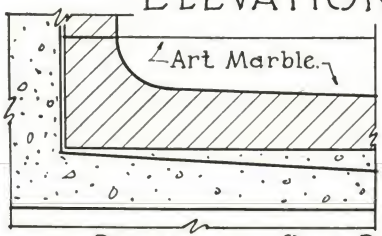


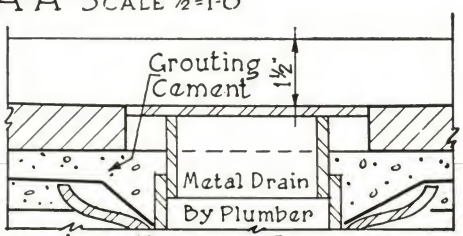


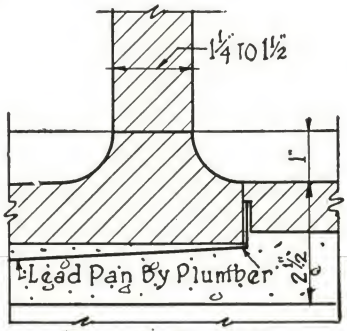
DETAIL OF ART MARBLE BRACKET & SHELF
SCALE 3"=1'-0"



DETAIL OF ART-MARBLE PARTITION







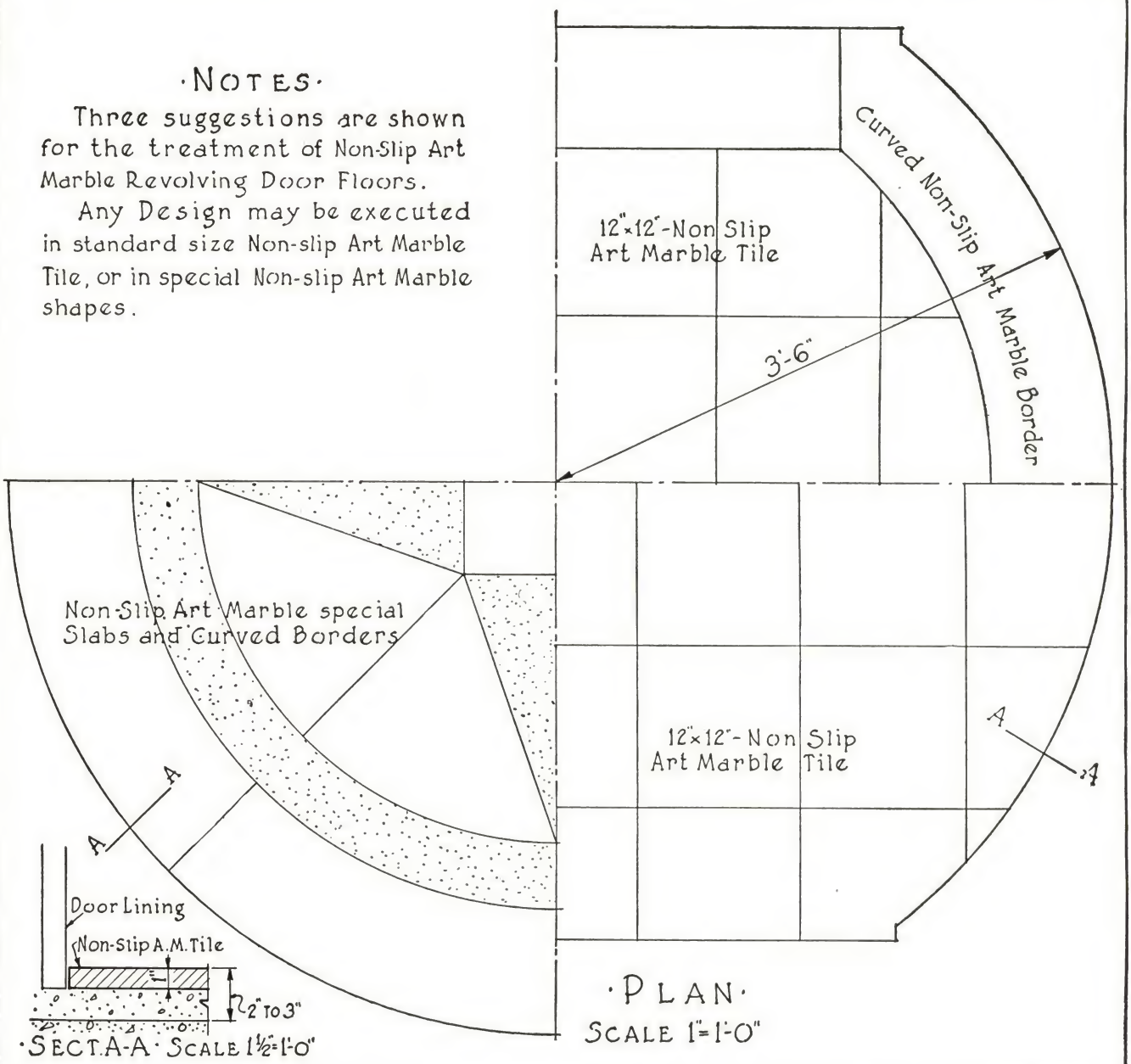
· DETAIL · OF · ONE · PIECE · ART · MARBLE · RECEPTOR · · SCALE · 3"=1'-0"

CHICAGO ART MARBLE CO.	CHICAGO ART MARBLE SHOWER DETAILS	SCALE AS SHOWN	PLATE ⑤

·NOTES·

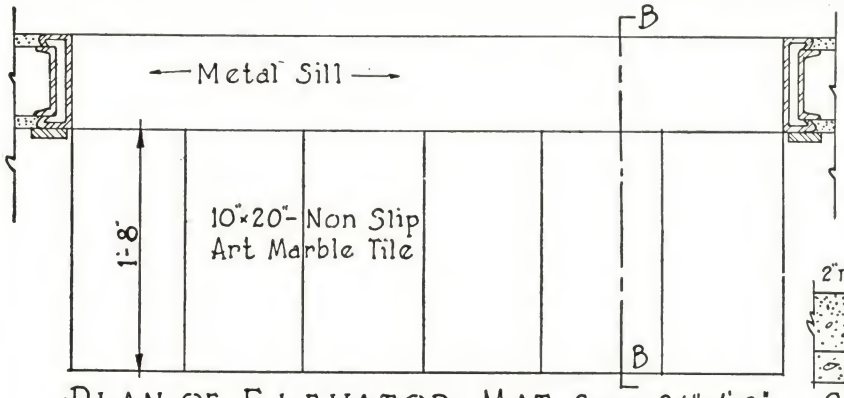
Three suggestions are shown for the treatment of Non-Slip Art Marble Revolving Door Floors.

Any Design may be executed in standard size Non-slip Art Marble Tile, or in special Non-slip Art Marble shapes.



·PLAN·
SCALE 1"=1'-0"

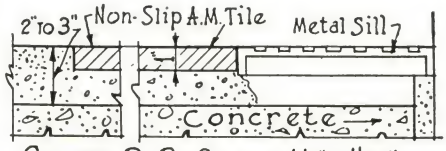
·SECT.A-A· SCALE 1½"=1'-0"



·PLAN·OF·ELEVATOR·MAT· SCALE· 3/4"=1'-0"·

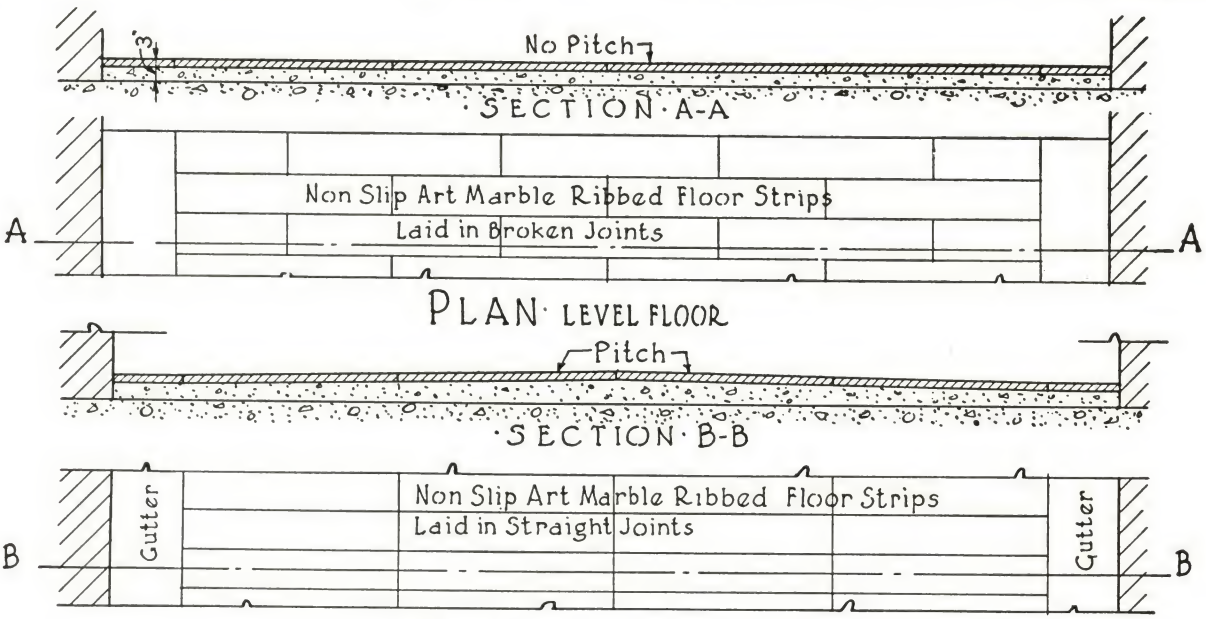
·NOTES·

Non-Slip Art Marble Elevator Mats can be detailed as shown by using any standard size Tile or special slabs.
18" min. width recommemded.



SECT. B-B-SCALE 1½"=1'-0"

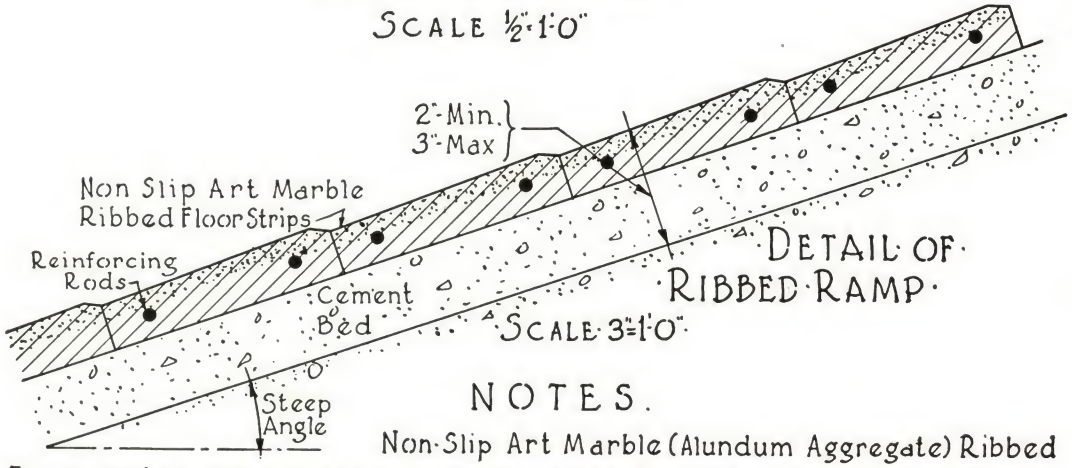
CHICAGO ART MARBLE CO.	CHICAGO ART MARBLE NON-SLIP REVOLVING DOOR FLOORS ~ ELEVATOR MATS	SCALE AS SHOWN	PLATE ⑥



PLAN LEVEL FLOOR

PLAN CROWNED FLOOR

SCALE ½"-1'-0"

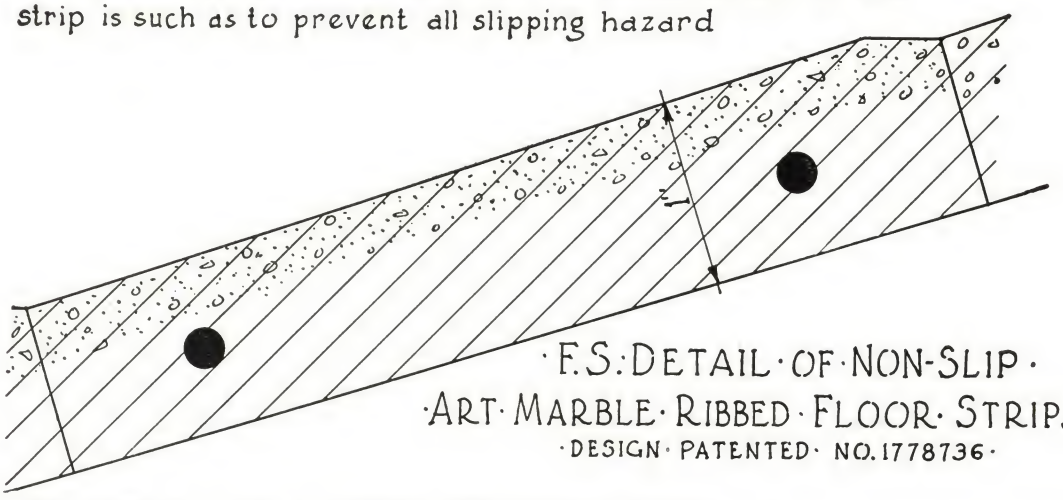


DETAIL OF RIBBED RAMP

SCALE 3"=1'-0"

NOTES.

Non-Slip Art Marble (Alundum Aggregate) Ribbed Floor Strips are necessary, where steep Ramps are required, for heavy foot traffic. In addition to the use of Alundum Aggregate as the Non-Slip abrasive, note that the construction of the strip is such as to prevent all slipping hazard



F.S. DETAIL OF NON-SLIP ART MARBLE RIBBED FLOOR STRIPS

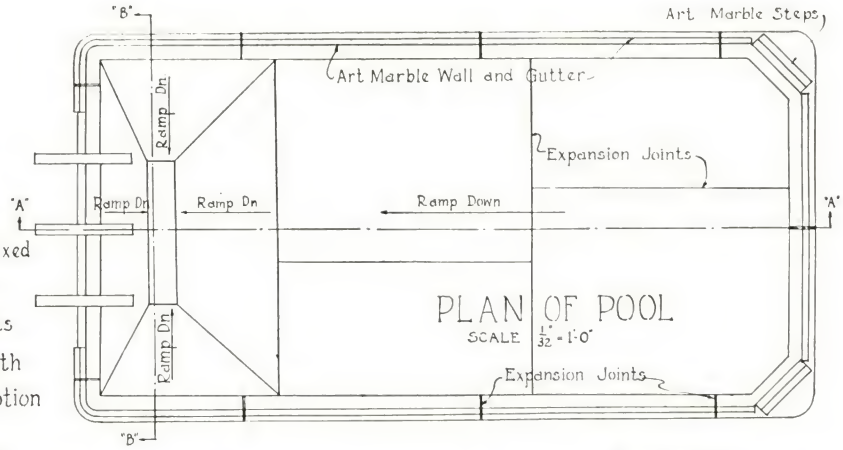
DESIGN PATENTED NO. 1778736

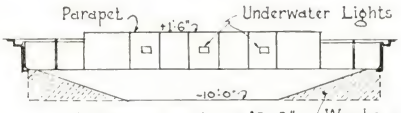
CHICAGO ART MARBLE CO.	CHICAGO ART MARBLE NON-SLIP RAMPED FLOORS	SCALE AS SHOWN	PLATE 7

Patents Pending

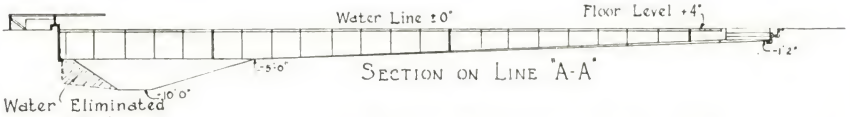
CAMCO SWIM POOL ADVANTAGES

Speedy Installation	Scientifically Mixed
Precast Reinforced Slabs	Air Compressed
No Form Work	Water Tight Joints
Perfect Hone Finish	Maximum Strength
No Algae Adherence	Minimum Absorption



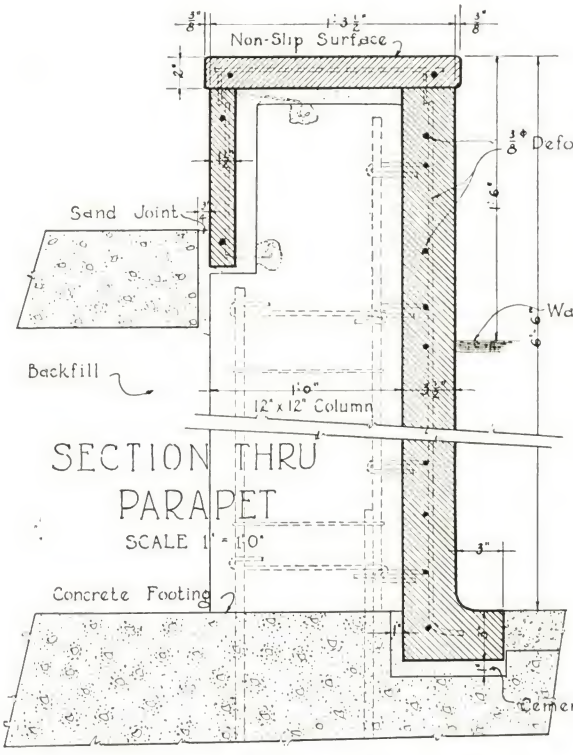


SECTION ON LINE "B-B"

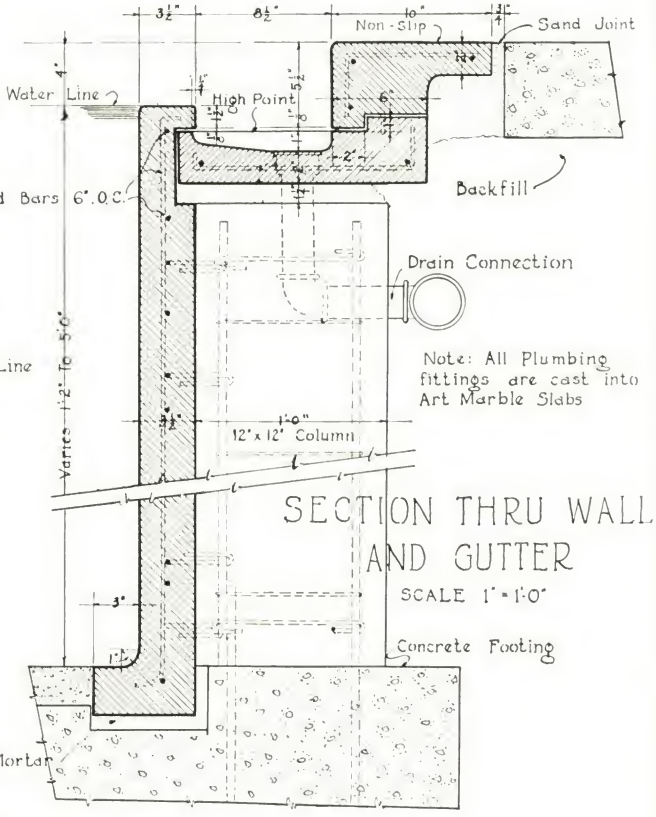


SECTION ON LINE "A-A"

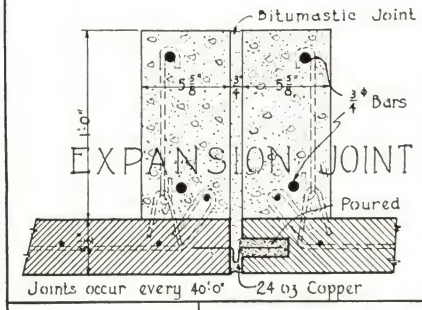
(Waste of Water Eliminated
Filtration System Reduced



SECTION THRU PARAPET
SCALE 1" = 1'-0"



SECTION THRU WALL AND GUTTER
SCALE 1" = 1'-0"



EXPANSION JOINT

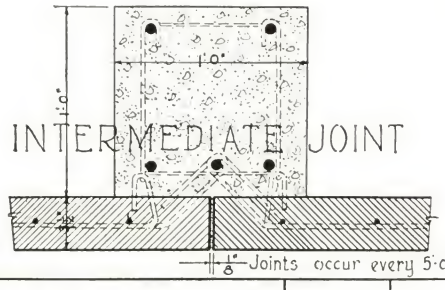
GENERAL NOTES

Details shown can be applied to pool of any shape or size.

Footing to be poured before Art Marble walls are set.

Art Marble slabs form pool wall.- No structural wall required.

Columns shown are poured after Art Marble walls are set.- Columns reinforce slabs at joints and support gutter.

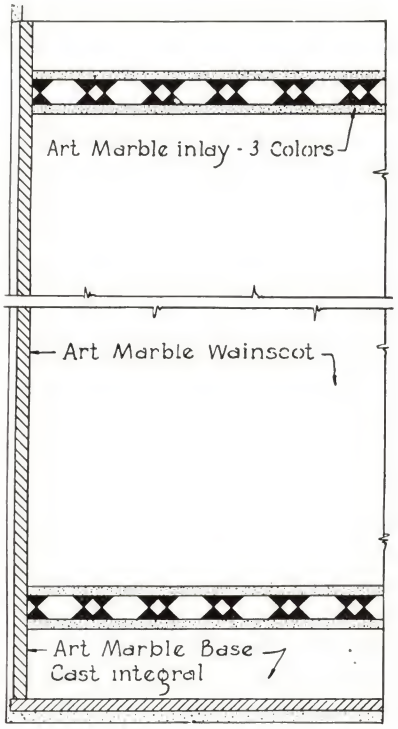


INTERMEDIATE JOINT

CHICAGO ART MARBLE CO.	**CHICAGO ART MARBLE SWIMMING POOL DETAILS**	SCALE AS SHOWN	PLATE 8

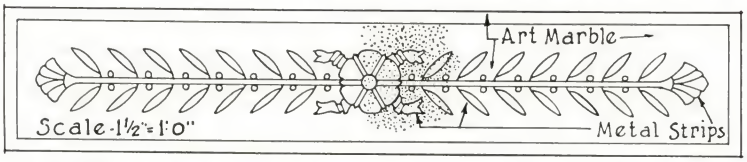


Vestibule walls executed in inlaid Art Marble Wainscot. - (see detail at right.)



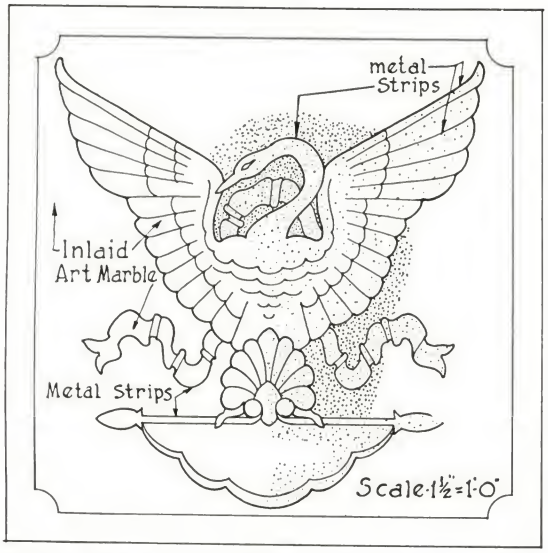
Detail of inlaid Art Marble Wainscot. (shown at left)

ELEVATIONS OF ART MARBLE INLAID WAINSCOTS · SCALE - 3/4" = 1'0"



Simple designs inlaid in Chicago Art Marble wainscot can be effected with or without metal strips, according to desire of Architect.

ART MARBLE WAINSCOT · METAL STRIPS ·





Soda Fountain executed in Metal strip inlaid Art Marble. Data on Soda Fountains upon request.

ART MARBLE WAINSCOT · METAL STRIPS ·

CHICAGO ART MARBLE CO.	CHICAGO ART MARBLE INLAID WAINSCOTS	SCALE AS SHOWN	PLATE 9

ART MARBLE

PRODUCTS OF

CHICAGO ART MARBLE COMPANY

JOHN J. WISE & COMPANY—INCORPORATED

Artificial Marbles, Scagliola and Travertine

TELEPHONE
ALgonquin 4-2699

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Products and Services

Manufacturers and Contractors for:

ARTIFICIAL MARBLES, KROME-MARBLE, SCAGLIOLA, IMITATION TRAVERTINE, KATO STONE, KASOTA STONE, etc.

All other varicolored Domestic and Imported Marbles and Stones Reproduced for interiors of monumental buildings such as banks, churches, theaters and public and private buildings of distinction. (See illustration below.)

In Krome-Marble we are offering a highly polished pre-cast product with a natural glaze adaptable for interior finishes of class and distinction. It can be compared with the finest domestic or imported marbles.

Krome-Marble is specially adaptable for sanitary bases as well as being a decorative element similar to marble in uses, wear, thickness and application, making possible an efficient solution of costly interiors, where used by itself or in conjunction with other materials.

Krome-Marble besides being moistureproof will withstand the effects of excessive heat or cold. Its hard non-porous surface is easily cleaned, being unaffected by washing or cleaning solutions.

We undertake to manufacture, also contract for erection of the above materials in any part of the United States or Canada, etc.

Quality

Products of this firm are of the best charactre, both in æsthetic values in reproductions of natural marbles and in quality of workmanship and materials.

Co-operation

We welcome any opportunity to be of service to architects and contractors in any capacity. Samples, estimates and suggestions will be submitted on request.

Prompt and attractive proposals will be sent to the inquirer on receipt of plans and specifications.

A Few Recent Installations

BUILDING	LOCATION	ARCHITECT
Peoples Bank & Trust	Passaic, N. J.	Halsey, McCormick & Helmer
St. Theresa's Church	Providence, R. I.	Ambrose J. Murphy
Greek Orthodox Church	New York, N. Y.	Thompson, Holmes & Converse
Portchester High School	Portchester, N. Y.	Tooker & Marsh
Snowden Fahnestock Residence	Newport, R. I.	Russell & Clinton
Bloomfield Bank & Trust	Bloomfield, N. J.	Uffinger, Foster & Bookwalter
County Trust Co.	New York, N. Y.	W. Whithill
Rhode Island Hospital Trust	Woonsocket, R. I.	Thomas M. James
Boca Raton Club	Boca Raton, Fla.	Schultze & Weaver
400 Madison Avenue Bldg.	New York, N. Y.	H. Craig Severance
Equitable Trust Co.	New York, N. Y.	York & Sawyer



Broadway National Bank, New York, N. Y.
L. H. FRIEDLANDER, Architect
These columns were executed in imitation black and gold marble. The caps in imitation of Escalette marble

X-ITE CORPORATION

DIVISION OF THE E. L. BRUCE CO.

MEMPHIS, TENN.

EASTERN AND MIDWESTERN OFFICES

Newark Parquet Floor Co.
10 Boston Street
NEWARK, N. J.

Joseph Lumber Co.
22nd and Ashland Avenue
CHICAGO, ILL.

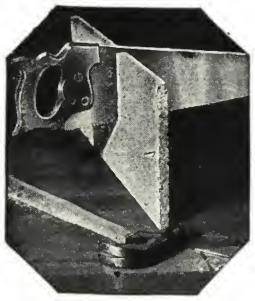
Hamilton Company, Inc.
2127 Pine Street
ST. LOUIS, MO.

REPRESENTATIVES IN PRINCIPAL CITIES IN THE UNITED STATES AND CANADA

Write X-ite Corporation, Memphis, Tenn., for Nearest Representative

Product

X-ITE, a Moulded Material for walls, floors, and ornaments, made of wood fibre, mixed with suitable binder and color pigments. The weight of X-ite is approximately 50% heavier than wood and it is sawed, bored or nailed with woodworking tools. X-ite is not inflammable. It neither expands nor contracts due to damp or humid atmosphere. It remains set without warping or distortion.



Colors and Textures

X-ite may be obtained in twenty colors (see color chart on page following). Four textures are available: gloss, close, semi-shaggy, acoustical, with distinctive mottled effect.

Being prepared in colors, X-ite offers the added attraction of ample selection to harmonize with any decorative scheme, or for use as the basic standard. Where X-ite is used, no painting, finishing, brown or scratch coats are required. X-ite is inexpensively maintained by washing with soap and water or waxing or oiling. Owing to its light weight, a less heavy superstructure is needed than for heavier materials.

Acoustical X-ite is manufactured according to the sound absorption required for the specific job. Any material with real acoustical value depends upon porosity for sound absorption and shaggy-texture X-ite provides this necessary porosity. The acoustical value of X-ite must be experienced to be appreciated.

Literature

"Illustrated Opinions Concerning X-ite and Its Uses," A. I. A. file No. 23-g-2.

Illustrated Folder, "X-ite for Walls, Ceilings, and Floors."

The Material and Its Uses

X-ite enjoys universal application for residences, hotels, churches, schools, apartments, office and public buildings generally. There is a warmth of tone and physical warmth under foot or to the touch, which makes X-ite particularly adaptable in residence work to floors and walls in bathrooms, kitchens, sun parlors, breakfast nooks and recreation rooms. X-ite floors are not slippery when wet.



X-ite Wainscot in Trophy Room, Junior and Senior High School, Concordia, Kan.

The manufacturers of X-ite bring to the attention of architects a structural material which offers certain qualities greatly desired in modern-day building. X-ite not only reduces the initial cost of building without sacrificing beauty and permanence, but permits widest latitude in architectural expression.

X-ite offers strength and durability. Though in the class of the harder and impervious materials—such as stone, marble, cement, and tile—X-ite weighs only approximately 50% more than wood. A particular advantage of X-ite is that ornamentation, such as mouldings, pilasters, spandrels, caps, etc. may be inexpensively manufactured to the architect's detail in the same texture as the flat material.

For Walls

As X-ite is a manufactured material, it can be supplied in slabs of standard sizes, completely finished at the factory and shipped ready to be nailed or bonded into place.

The surface texture and varied coloring of the material give to X-ite walls the beauty and architectural dignity of Mid-Victorian as well as modern times.



Radio Station WNBR, Memphis, Tenn.

X-ite walls and vaulted ceiling with ventilating grilles cast in X-ite

X-ite is installed over standard types of backing (see installation instructions). *Corners, borders, etc., can be cut with an ordinary hand saw at the place of installation* or cut at plant to detailed drawings.

For Floors

X-ite floors, like the walls, are without coldness or dampness, and act as an insulator for both heat and cold. The natural resiliency of the material, plus a tough wearing surface with the tendency to give and not to scruff or dust, make X-ite floors greatly to be desired as a health measure as well as one of durability or beauty.

X-ite floors are sound absorbent—without ring or clatter; the surface texture is a natural preventive of slipping without gumminess or cohesion. The texture and colorings of X-ite are especially effective with Spanish, early English, or Italian interior decoration. Any individual design may be followed. Much of the beauty of X-ite is in the variegated shading and mottling of its color effect, avoiding monotony in tone. The beauty of X-ite improves as it ages.

Miscellaneous Uses

X-ite for window stools, in bathrooms, and above kitchen sinks, especially in connection with steel sash construction, stair treads and risers, threshold strips.



X-ITE COLOR CHART

1. BUFF
2. PALE GREEN
3. GREEN
4. MOSS GREEN
5. OLIVE
6. BLUE
7. LIGHT BROWN
8. DARK BROWN
9. DRAB
10. STONE GRAY
11. BLACK
12. LIGHT GRAY
13. IVORY
14. MEDIUM BROWN
15. RED
16. OLD ROSE
17. SHELL PINK
18. TANGERINE
19. GOLD
20. VIVID GOLD

X-ITE CORPORATION

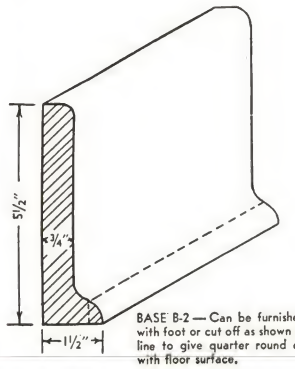
DIVISION OF E. L. BRUCE COMPANY

MEMPHIS, TENN.

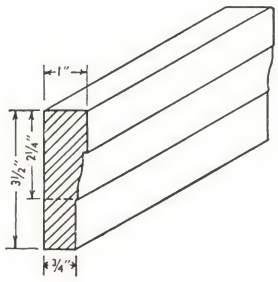
ORNAMENTAL WORK IN X-ITE

The manufacturers of X-ITE bring into the field of architecture a structural material which offers certain qualities greatly desired in modern-day building. A moulded material of new wood fibre, binder and color pigments, it offers strength and durability, and although in the class of the harder and more impervious materials such as stone, marble, cement and tile, X-ITE weighs only approximately fifty percent more than wood. The variety of X-ITE colors offers the added attraction of ample selection to harmonize with any decorative scheme. X-ITE requires no finishing coats, and is economically maintained by washing with soap and water, or waxing and oiling. Mouldings, base and stair treads and window seats are economically moulded with accuracy and perfect duplications. Suggestions, as well as assistance, as to the most effective uses of X-ITE in walls, ceilings, floors and ornaments, will be gladly given to architects and builders by our architectural department.

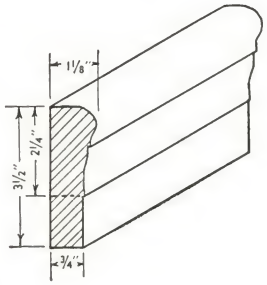
STANDARD ORNAMENTAL WORK



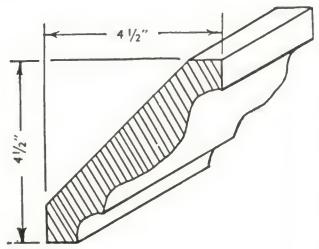
BASE B-2 — Can be furnished either with foot or cut off as shown by dotted line to give quarter round cove flush with floor surface.



WAINSCOT W-1 — Can be furnished in either 2¼" or 3½" width as shown.



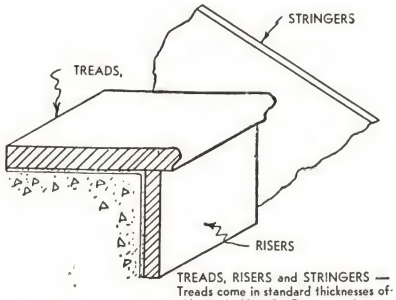
WAINSCOT W-2 — Can be furnished in either 2¼" or 3½" width as shown.



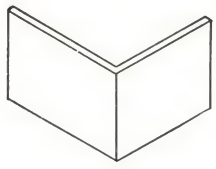
CORNICE CR-1 — Standard. Can furnish any other type of cornice to architect's detail.

Note: Can furnish any type of above, and other, wall mouldings to architect's details.

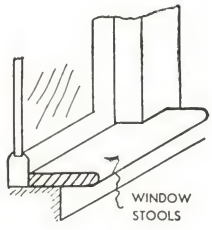
STANDARD ORNAMENTAL WORK TO SPECIFIED DIMENSIONS



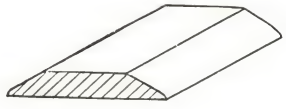
TREADS, RISERS and STRINGERS — Treads come in standard thicknesses of 1⅛" and 1¼", O. G. or round nose, length and width as specified. Risers and Stringers in standard thicknesses of ⅝", lengths up to 47½", widths up to 17½".



CORNER PIECES — In standard thicknesses of ⅝", standard widths of 5½", 8½", 11½" and 17½" to conform to wall size standards. Legs in any length up to 17½" one leg, 47½" other leg.



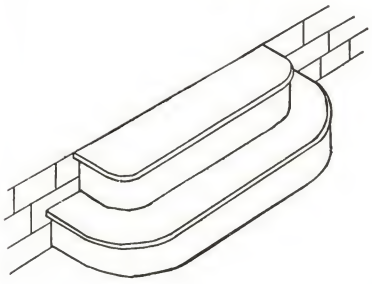
WINDOW STOOLS — In standard thicknesses of 1⅛" and 1¼", O. G. or round nose, length and width as specified.



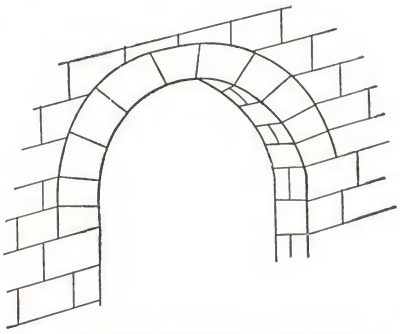
THRESHOLDS, DOOR and WINDOW TRIM, Etc. — Details and dimension to architect's specifications.

Note: Above work can be furnished in other thicknesses than specified if desired.

SPECIAL ORNAMENTAL WORK TO ARCHITECTS' DETAIL



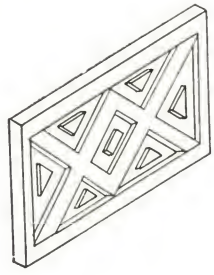
CURVED TREADS AND RISERS — Can be furnished in thickness and width as specified, lengths up to six feet; over this length should be laid in sections.



ARCH AND SOFFITT WORK — Standard thickness ⅝" or ¾", other dimensions to architect's details.



PILASTER AND COLUMN WORK — Thickness as specified; widths up to two feet; lengths up to six feet.



FRIEZE PANELS — SYMBOLIC FIGURES, Etc. — To architect's details.

Note: There are countless other uses for X-ITE in special ornamental work, such as wall niches, door and window lintels, window seats, office counters, column caps, etc.

ARCHITECTS' SPECIFICATIONS AND INSTRUCTIONS FOR ERECTING X-ITE WALLS

Note: The following specifications are intended for the use of architects, and cover the uses of X-ite for building purposes.

Furnish and install in the following portions of the work, X-ite walls (and wainscot) as manufactured by the X-ITE CORPORATION of Memphis, Tennessee, erecting strictly in accordance with manufacturer's specifications *and installation instructions:* (Insert here the areas affected.)

Installation Instructions

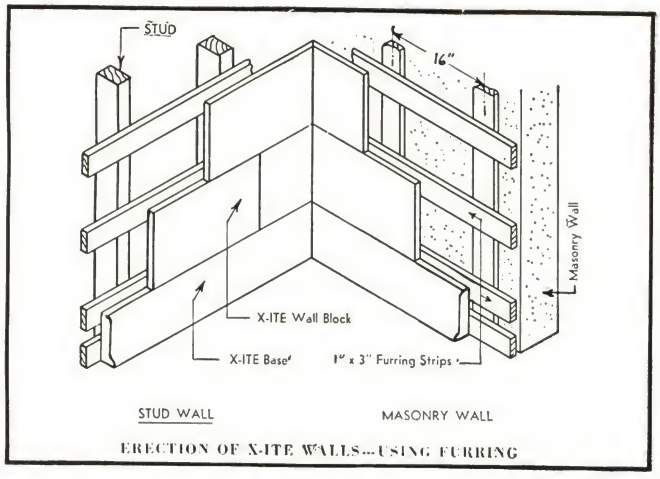
Before applying X-ite, the contractor shall see that all wall surfaces are true and plumb.

(*Note:* Paragraph (a), (b) or (c) should be used, depending upon the type of joint desired).

(a) V-joint—X-ite blocks shall be ⅝ in. thick and have ⅛-in. (or ¼-in.) beveled edge to form V-joint when laid up close. All blocks shall be laid true and level.

(b) Open Joint—X-ite blocks shall be ⅝ in. thick and have straight or square edges and shall be laid up absolutely true and level to form ⅛-in. (or ¼-in.) open joint. All joints shall be pointed with X-ite Pointing Compound.

(c) Butt Joint—X-ite blocks shall be ⅝ in. thick and have straight or square edges and shall be laid up absolutely true and level with butt joints. All edges of block shall be buttered with X-ite Pointing Compound before setting the next block, excess compound being wiped off from the face immediately, keeping the block as clean as possible.



ERECTION OF X-ITE WALLS—USING FURRING

On Stud Walls (See Drawing Above)

X-ite blocks shall be installed against stud walls by nailing with 6d galvanized finishing nails driven at an angle to 1x3-in. furring nailed to studs, using horizontal strips only and centering on horizontal block joints. Nails shall be set ⅛ in. and nailholes filled with X-ite Pointing Compound.

On Concrete, Hollow Tile or Masonry Walls Using Furring (See Drawing Above)

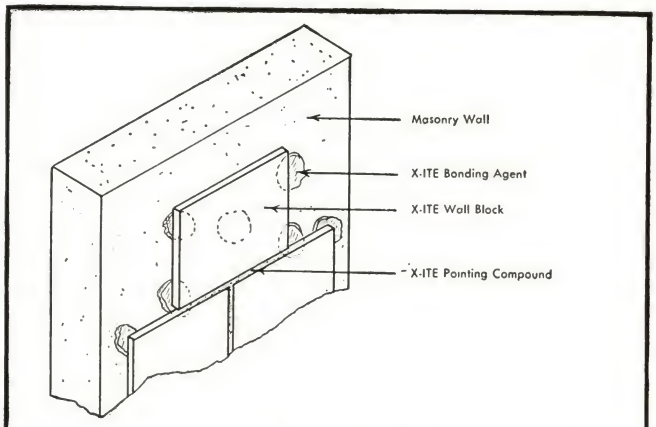
Double furring shall be used where small blocks are used, the last furring to be horizontal; vertical furring only may be used for large blocks 17½ in. or longer. Furring shall be 1x3 in. and shall be centered on block joints. Vertical furring shall be secured to hollow tile by means of toggle-bolts about 18 ins. on centers; to concrete and brick walls by means of expansion bolts or with nails driven into hardwood plugs in wall. Horizontal furring shall be securely nailed to vertical furring. Furring shall be absolutely plumb before blocks are installed.

X-ite Blocks shall be nailed with 6d galvanized finishing nails driven at an angle, nails to be set ⅛ in. and nailholes filled with X-ite Pointing Compound.

On Concrete, Hollow Tile or Masonry Walls Using "Bonding" Method (See Next Drawing)

Blocks shall be secured to walls by means of X-ite bonding agent or cement, applied by "spotting," covering block surface, to at least 20% of total area and to a thickness of at least ¼ in.

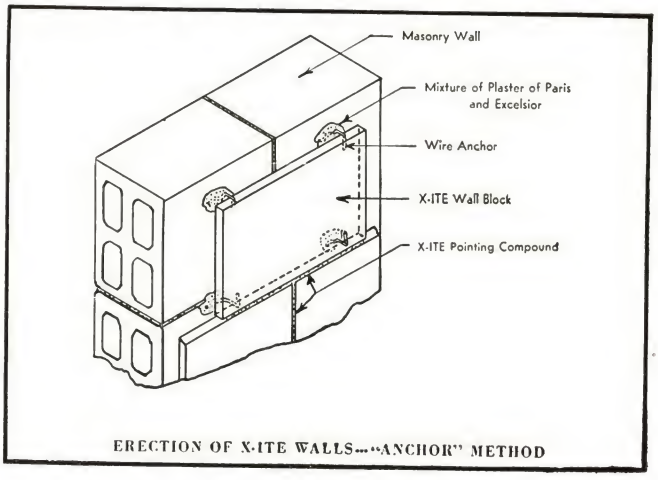
If any other bonding agent is used it must be approved by the X-ITE CORPORATION.



ERECTION OF X-ITE WALLS—"BONDING" METHOD

On Concrete, Hollow Tile or Masonry Walls Using "Anchor" Method (See Drawing Below)

Blocks shall be secured to walls by means of four wire "anchors" to each block, the anchor to consist of a short piece of No. 10 copper wire with one end tightly inserted in a hole of ½-in. depth drilled in the edge of the block, the wire bent at right angles, given a few spiral turns parallel to face of wall so as to set block out about ½ in. from wall



ERECTION OF X-ITE WALLS—"ANCHOR" METHOD

(see cut). The "anchors" set in position shall be secured to the back wall in a mixture of plaster-of-paris and excelsior applied to a thickness of ⅝ in. over wall areas covered by anchor. Another method is that of inserting anchor in hole in backing and plugging hole with plaster-of-paris and excelsior.

In Bathrooms

The wood backing around tubs and shower stalls shall be covered with a layer of heavy waterproof paper, and the X-ite nailed with 6d galvanized finishing nails, driven at an angle, nails to be set ⅛ in. and the nailholes to be filled with X-ite Pointing Compound. Edges of blocks shall be buttered with Pointing Compound when erecting.



X-ite Wainscot in Junior and Senior High School, Concordia, Kan.

(See Page 1)

PROUDFOOT, RAWSON, SOUERS & THOMAS, Architects, Des Moines, Iowa

ARCHITECTS' SPECIFICATIONS AND INSTRUCTIONS FOR LAYING X-ITE FLOORS

Note: The following specifications are intended for the use of architects, and they cover the adaptations of X-ite for floors, base work, and wood, concrete or iron stair work.

Furnish and install in the following portions of the work, X-ite floors as manufactured by the X-ITE CORPORATION of Memphis, Tennessee, laying strictly in accordance with manufacturer's specifications *and installation instructions.* (Note: List here the portions of the work that are to have X-ite floors, specifying the sizes and colors of blocks to be used.)

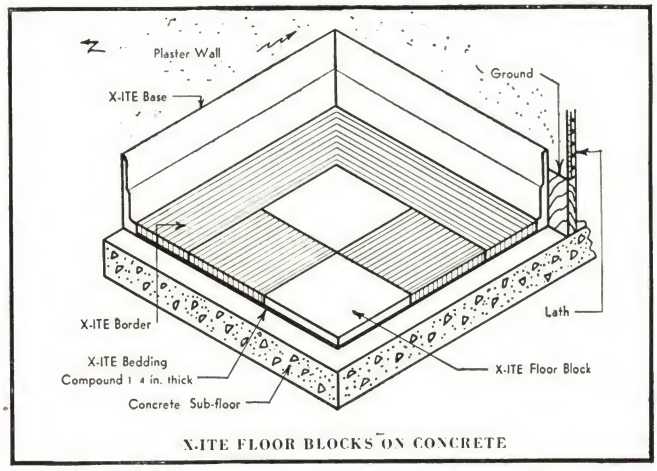
Installation Instructions

Preparation of Wood Subfloor—(Include in Carpentry Specifications.)

The contractor shall see that all wood subfloors where X-ite Floors are to be laid are level and true ⅞ in. below the finish floor level, boards to be securely nailed to prevent warping. On new work the wood subfloor should be of side-matched boards not over 4 ins. wide, driven tight, well nailed, true and level.

Preparation of Concrete Subfloor—(Include in Concrete Work Specifications.)

The contractor shall inspect the portion of the work where X-ite Floors are to be laid and see that the subfloor is level and true ⅞ in. below the finish floor level. On new concrete work top coat need only be screeded or floated to a level surface free from projections or depressions. On old concrete work projections are to be chiseled off and depressions filled.



X-ITE FLOOR BLOCKS ON CONCRETE

Laying Over Wood or Concrete Subfloor

(See drawings on this page.)

When the subfloor has been properly prepared, X-ite Blocks, ⅝ in. thick of the size and color specified, shall be laid in ¼-in. layer of X-ite Bedding Compound, applied as the blocks are laid. As each block is laid the edges shall be buttered with X-ite Pointing Compound and squeezed up tight, the compound that oozes out being wiped immediately from the face. After the pointing compound has set the floor shall be washed to remove any smears or stains from the surface. *Do not sand floor.* The finished floor shall be allowed a minimum of six hours for setting before being used.

Border

X-ite border shall be laid in the same manner as specified for X-ite floors, in the following portions of the work (insert here the areas affected).

Base

X-ite base, of the height indicated on blue print or as specified herewith, shall be set in the following portions of the work (insert here the areas affected).

Base shall be set in 47½-in. lengths, and secured to grounds with 6d galvanized finishing nails. Nails shall be set ⅛ in. and nailholes filled with X-ite Pointing Compound.

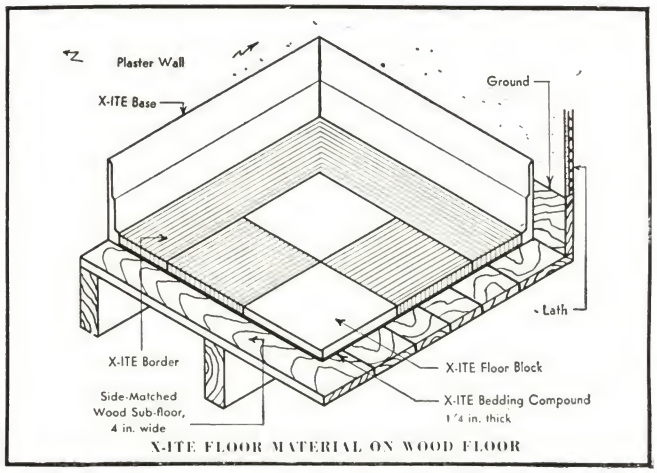
Stairs

X-ite Stair Treads and Risers shall be laid as follows:

(a) On Wood Stairs—*On new work,* treads and risers shall be nailed to wood with 6d galvanized finishing nails. Nails shall be set ⅛ in. and nailholes filled with X-ite Pointing Compound.

On old work, former treads and risers shall be removed before installing those of X-ite.

(b) On Concrete Stairs—Treads and risers shall be laid



X-ITE FLOOR MATERIAL ON WOOD FLOOR

over a ¼-in. layer of X-ite Bedding Compound applied as they are laid. Compound dropped on face shall be wiped off immediately, keeping face as clean as possible.

(c) On Iron Stairs—If treads and risers on iron stairs are of a network pattern X-ite treads and risers shall be fastened by means of toggle bolts. The toggle bolt shall be countersunk and the hole filled to face surface with X-ite Pointing Compound. If treads and risers on iron stairs are solid and it is possible to get under the stairs, X-ite treads and risers shall be fastened by means of wood screws through holes drilled in iron. If impossible to work from under the stairs, the treads and risers shall be fastened by means of toggle bolts as described above.



Composite Demonstration of X-ite Products

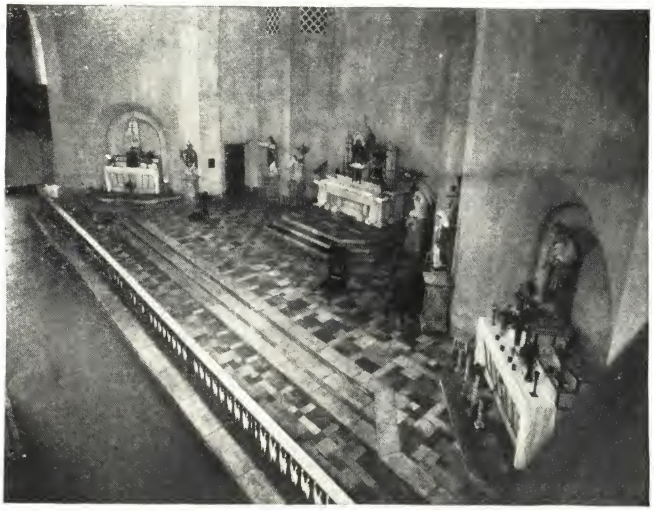
Acoustical walls and arch, buff color. Floors green and olive, with buff, green, and black center design. (Telephone niche, medicine cabinet, lawn bench of moulded X-ite.)

Standard Mouldings

Although it has been found, in the majority of cases, that special mouldings are required to conform to the architect's details for the particular plans, Standard Mouldings are available for immediate shipment in reasonable quantities, and in such forms as are readily adaptable to numerous situations. (See Standard Mouldings on back of X-ite Color Chart.)

Typical Installations

A few of the many adaptations of the various types of structures, with testimonial comment are here illustrated.



X-ite Random T-Pattern Floors: Gold, Drab, Natural and Olive in St. Leo the Great Church, New Orleans, La.
PAUL CHARBONNET, Architect

In commenting on this installation, the architect says: "I wish to express my satisfaction with the installation of the X-ite flooring, base and stair treads of the St. Leo the Great Church. I do not know of any other material which could have been used to give us the effect we desired for the amount of money we had to spend, and your service on this floor since completion has been highly satisfactory."



Detail of X-ite Pilaster and Wall Construction in the Reception Rooms of the Six-story Building, 2800 Milwaukee Ave., Chicago
LEICHENKO & ESSER, Architects

To quote Mr. Leichenko: "We are satisfied that this material has all the beauty, permanence and durability claimed for it. We have used a number of similar materials before, for floors and walls, but find that 'X-ite' has a considerably better color and texture and is more suited for its intended purpose. Another point highly in favor of this material is the fact that from our past relations we know that the manufacturers are entirely reliable and stand back of their products."

The floor is *CELLized walnut and oak wood floor tile (see Products' Index).



X-ite Walls and Arches in the Mutual Building & Loan Association Building, Emporia, Kan.
BRINKMAN & HAGAN, Architects

We quote from a letter from the architects as follows: "We are happy to state that we are more than pleased with the results obtained with its use. It forms a background in a room that would be hard to reproduce in any other material at anywhere near the same cost."

Also this comment from the president of the Association: "We are more than pleased with the X-ite used on the walls of our new building. We consider it better than similar products in that there is sufficient variation in the appearance of each piece to make it unnecessary to have different colors in order to avoid the flat appearance which is so noticeable where there is but one shade. We have been complimented by a number of people upon the appearance of our walls."



Acoustical X-ite Wall Treatment in the Walthall Hotel, Jackson, Miss.
N. W. OVERSTREET, Architect

Mr. Ford, manager of the hotel, writes: "We deem it a privilege to attest to the quality, durability and beauty of your wonderful product—X-ite. The Walthall lobby is constructed of X-ite and we consider it the most beautiful lobby that we have ever observed and this wonderful material is responsible for its beauty. Very attractive and durable in every way. We highly recommend this material to any one interested in construction work for durability and beauty."

Resources

X-ite is manufactured by the X-ITE CORPORATION, a Division of the E. L. Bruce Co., Memphis, Tenn., one of the largest manufacturers of hardwood flooring in the world. Also manufacturers of *CELLized Wood Floor Tile.

See Manufacturers' Index.

ZENITHERM COMPANY, INC.

Manufacturers of Interior and Exterior Walls and Floors
110 East 42nd Street, New York, N. Y.
HOME OFFICE AND PLANT: KEARNY, N. J.
CHICAGO, ILL., 612 No. Michigan Avenue BOSTON, MASS., 11 Beacon Street PHILADELPHIA, PA., 806 Otis Building
REPRESENTATIVES IN ALL PRINCIPAL CITIES OF UNITED STATES AND CANADA

The Material

Zenitherm has all the dignity and massiveness, without the coldness, of stone. It has all of the convenience of wood, since it can be nailed, sawed, drilled and screwed.

Zenitherm is made of a combination of selected wood fibre and highest quality calcined magnesium oxide. This is treated with a weatherproofing binder and subjected to hydraulic pressure in steel moulds. The pressure is maintained until the mass sets into a dense block, which is not only highly fire resistant but is exceptionally low in absorption. It does not distort or shrink. The process is covered by patents and its production is under factory control. There is no substitute having the specific advantages of Zenitherm.

Qualities and Properties

Zenitherm is impervious to frost or any climatic conditions. Constant physical characteristics together with low thermal conductivity make Zenitherm preferable as a permanent material insuring comfort, beauty, durability, weather resistance and safety in its fireproof qualities.

Uses

Zenitherm is used for interior or exterior walls, floors, fireplace facings, wainscot, arches, panels, sills, stair treads, risers, string, base, walks, et cetera.

ZENITHERM
(For Walls and Floors)



Zenitherm Floors, F. R. Russell Residence, Mill Neck, N. Y.

WILLIAM LAWRENCE BOTTOMLEY, Architect

In addition to the music room illustrated, Zenitherm was installed in the loggia and bathrooms of this residence

Standard Colors

Zenitherm is made in 21 standard colors: natural, buff, gold, pink, coral pink, olive, drab, light gray, stone gray, light brown, dark brown, red, green, blue, black, tangerine, havana brown, maya brown, £1000, sea green, lichen green.

(See color chart on page 2.)

The fact that Zenitherm is available in different shades gives the architect ample opportunity to secure beautiful and permanent effects. Colors are obtained by mineral pigments, *not dyes.*

Standard Sizes

Zenitherm is made in fifteen standard sizes. Other sizes can be furnished according to specifications. Prices on application. All wall and floor material is ⅝ in. in thickness. Cove base measures 4¾ in. from top of base to finish floor. Straight plain base, any height desired. Stair treads 1¼ in. in thickness. Risers ⅝ in. in thickness. (See details of Zenitherm base stair treads and risers on page 3.)

STANDARD SIZES

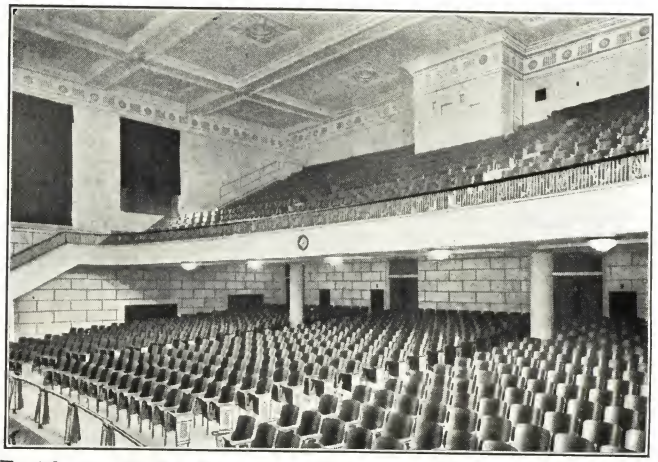
Width, in.	Length, in.	Width, in.	Length, in.
5½	5½	8½	23½
5½	11½	8½	47½
5½	17½	.....	.....
5½	23½	11½	17½
5½	47½	15½	15½
8½	8½	15½	17½
8½	11½	17½	23½
8½	15½	17½	47½



Zenitherm Floors, Chapel, Franciscan Novitiate Folly Quarters, Hartford County, Md.

PALMER & LAMDIN, Architects

Zenitherm Floors were also installed in the sacristy, apse, sanctuary, recreation rooms, library, refectory, community room, archbishop's room, reception rooms and bedrooms, a total of over 10,000 sq. ft.

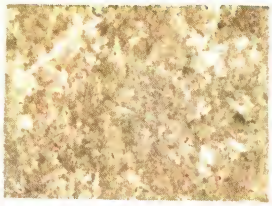


Zenitherm Walls, Longview High School, Longview, Wash.

WM. B. ITTNER, INC., Architects

An example of the use of Zenitherm by these nationally-known school architects, whose satisfaction with the results obtained from Zenitherm in this school has led to wide similar usage by them in other schools

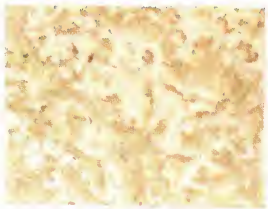
LIGHT COLORS



DRAB



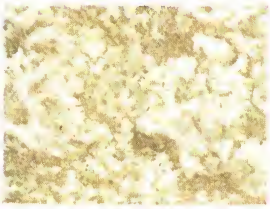
CORAL PINK



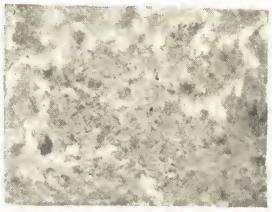
GOLD

PINK

NATURAL



OLIVE



STONE GREY



BUFF

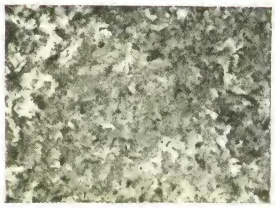
LIGHT GREY

STANDARD COLORS

These exact reproductions of the entire range of Zenitherm shades and colors illustrate the beauty and character of Zenitherm texture and coloring. Note how well the flat monotony of solid tones is eliminated through the variation of color and texture in each piece. With this variation, however, a general harmonious tone is maintained, and the effect of the finished Zenitherm floor or wall is both pleasing and desirable.

ZENITHERM
(For Walls and Floors)

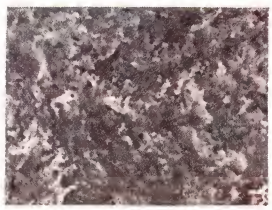
DARK COLORS



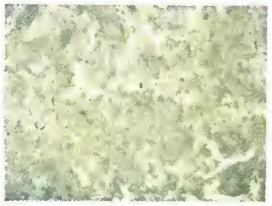
LICHEN GREEN



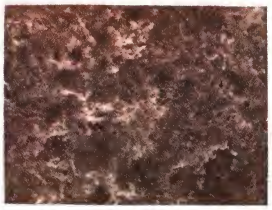
SEA GREEN



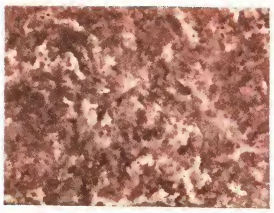
DARK BROWN



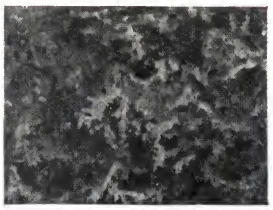
GREEN



LIGHT BROWN



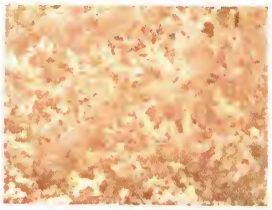
MAYA BROWN



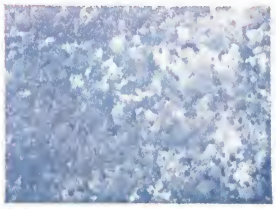
BLACK



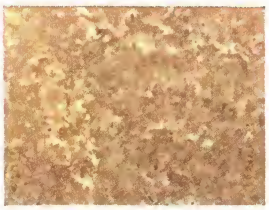
RED



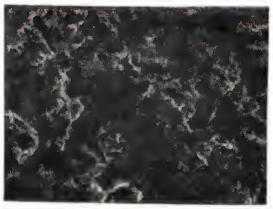
TANGERINE



BLUE



HAVANA BROWN

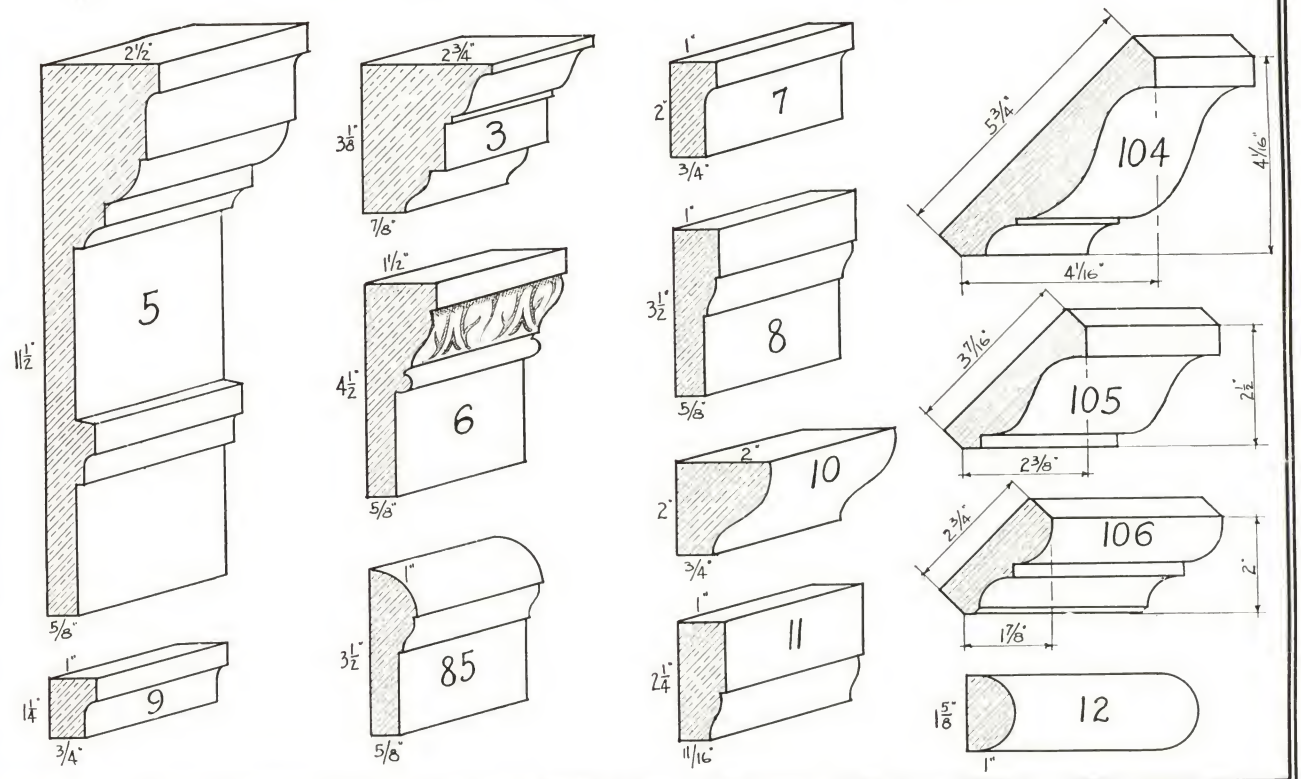


£ 1000

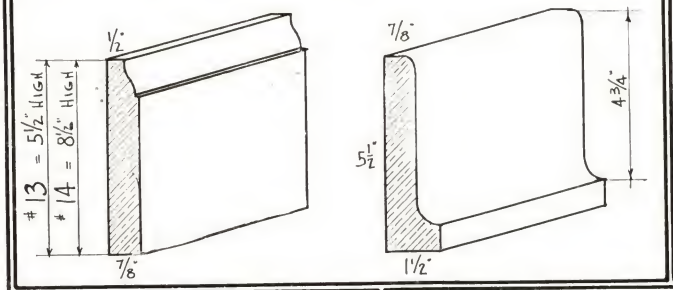
ZENITHERM ORNAMENTAL WORK

The use of Zenitherm for architectural and decorative ornament has certain decided advantages over the use of stone or a similar material. Zenitherm mouldings, base and stair treads can be obtained at moderate cost. Zenitherm is pressed, not cut, thereby insuring perfect detail and absolute duplication. Zenitherm can be supplied in a variety of colors at no extra cost. No surfacing or finishing is necessary, thus adding to the economy of its use. Our architectural department is always glad to assist architects and builders with suggestions as to how Zenitherm may be used most effectively.

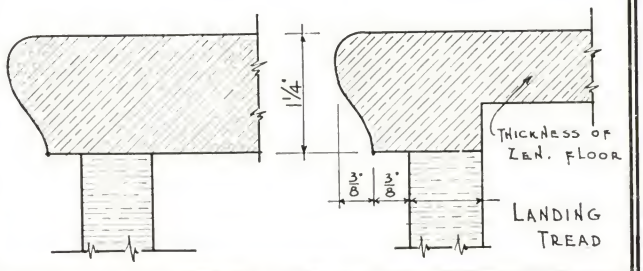
STANDARD MOULDING DETAILS



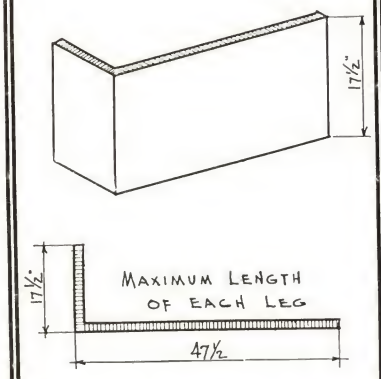
STANDARD BASE DETAILS



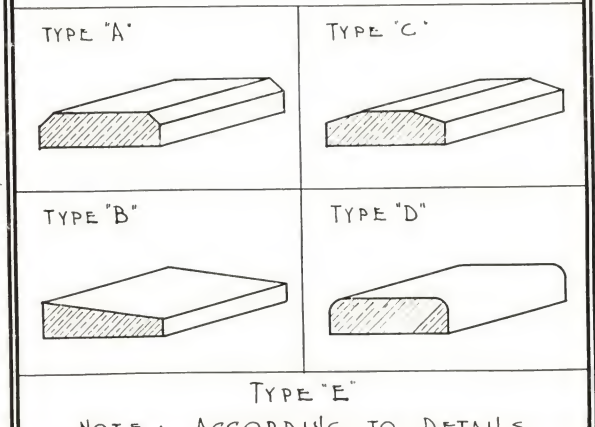
STANDARD TREADS & RISERS



SOLID CORNER PIECES

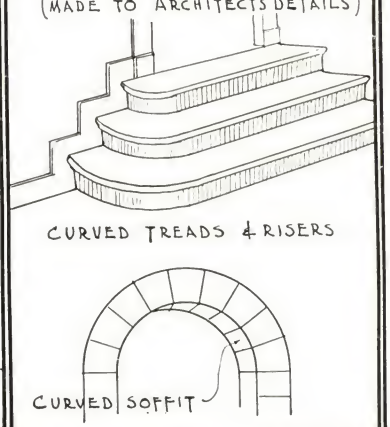


TYPICAL DOOR SADDLES



SPECIAL CURVED MATERIAL

(MADE TO ARCHITECT'S DETAILS)



Standard Mouldings and Trim

Zenitherm standard mouldings are made for use in conjunction with Zenitherm walls. There are thirteen different designs available. (See details on page 3.) Zenitherm mouldings and trim adaptable to ashlar surfaces assure a finish correct in design and effective in treatment.

Corner Pieces

Zenitherm solid corners are manufactured to eliminate the appearance of joining and edge mitering. (See details on page 3.) They carry out completely the effect for solid stone for columns, pilasters, beams, returns, reveals, quoins, et cetera. Where Zenitherm corner pieces are used, all edge mitering or joining is eliminated and installation costs are reduced to a minimum. Zenitherm corner pieces are supplied only when called for.

Door Saddles

On page 3 are detailed five different types of Zenitherm door saddles which may be explained as follows:

Type A—Made from standard ⅝-in. material. The maximum dimensions are 47½ in. long and 17½ in. wide.

Type B—This type is standard ⅝-in. material planed in such a manner that it acts as a ramp between the Zenitherm floor level and the adjacent floor level.

Types C and D—These are special hand cast saddles and can be had up to a length of 5 ft. Maximum width for safe shipping 17½ in.

Type E—Any saddle made in accordance with architect's detail.



Exterior Modernizing with Zenitherm—Carroll Building, Paterson, N. J.

Floyd Y. Parsons, Architect

Above is shown the old brick building as it existed before the Zenitherm walls were erected. Below shows the complete transformation effected

Note: In the case of ⅝-in. material for walls, the weight is to be based on the gross area; that is, net area plus 15%. It is essential that the additional 15% be added in, as it is impossible to tell what portion of the allowable waste must be shipped in order to complete the job.

The weight of ⅝-in material for floors should be based on net area plus 8%, as it is necessary to send some waste over the actual net required.

For all ornamental items, except standard mouldings (which can be taken on the basis of the 1¼-in. treads), it is wise to figure 10 lb. per sq. ft. for an average thickness of 1 in. While the material itself does not weigh quite this much, it is often necessary to pack it in bulky boxes which have a tendency to raise the weight out of proportion to the actual pieces shipped.

Installation

Zenitherm presents no difficulties of installation. The blocks, cut into standard sizes at the factory, are face nailed with galvanized finishing nails to furring, or haired brown coat of plaster or mortar, for ashlar surfaces. Zenitherm Floors follow the standard method of installing floor materials. Any competent carpenter can lay Zenitherm Floors and erect Zenitherm Walls if a reasonable amount of care is exercised.

Our "Installers' Guide" gives full information and helpful suggestions to make the installation of Zenitherm a simple task. A copy is furnished with every order; extra copies on application.

Weight Data

The following information will be found valuable in computing the freight costs on Zenitherm:

⅝-in. Zenitherm .....4½ lb. per sq. ft.

Bedding compound:

*3½ lb. per sq. ft. for ¼-in. bed,

*1¾ lb. per sq. ft. for ⅛-in. bed.

*This includes the weight of the liquid binder.

1¼ in. stair treads.....8 lb. per sq. ft.

Literature for Architects, Their Clients and Contractors

We have several booklets and folders available which we shall be glad to mail on request. Included among these publications are "Zenitherm for Walls and Floors"; "Zenitherm Defined"; "Banking on Zenitherm"; "Some Architectural Mouldings and Bases Achieved with Zenitherm"; "Installers' Guide"; "Zenitherm for Church Buildings"; "Zenitherm for Educational Buildings"; "Zenitherm Floors of Character."



Zenitherm Floors, Beauty Salon, Best & Co. Department Store, New York, N. Y.

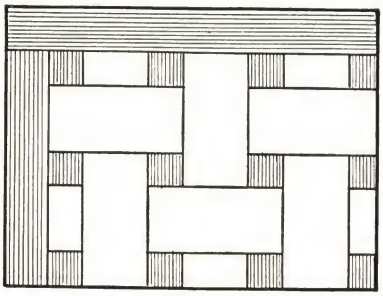


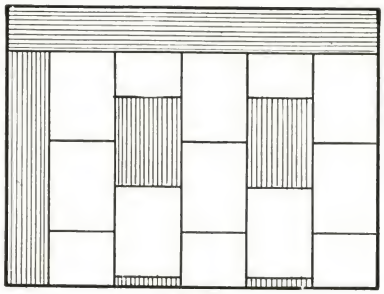
Zenitherm Wainscot and Mirror Frames, Waldorf System Cafeteria, Boston, Mass.

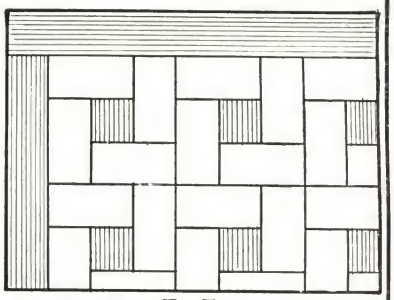
John M. Gray, Architect

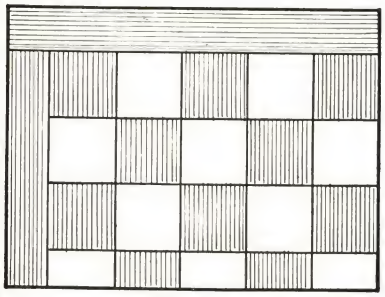
STANDARD FLOOR PATTERNS

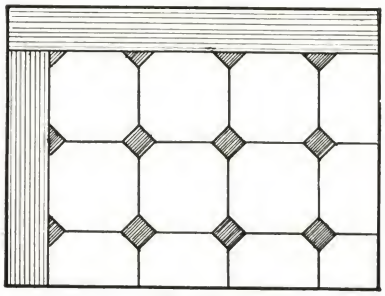
The national reputation which Zenitherm Floors have gained and consistently maintained is richly deserved for many reasons, including their good looks, durability and general workability. But one of the chief claims to consideration is the wide range of selection afforded by a multiplicity of beautiful and striking patterns offered in all sorts of shapes, sizes, colors and styles. Fourteen of the more popular standard Zenitherm Floor patterns are shown below. A series of Zenitherm Floor patterns, reproduced in actual colors, will be supplied upon application.

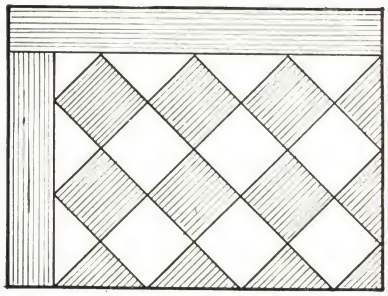

F-1

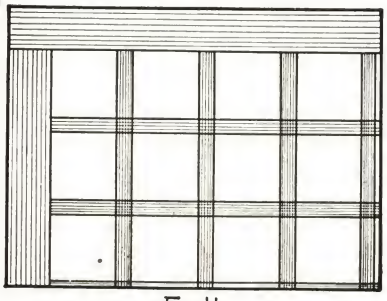

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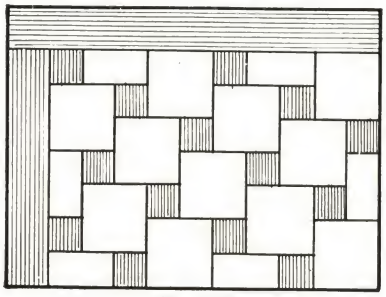

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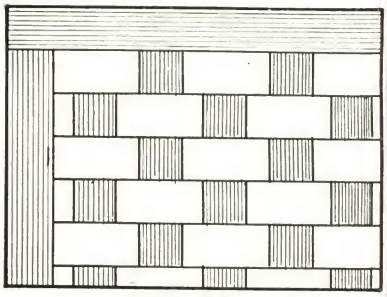

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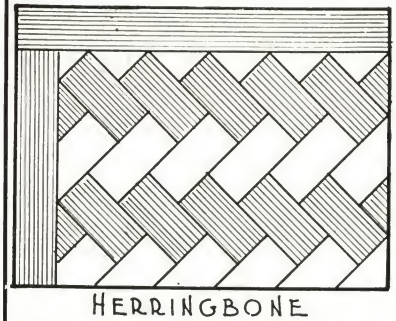

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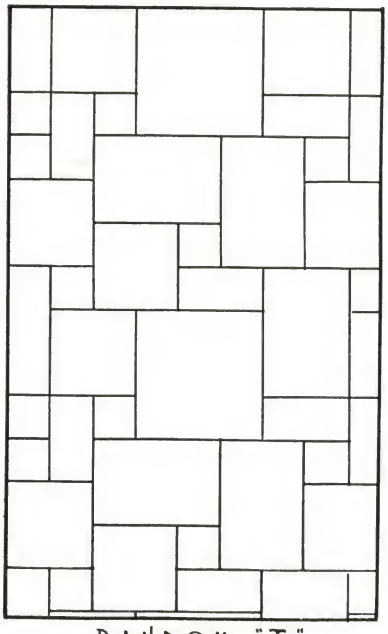

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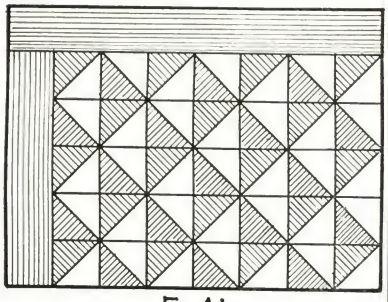

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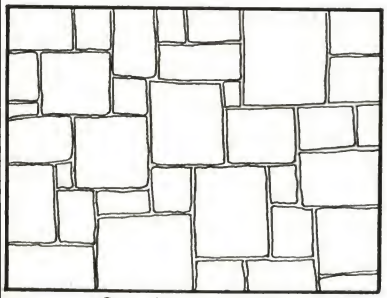

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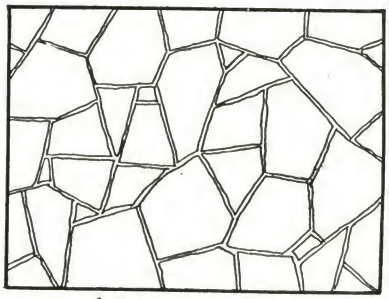

F-40


HERRINGBONE


RANDOM "T"


F-41


RANDOM "100"


RANDOM "200"

Blocks for patterns Random "100" and Random "200" are cut at the job from standard sizes. Blocks for all other patterns shown on this page are cut at the factory

SPECIFICATIONS FOR THE PROPER INSTALLATION OF ZENITHERM

The following Specifications Are Recommended for Architects' Use. They Are Designed to Cover All Possible Uses of Zenitherm

SPECIFICATIONS FOR ZENITHERM FLOORS

Zenitherm Floor on Wood Underfloor

(1) Furnish and install in the following portions of the work, Zenitherm Floors as manufactured by the ZENITHERM COMPANY, INC., Kearny, N. J., laid strictly in accordance with the following specifications and the manufacturer's directions.

Note: List here the portions of the work that are to have Zenitherm Floors and specify the sizes and colors of blocks to be used.

(2) **Preparatory Work**—Before the Zenitherm Floors are laid, the General Contractor shall see that all wood underfloors are level and true ¾ in. below the finish floor level; boards to be laid up tight and securely toe-nailed to prevent warpage. Wood underfloor on new work should be tongue and groove flooring not over 4 in. wide, driven tight, well nailed, true and level.

(3) When the underfloor has been properly prepared, Zenitherm blocks ⅝ in. thick shall be nailed directly to the underfloor. A ⅛-in. skim coat of Zenitherm Bedding Compound shall be spread over the wood underfloor as the laying of the blocks proceeds, filling up any depressions to a true and level surface. As the blocks are laid, edges of blocks shall be buttered with Zenitherm Pointing Compound and squeezed up tight, the surplus compound that oozes out being wiped off immediately after nailing. 6d hot-dipped galvanized finishing nails shall be used and shall be set ⅛ in., the nail holes being filled with Zenitherm Pointing Compound.

Zenitherm Floor on Concrete Underfloor

(4) Furnish and install in the following portions of the work, Zenitherm Floors as manufactured by the ZENITHERM COMPANY, INC., Kearny, N. J., laid strictly in accordance with the following specifications and the manufacturer's directions.

Note: List here the portions of the work that are to have Zenitherm Floors and specify the sizes and colors of blocks to be used.

(5) **Preparatory Work**—The General Contractor shall see that provision is made for leaving the concrete underfloors *level* and *true* ⅞ in. below the finish floor level. On new concrete work, top coat need only be screeded or floated to a *level* ⅞ in. below finish floor level. Troweled surface not needed nor desirable, but a uniform level must be maintained.

(6) Over the level and true underfloor shall be spread a ¼ in. thick layer of Zenitherm Bedding Compound as the blocks are laid, filling up any depressions to proper level by the use of the Zenitherm Bedding Compound. The backs of the Zenitherm blocks shall be cleaned of dust and dirt. The Zenitherm blocks shall be buttered on two edges with Zenitherm Pointing Compound and set in position, care being taken to keep the Compound off the finished surface of the blocks. The finished floor shall be allowed a minimum of ten hours for setting.

(7) **Border**—Zenitherm border shall be laid in the same manner as specified for Zenitherm Floors.

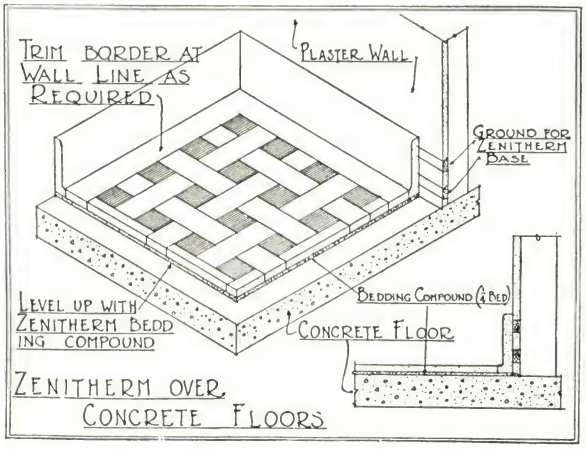
(8) **Base**—Zenitherm base, of the height indicated on drawings or specified herein, shall be set in the following portions of the work:

(Insert here the areas affected.)

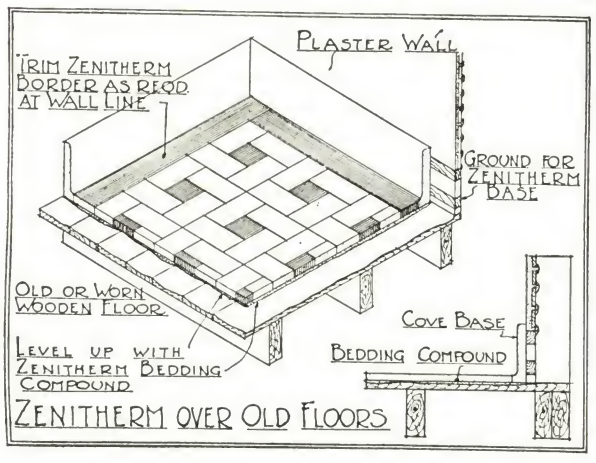
(9) Base shall be set in 47½-in. lengths, in blocks ⅝ in. thick and secured to grounds with 6d hot-dipped galvanized finishing nails. Nails shall be set ⅛ in. and nail holes filled with Zenitherm Pointing Compound.

(10) **Stairs**—Zenitherm stair treads and risers (and strings) shall be laid as follows:

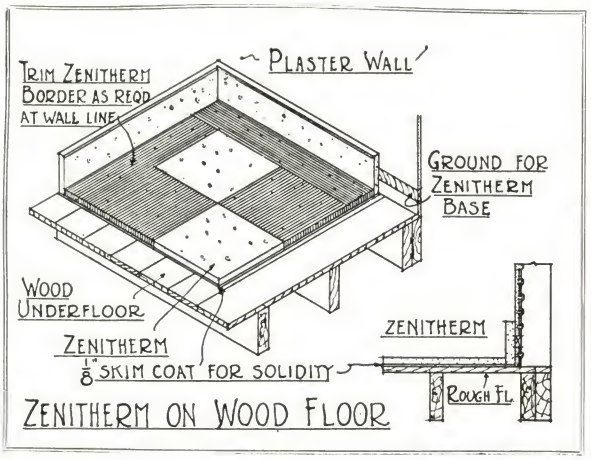
Note: On wood stairs, Zenitherm should be specified as above for Zenitherm Floors over wood underfloor. On concrete stairs, Zenitherm treads should be specified exactly as for floors over concrete. On iron stairs, specify as follows: Toggle bolt shall be inserted through hole in iron step. The toggle bolt shall be countersunk and hole filled to surface of Zenitherm tread or riser with Zenitherm Pointing Compound. If it is possible to get under the stairs, drill hole through the iron and fasten with wood screw. The use of stove bolts is optional, in which case countersink head in Zenitherm tread and point with Zenitherm Pointing Compound. It is safer to use galvanized or brass screws to avoid development of rust spots.



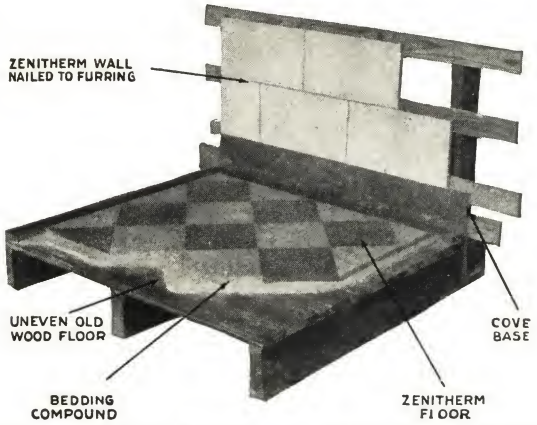
ZENITHERM OVER CONCRETE FLOORS



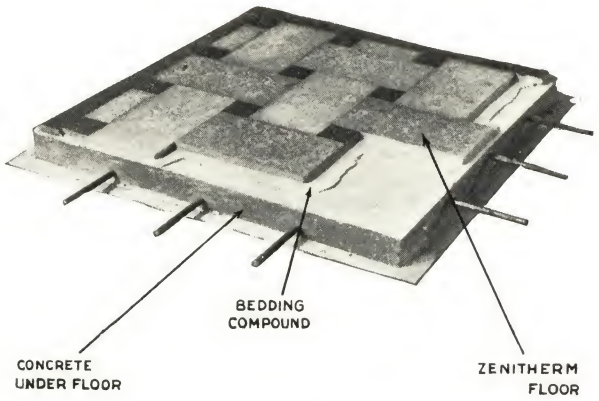
ZENITHERM OVER OLD FLOORS



ZENITHERM ON WOOD FLOOR



Photographic Detail Showing the Installation of Zenitherm Walls Over Furring and Zenitherm Floors Over Old Wood Floors



Photographic Detail of the Installation of Zenitherm Floor Over Concrete Underfloor

SPECIFICATIONS FOR ZENITHERM WALLS

Zenitherm on Interior Walls

(11) Zenitherm Walls and wainscot shall be provided in the following portions of the work:

Note: If Zenitherm Floors have not been previously specified, paragraph 12 should be used instead of paragraph 11.

(12) Furnish and install in the following portions of the work, Zenitherm Walls (and wainscot) as manufactured by the ZENITHERM COMPANY, INC., Kearny, N. J., laid strictly in accordance with the following specifications and the manufacturer's directions:

(Insert here the areas affected.)

(13) Before the Zenitherm is applied, the General Contractor shall see that all wall surfaces are true and plumb.

Note: Paragraph 14, 15, 16 or 17 should be used, depending upon the type of joint desired.

(14) Zenitherm blocks shall be ⅝ in. thick and shall have ⅛-in. (or ¼-in.) chamfered edges to form V joint when laid up close. All blocks shall be laid up absolutely plumb and true. All edges of block shall be buttered with Zenitherm Pointing Compound before setting the next block, all excess Compound being wiped from the finished face of the block.

(15) Zenitherm blocks shall be ⅝ in. thick and shall have straight and square edges and shall be laid up absolutely plumb and true to form ⅛-in. (or ¼-in.) open joint. All edges of block shall be buttered with Zenitherm Pointing Compound before setting the next block, all excess Compound being wiped from the finished face of the block. (Solid sheathing instead of furring strips is best with open joint design.)

(16) Zenitherm blocks shall be ⅝ in. thick and shall have straight and square edges and shall be laid up absolutely plumb and true with butt joints. All edges of block shall be buttered with Zenitherm Pointing Compound before setting the next block, all excess Compound being wiped from the finished face of the block.

(17) *Note:* If rusticated joints are desired, indicate the depth and width of the rustication and have specification read: Zenitherm Walls with rusticated joint shall be installed in strict accordance with the manufacturer's directions.

(18) **Bathrooms**—The wood backing around tubs and shower stalls shall be covered with a layer of heavy waterproof paper or Ruberoid, applied like flashing at rim of tub or shower pan, and the Zenitherm shall be nailed with 6d galvanized finishing nails, driven at an angle, nails to be set ⅛ in. and the nail holes filled with Zenitherm Pointing Compound. All edges of block shall be buttered with Zenitherm Pointing Compound before setting the next block, all excess Compound being wiped from the finished face of the block.

(19) **On Concrete, Hollow Tile or Masonry Walls Using Furring**—

Note: It is recommended, for the sake of economy, that wood nailing blocks be provided when the wall is erected, to which attach ⅞x3-in. furring strips.

(20) Zenitherm blocks shall be nailed to furring strips or sheathing with 6d galvanized finishing nails as above specified.

(21) Center all vertical joints of Zenitherm ashlar on furring strips, and, where double furring is used, center horizontal joints on horizontal furring strips. (In lieu of horizontal furring, the vertical furring may be covered with sheathing.)

Note: If close joint is specified, butter edges of block with Zenitherm Pointing Compound. Point open joints as specified under paragraph 15.

(a) *Alternate*—Secure furring for Zenitherm with expansion bolts.

(b) *Alternate*—On hollow tile walls, secure vertical furring with toggle bolts about 18 in. on centers. Apply horizontal furring as above.

(22) **On Cinder Nailing Block or Gypsum Block Walls, Without Furring or Sheathing**—

Note: The General Contractor shall see that provision is made for the application of a skim coat of haired brown coat of gypsum plaster or mortar sufficient to bring the wall plumb, true and straight ⅝ in. behind finished wall face.

(23) Zenitherm shall be face-nailed in the usual manner with *brass* finishing nails, nails being driven at an angle directly into the supporting wall. Nail holes shall be pointed as above.

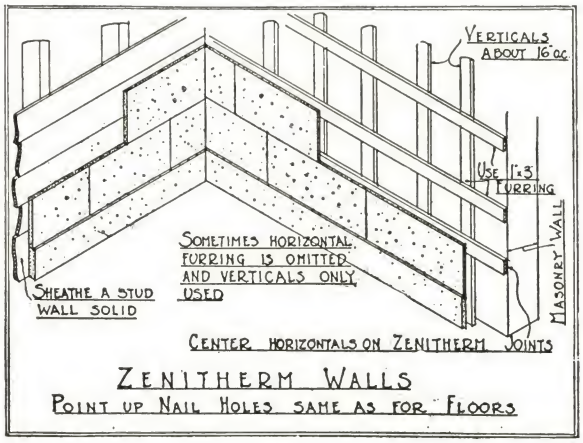
(24) **On Brick, Concrete, Hollow Tile or Masonry Walls, Without Furring or Sheathing**—

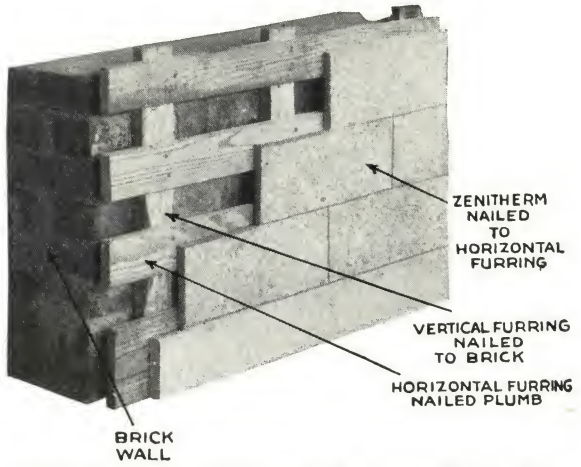
Note: The General Contractor shall see that provision is made for the application of a minimum ¾ in. thickness of haired brown coat of gypsum plaster or mortar, bringing wall perfectly true, plumb and straight ⅝ in. behind finished wall face.

(25) Before applying the Zenitherm, this contractor shall see that the brown coat of gypsum plaster or mortar is thoroughly set and dry, true, plumb and straight, of proper strength and nailable.

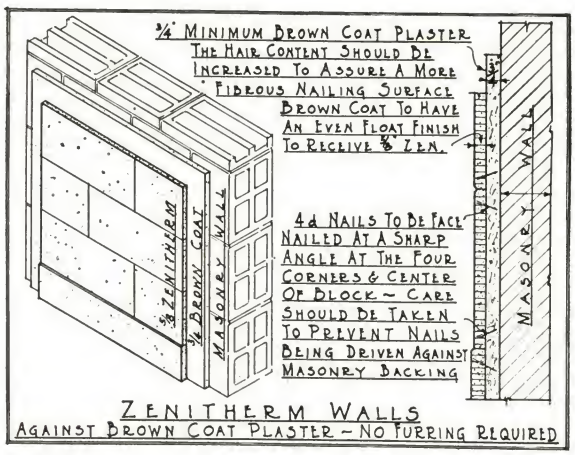
(26) Before nailing the Zenitherm Blocks, the back surface of blocks shall first be spread with a thin coating of Zenitherm Bedding Compound over the entire surface of the block. The block shall be pressed plumb into place against the plaster backing and nailed as specified below.

(27) Zenitherm shall be nailed with hot-dipped galvanized finishing nails driven through face of Zenitherm at an angle into the brown coat (specify 3d nails for ¾-in. thick brown coat; 4d for brown coat thicker than ¾ in.). Use 4, 6 or 8 nails, according to size of block. Edges of Zenitherm blocks shall be buttered with Zenitherm Pointing Compound while being erected. Nails shall be set ⅛ in. and filled with Zenitherm Pointing Compound.





Detail of the Installation of Zenitherm Walls Over Masonry Construction



Zenitherm on Exterior Walls

(28) Frame Construction—Sheathing shall be covered with waterproof building paper and Zenitherm blocks nailed to sheathing with 6d brass finishing nails. Nails shall be set ⅛ in. and nail holes filled with Zenitherm Pointing Compound.

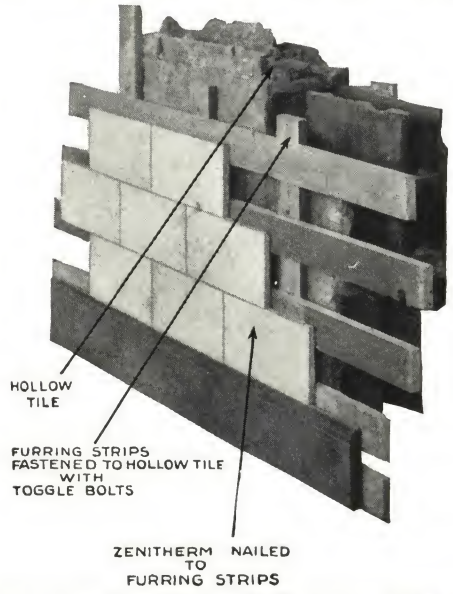
Note: If close joint is specified, butter edge of block with Zenitherm Pointing Compound and squeeze into place before nailing, wiping off excess compound. Point open joints as specified under paragraph 15.

(29) Masonry Construction—⅞x3-in. furring strips shall be nailed to wood plugs or metal wall plugs set in masonry wall. Zenitherm blocks shall be nailed to furring strips with 6d brass finishing nails, the nails set ⅛ in. and the nail holes filled with Zenitherm Pointing Compound. All vertical joints of Zenitherm ashlar shall be centered on furring strips where single furring only is used. Horizontal joints shall be centered on horizontal furring strips where double furring is used. Vertical furring may be covered with sheathing instead of the use of horizontal furring.

Note: (a) If close joint is specified, butter edges of block with Zenitherm Pointing Compound. Point open joints as specified under Frame Construction.

(b) *Alternate*—Secure furring for Zenitherm with expansion bolts.

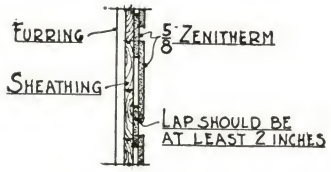
(c) *Alternate*—On hollow tile walls, secure furring with toggle bolts about 18 in. on centers vertically.



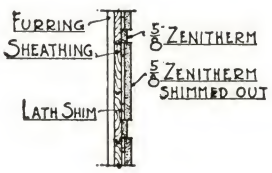
Detail of the Installation of Zenitherm Walls Over Hollow Tile Construction



Photographic View of Rusticated Joint



METHOD "A"



METHOD "B"

SOME REPRESENTATIVE ZENITHERM INSTALLATIONS

Joseph E. Widener Residences, New York, N. Y. and Palm Beach, Fla.
Otto Kahn Residence, Palm Beach, Fla.
H. H. Flagler Residence, New York, N. Y.
Howard Phipps Residence, Gulf Stream, Fla.
Jay Gould Residence, New York, N. Y.
Max D. Steuer Residence, New York, N. Y.
John Hartford Residence, Valhalla, N. Y.
Harry Payne Whitney Residence, Wheatley Hills, N. Y.
E. T. Stotesbury Residences, Bar Harbor, Me. and Palm Beach, Fla.
Eugene G. Grace Residence, Bethlehem, Pa.
Custer School, Berwyn, Ill.
Southern Junior High School, Somerville, Mass.
Lehigh University, Lehigh, Pa.
Chicago University, Chicago, Ill.
L. Bamberger & Co. Department Store, Newark, N. J.
B. Altman & Co. Department Store, New York, N. Y.
T. Eaton Co. Department Store, Toronto and Montreal, Canada
Crane Co. Showrooms (in over 100 cities)
First Swedish Baptist Church, New York, N. Y.
Church of the Immaculate Conception, New York, N. Y.
Temple Emanu-el, Paterson, N. J.
Gaston Presbyterian Church, Philadelphia, Pa.
St. Anne's Church, Philadelphia, Pa.
William Wrigley, Jr., Company, Chicago, Ill.
L Street Bath, South Boston, Mass.
Scottish Rite Temple, Kansas City, Mo.
Union League Club, Philadelphia, Pa.
Haddon Hall Hotel, Atlantic City, N. J.
Shoreham Hotel, Washington, D. C.
Belle Isle Power Station, Oklahoma City, Okla.
Duquesne Light Co. Power Station, Pittsburgh, Pa.
United States Post Office, New Canaan, Conn.

THE CHARLES H. MARTIN COMPANY

Producers and Distributors of Flagstone

GREENWICH, CONN.

Address All Inquiries to Greenwich, Conn.

DIRECT REPRESENTATIVES IN

NEW YORK, N. Y. CHICAGO, ILL. BOSTON, MASS. PHILADELPHIA, PA. DETROIT, MICH. CLEVELAND, OHIO

QUARRIES

VERMONT PENNSYLVANIA NEW YORK TENNESSEE MINNESOTA OHIO

A Complete Interior and Exterior Flagstone Service

The business of THE CHARLES H. MARTIN COMPANY is wholly and exclusively flagstone. The company either operates, contracts for the entire output or contracts for the bulk of the output of some 25 quarries in six different States. With these unusually large and scattered sources of supply to draw from, flagstone of every character is available.

The company actively covers and is prepared to render service to architects in the following states: Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, District of Columbia, Ohio, Michigan, Illinois, Indiana and Wisconsin.

An Architectural Service Department is maintained at Greenwich, Conn. to figure quantities, issue quotations, make layouts and to offer information, suggestions or assistance of every sort regarding flagstone to architects, landscape architects and contractors.

Types of Flagstone and Their Characteristics

Three distinctly different types of flagstone are available in all thicknesses, shapes and sizes for walks, porch and sunroom floors, terraces, pavements, curbing, coping, treads and risers.

Stratford Slate Flagstone

Produced in seven natural colors procured from widely separated quarries in Vermont. The various colors are economically assembled, intermixed and distributed throughout the entire country, at low prices due to shipping facilities. The colors are unfading in purple, green, red, gray, black, antique and combined mottled green and purple.

Shapes and Sizes—Irregular shapes in standard thickness of 1 in. or thicker if especially desired. Rectangular shapes of random size in standard thickness of ¾ to 1 in. Units of one size, if desired for interior floors, in either ½ or 1-in. thicknesses. Pieces contain from 1½ sq. ft. surface area up to 5 sq. ft. Larger sizes may be had if desired.

Slate floor tiles with all edges sawed may be had in any of the following thicknesses ½, ¾ or 1 in. with either natural cleft or sand rubbed surfaces. These floor tiles can be furnished in rectangular shapes of random size or units of one or more sizes as desired.



Stratford Bluestone Flag Terraces and Pavements Around Swimming Pool, Westchester Country Club, Rye, N. Y.
KENNETH MURCHISON, Architect ROBERT GLENN, INC., Contractor

Stratford Bluestone Flag

Produced from quarries in New York, and Pennsylvania. Furnished in two grades: "Standard" in gray and blue-gray colors, and "Premium" in gray, blue-gray, light green, purple, faun, buff and brown.

Where large quantities and a wide range of colors are desired shipments are made from several different quarries. A notable example of this was on the job illustrated on this page. No two cars were shipped from the same quarry, with the result that every possible shade or color obtainable was used. The result has received the highest praise from architects and others.

Shapes and Sizes—Rectangular shapes of random size ranging from 12x12 in. and 12x18 in. up to 3½ ft. long by random widths with standard thicknesses of ¾, 1, 1¼, 1½ and 2 in. Thicker flagstone is obtainable if desired. Pieces of larger size than those mentioned above may be had if desired. For indoor work, Bluestone Flag ¾ or 1 in. in thickness is long-lived and economical. When irregular or broken shapes are desired, it is suggested that rectangular shapes of very large size be specified and ordered in the thickness desired and these pieces be broken with a maul at the site of the job.

Stratford "Standard" and "Premium" Bluestone Flag can be furnished for wall copings, borders, curbing, treads and risers in any thickness and size desired.

Stratford Martinique Flagstone

This is the well-known quartzite flagstone from the Crab Orchard quarrying area in Tennessee. Its features are its fine grain, uniformity of thickness and exceptional smoothness of surface. This stone is of great durability. Colors are most unusual and found in no other flagstone. They consist of pinks, buffs, tans, browns, grays, fauns in great variety and sometimes intermixed in one piece of stone.

Shapes and Sizes—Either rectangular shapes of random size or in irregular shapes of random size. Can be had in any range of sizes desired. This stone is obtainable in ½, ¾, 1, 1¼, 1½, 1¾ and 2-in. thicknesses. Thicker stone may be had if desired.

Stratford Martinique Flagstone can also be furnished for wall copings, borders, wainscoting, treads and risers in any thickness and size desired.

A List of Architects Who Have Used our Products and Installations in Your Locality Will Be Furnished on Request

ROBINSON FLAGSTONES

(J. G. ROBINSON, INC.)
Rittenhouse and Pulaski
GERMANTOWN, PHILADELPHIA, PA.

Samples and Displays at each Agency and at the New York Office at 103 Park Avenue

Robinson Northern Flagstone

Robinson Northern Flagstone is a natural cleft material (not sawed) from the Wyoming Valley region of Pennsylvania. It is suitable for exterior and interior use. The colors vary from the grays, buffs, rusts, browns and purples, giving a soft pastel effect free from sheen. Natural weathering adds to the unusual color combinations.

We are constantly studying and experimenting with flagstone in securing architectural effects and co-operating with architects in obtaining the spirit and charm of old world beauty. We recommend 1 in. for cement and 1¼ to 1½ in. for dirt. Heavier material can be furnished for treads and coping.

Robinson Southern Flagstone

Robinson Southern Flagstone comes from Crab Orchard, Tennessee and is a quartzite, light bluff tones predominating in sunset hues. This is used for the same purposes as the northern flagstone and is particularly satisfactory in formal surroundings and in combination with marbles, limestone, granite, and other formal materials.

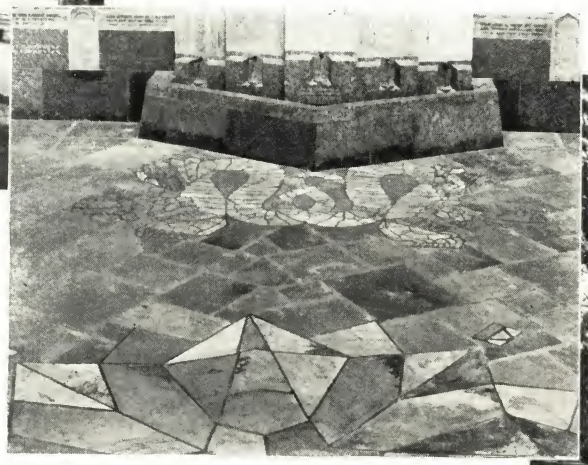
Robinson cleftstone roofs furnished for larger residences and country clubs.

Installations

Both the northern and southern flagstones have been supplied by us during recent years for Government work (Internal Revenue, Department of Commerce and Agricultural Buildings); the Approach to the Tomb of the Unknown Soldier, Arlington Cemetery, Lorimer Rich, Architect; as well as the Folger Shakespearean Library at Washington, Paul Cret, Architect; and various groups at Harvard University, Cambridge, Mass., Coolidge, Shepley, Bulfinch & Abbott, Architects.



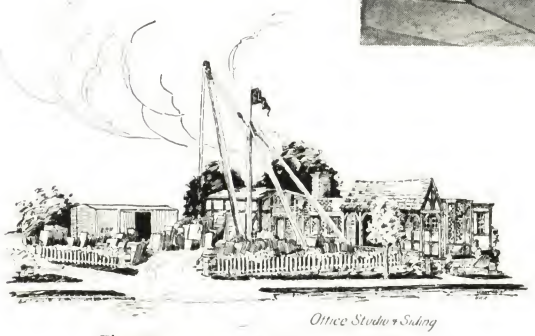
Brooklyn Savings Bank
FRANK FREEMAN, Architect



Crucifixion Tower, Detroit
HENRY J. MCGILL, Architect



Residence at Doylestown, Pa.
WILLING, SIMS & TALBUTT, Architects



Office Studio & Siding

The Showrooms and Home Office
at Philadelphia

AMBLUCO NON-SLIP BLUE STONE STAIR TREADS AND FLOORING

QUARRIES AND MILLS
AMBLUCO, WYOMING CO., N. Y.

Produced by
AMERICAN BLUE STONE COMPANY
101 Park Avenue, NEW YORK, N. Y.

Products

AMBLUCO NON-SLIP STAIR TREADS and LANDINGS for interior steel and concrete stairways; AMBLUCO FLOORING, THRESHOLDS and WALL BASE for interior and semi-interior uses.

For Genesee Valley Blue Stone for exterior uses, and Naturcleft Flagging, see Manufacturers' Index.

Reg. U. S. Pat. Off.
"A Product with a Real Guarantee"

Facilities

This company has well developed quarries on its own property of about 200 acres, located at Ambluco, Wyoming County, N. Y. The mills and yards are equipped with the most modern machinery so that large volumes of business can be handled without delay.

One building 150 ft. long, devoted exclusively to the storing and finishing of AMBLUCO Products is heated during the cold weather so that orders can also be filled in the winter.

Ambluco Non-slip Stair Treads and Landings

These treads and landings have established themselves wholly on their own merits, with practically no introduction on our part. By those who have studied their qualifications or used them, they are declared to be superior to and more economical than any other type.

Attractive Color and Texture—Uniform color, even grained texture and standard sand sawed finish (free from saw marks and imperfections) give a splendid appearance. The distinctive light-blue shade blends well with adjacent light color surfaces or gives a sharp clean contrast with dark material. It is a fine, close grained blue stone, made up mostly of pure, hard quartz as shown below:

MINERALOGICALLY CONSIDERED

Fine, hard sand, mostly quartz	70%
Clay, as binding material	28%
Water	2%

Non-slip—The non-slip property, due to the fine grained quartz, does not grip the foot to cause tripping, but gives ample security against slipping at all times, whether wet or dry, without requiring resurfacing or replacing. These quartz particles are always uniformly distributed throughout the entire stone, a condition that is only produced by nature and prevents the surface from ever wearing smooth.

Durable—The extreme durability of the AMBLUCO Treads comes from the character of the material and the steadily increasing hardness of the stone brought on by the heat of the building, causing the treads to resist wear as they age.



Ambluco Stair Treads, Hartford (Conn.) Fire Insurance Co. Building
PARKER, THOMAS & RICE, Architects
MARC EIDLITZ & SON, Contractors

The density of the stone's structure which helps to give the remarkable wearing quality is revealed comparatively in the following table:

CRUSHING STRENGTH

Rockport granite (Kidder's Hand Book)	17,750 lb. per sq. in.
Vermont marble	13,500 lb. per sq. in.
Genesee Valley blue stone	19,970 lb. per sq. in.

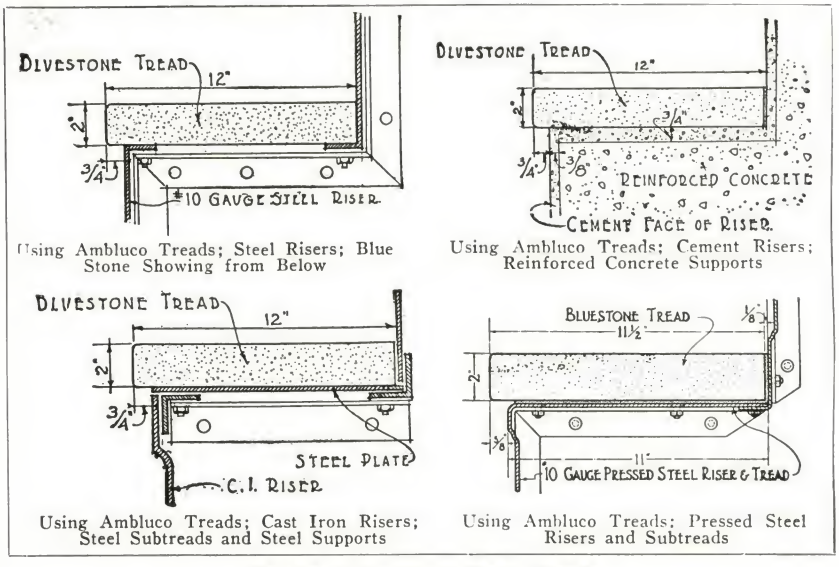
This blue stone weighs only, approximately, 150 lb. per cu. ft. (or 25 lb. per sq. ft. 2 in. thick) when cut ready to set.

Sanitary—AMBLUCO Non-slip Treads and Landings are easily kept sanitary. Their great hardness prevents generation of dust and permits clean sweeping and mopping. The flat, non-porous surface has no grooves or pores to collect filth and disease germs. The soffits may be painted without danger of the stain coming through the stone to the top surface.

Quiet—They are practically noiseless and do not resound from footsteps nor become loose and rattle. This quiet feature is a truly essential quality for most buildings, and especially for hospitals where many human beings are undergoing great suffering, and for schools where it is so important that the pupils' minds are not distracted from their work.

Fire Resisting and Rust-proof—The AMBLUCO Treads and Landings offer great resistance to extreme heat and are of inestimable value in fireproof construction. In contrast to many other treads these AMBLUCO treads do not become rusty themselves nor stain other adjacent materials.

Permanent and Economical—"Lasts the life of a school" is a fitting slogan, for, as indicated by tests and



Using Ambluco Treads; Steel Risers; Blue Stone Showing from Below

Using Ambluco Treads; Cement Risers; Reinforced Concrete Supports

Using Ambluco Treads; Cast Iron Risers; Steel Subtreads and Steel Supports

Using Ambluco Treads; Pressed Steel Risers and Subtreads

Details of Ambluco Stair Treads

reputed records, AMBLUCO Non-slip Treads give satisfactory service in an average school for 50 to 60 years, while observance shows that at the existing rate of advancements in scientific design and construction, a school is considered obsolete in that length of time and is frequently replaced by a new building. In fact, there are records where these blue stone treads have been removed in the wrecking of a school and the same treads later installed in a new school.

The initial cost of the AMBLUCO Treads (1½ in. to 2 in. thick) is about the same or less than other natural stone treads and the ultimate cost much less even than the cheap metal and composition treads.

The facility with which they can be set on the regular types of fabricated or pressed steel stair construction eliminates the great expense of specially designed steel members.

No maintenance cost is necessary after these blue stone treads are properly installed.

As a matter of fact, the AMBLUCO Treads and Landings can be safely adopted without first experimenting.

Specification Suggestions—AMBLUCO Non-slip Treads and Landings should be called by their trade-name, and although in many localities this name is well known, we suggest (to avoid substitution of inferior material) giving the additional information that they are produced by the AMERICAN BLUE STONE COMPANY, New York, N. Y.

The sand sawed or wet sand rubbed are the only two finishes which should be allowed. The former has proved entirely satisfactory and we endorse it as a standard. Planed and axed surfaces should be avoided.

AMBLUCO Treads and Landings are universally used 2 in. thick, but can be furnished down to 1½ in. Complete specifications will be supplied upon application.



Ambluco Flooring, Base, Treads and Risers, Alumnae Hall, Vassar College, Poughkeepsie, N. Y.
HUNT & HUNT, Architects

Accepted as Standard by Prominent Users—Subsequently to the standardizing on the AMBLUCO Blue Stone Treads by the City of Boston and its many suburbs in their schools and other public buildings, nearly all the rest of New England, recognizing the superior features of these treads, did likewise. Many of the leading school architects in the Eastern, Southern and Middle Western States specify them. The use has not been confined to schools, but has also been extended to other public buildings, such as hospitals, museums, colleges, churches, clubs, railroad stations and high class commercial buildings.

Also AMBLUCO installations are frequently made to replace worn-out treads of other kinds.

AMBLUCO Treads and Landings are used, for the most part, by architects and engineers long accustomed to incorporating in their specifications the best material for their work.

A Few Ambluco Tread and Landing Installations

Girls' Continuation School, Boston, Mass., Joseph J. Driscoll, Architect
Essex County Sanitarium Buildings, Verona, N. J., Sutton & Sutton, Architects
Taft Upper School, Watertown, Conn., James G. Rogers, Architect
New York State Teachers' College, Buffalo, N. Y., William E. Haugaard, Architect
Cook Dormitory, University of Michigan, Ann Arbor, Mich., York & Sawyer, Architects
St. Joseph's Normal Institute, Barrytown, N. Y., James W. O'Connor, Architect
Brookline High School, Boston, Mass., Kilham, Hopkins & Greeley, Architects
Columbia High School, South Orange, N. J., Guilbert & Betelle, Architects
St. Boniface R. C. School, Sea Cliff, L. I., N. Y., Jas. W. O'Connor, Architect
Homeopathic Hospital, Providence, R. I., Kendall Taylor & Co., Architects
Lehigh Valley Railroad Station, Easton, Pa., J. J. McCleece, Architect
Federal Reserve Bank, Boston, Mass., R. Clipston Sturgis, Architect
Liberty Telephone Exchange, Boston, Mass., Parker, Thomas & Rice, Architects

Ambluco Blue Stone Flooring, Thresholds, Wall Base, and Swimming Pool Coping

In these days of the exacting of high liability for accidents to mankind, the fundamental requirement in flooring is that it does not become slippery under any conditions. In this blue stone flooring, quartz, the essential constituent, being harder than the accessory minerals, is pre-eminent on the wearing surface at all times and makes the floor slip-proof and very durable. Besides the rust-proof, non-porous, dustless and sanitary qualifications of this flooring, it is quiet to walk on.

AMBLUCO Flooring is either 1½ or 2 in. thick and is especially suitable for interior and porch floors in both regular and irregular designs, suggestions of which are shown on the following page. In case of an irregular pattern, it is advisable for economy to limit the number of sizes to about seven. If, however, a greater variety of sizes and shapes is desired, random sawed slabs may be shipped from the quarries, and then fitted and jointed by local cutters on the job. Joints of ⅛ to ¼ in. are usually used for the regular styles and ¼ to ½-in. joints are more in keeping for the irregular style floors.

Its sawed or rubbed finish gives a level surface on which chairs and other furniture do not rock, a feature so annoying with natural split stone.

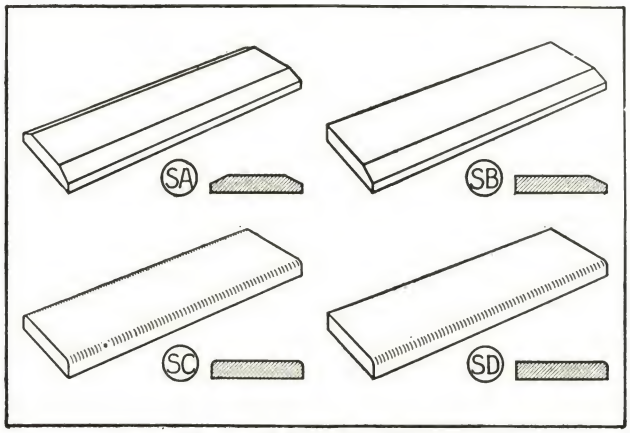
Other delightfully artistic effects are gained by several methods. One, by varying the finishes—having some pieces sawed with sand and some with steel shot. Another, by omitting the washing of the stone after sawing, which gives a variegated coloring from the rust stain of the saws.

For interior swimming pools it is claimed to be in a class by itself for the border flooring and coping, for it is not dangerously slippery, does not injure the bare feet, and does not deteriorate and necessitate frequent replacements as do some manufactured floorings.

AMBLUCO Flooring is especially appropriate for,

and is being used extensively in churches, cathedrals, museums, libraries, clubs, hotels, railroad stations, residences, high class commercial buildings, and the vestibules and stair halls of hospitals, schools and college buildings.

Perhaps in no place is there greater and more noticeable wear than in thresholds or saddles, and therefore, for this purpose, this AMBLUCO non-slip sand rubbed product is unapproached. These are furnished 1¼ to 2 in. thick by the desired widths, and with a choice of bevels.



Four Types of Standard Thresholds

The AMBLUCO Wall Base and Plinths should be used to match the flooring and thresholds, landings and treads. The base and plinths are 1¼ to 2 in. thick by 7 to 14 in. high. A ⅛-in. radius round on the top front arris is usually given or a slight bevel is occasionally applied.

A fine sand rubbed finish is most appropriate, although the sand sawed finish frequently harmonizes better with certain styles of wall.

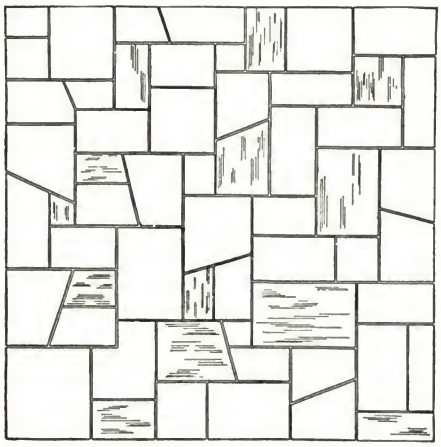
Specification Suggestions—It is important that this flooring, thresholds and base are specified by trade-name as described under the AMBLUCO Non-slip Treads.

For Flooring—The vestibules, lobbies, lounges (or whatever places desired) shall be of AMBLUCO Blue Stone, 2 in. [1½ in.] thick laid in regular [semi-irregular] [irregular] design (if irregular describe idea) with ¼-in. [½-in.] joints. It shall be set over a concrete fill and set in, at least 1 in. of mortar composed of 2 parts sand and 1 part portland cement. The joints shall be neatly pointed flush with surface of floor with same mortar, to which shall be mixed enough lamp black or other coloring to produce the desired effect.

For Thresholds or Saddles—All interior doorways for (.....) floors where cement, terrazzo or tile floor is used on either side, shall have AMBLUCO Non-slip Blue Stone saddles 2 in. [1¼ in. to 3 in.] thick by the full thickness of the partition wall in width, and the full width of the opening in length, with sand rubbed finish and 1x¼ in. deep bevel on each side. Joiner strips of AMBLUCO Blue Stone 1½ in. thick by 8 to 10 in. wide shall be used wherever different types of floor meet.

Typical Ambluco Flooring, Base and Threshold Installations

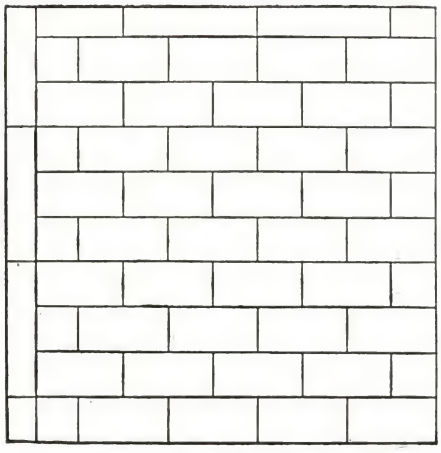
Museum of Fine Arts, Boston, Mass., Guy Lowell, Architect
Cathedral of Incarnation, Baltimore, Md., Bertram G. Goodhue, Architect
Christ Church, Bronxville, N. Y., Bertram Goodhue Associates, Architects
University of Maine Arts & Science Building, Orono, Me., Crowell & Lancaster, Architects
Baker Chocolate Co., Dorchester, Mass.
Dr. Walter Timme's Art Wing, Cold Spring, N. Y., John W. Ingle, Architect.
Carl Weeks Residence, Des Moines, Iowa, Rasmussen & Wayland, Architects.
Church of the Redeemer, Morristown, N. J., Parish & Schroeder, Architects



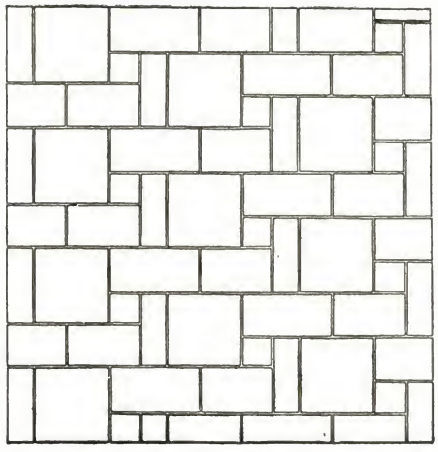
Irregular Design—FD
Random size blue stone slabs, showing variegated effect by combining sand sawed and shot sawed finishes. Laid with broken ½-in. joints

Suggestions for Care of Ambluco Products

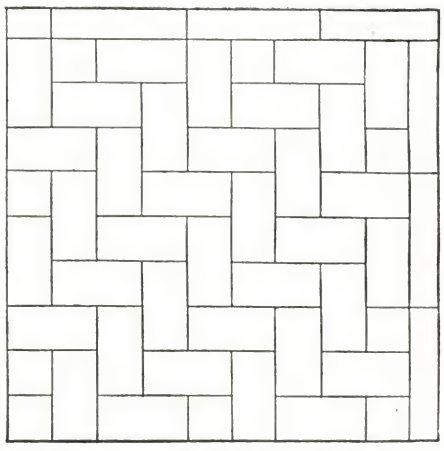
After AMBLUCO Treads, Landings, Flooring, etc., have been installed they should be thoroughly scrubbed with sand and water until clean. No acid or other damaging substances should be used. If the light blue color is desired, coat with one or two applications of Truscon's Super Por-Seal. Repeat this six to eight times a year if needed. If it is preferred to have a darker shade, scrub and then paint with raw linseed oil. This can be done as often as will give the best results.



Regular Design—FA
Oblong blue stone slabs 24x12 in. laid with straight joints and transverse joints uniformly broken. Border of blue stone 8 in. wide



Semi-irregular Design—FC
Five different size blue stone slabs laid to a pattern with broken ¼-in. joints



Semi-regular Design—FB
Oblong blue stone slabs laid herringbone. Border of blue stone 8 in. wide

Suggested Designs for Ambluco Flooring

FORMICA INSULATION COMPANY

CINCINNATI, OHIO

BRANCH FACTORIES

NEW YORK, N. Y., 139 Hudson Street
CHICAGO, ILL., 111 No. Canal Street

SALES OFFICES

CLEVELAND, OHIO, 501 Caxton Building
ROCHESTER, N. Y., 327 Cutler Building
PITTSBURGH, PA., 405 Penn Avenue
BOSTON, MASS., 11 Beacon Street
HAVANA, CUBA, 55 Calle Obispo
PHILADELPHIA, PA., 317 Bulletin Building
BALTIMORE, MD., 1901 St. Paul Street
SAN FRANCISCO, CAL., 235 Ninth Street
TOLEDO, OHIO, Board of Trade Building
WEST HARTFORD, CONN., 968 Farmington Avenue
ST. LOUIS, MO., 4497 Pershing Avenue
KANSAS CITY, MO., 308 E. 17th Street
LOS ANGELES, CAL., 224 E. 16th Street
PORTLAND, ORE., 54 Fourth Avenue
DETROIT, MICH., 417 Central Detroit Warehouse Building

The Product; the Company

FORMICA

FORMICA is a Laminated Material made with a Fibre Base and a Phenol Formaldehyde Binder. The Company is the largest in its field and the first to develop the application of material of this type to building uses.

The Uses of Formica

Formica can be used for the same purpose as marble, structural glass, wood paneling and finish plaster coats.

Wainscot—For this purpose, Formica is furnished in sheets 36x84x$\frac{5}{32}$ in. or smaller in the form of a Formica facing on hard board. It is installed on the wall with cement as shown in details *E-E*, *F-F* and *G-G*. Cap molding and basing of Formica in the same or contrasting colors are available.

Store Front Bulkheads—For this purpose, sheets 36x84x$\frac{7}{32}$ in. with Formica facing on an asbestos sheet center, are supplied. Sheets may be cut to size at the factory or on the job with a portable carborundum cutter. Attached with screws or a special concealed fastening as shown in details *A-A*, *B-B*, *C-C* and *D-D*.

Window Stools—Formica $\frac{1}{16}$-in. sheet veneered on plywood, or a molded channel covering top and two edges filled with wood. Fabricated at the factory to dimensions. See detail.

Basing and Mop Boards—These are molded channels $\frac{1}{8}$ or $\frac{1}{16}$ in. thick. Formica $\frac{1}{16}$-in. sheet may also be glued to wood for this purpose. See detail *E-E*.

Panels, Pilasters and Tops of Counters—This is $\frac{1}{16}$ in. Formica, veneered on all six sides of plywood, or where sinks or extreme moisture conditions are involved, veneered on asbestos sheet. Formica refinishing stock if worn or scratched can be restored to original color by sanding and waxing.

Door Kick Plates and Push Plates—Formica sheet $\frac{3}{32}$ in. or thicker screwed in place.



Left:
Formica Paneling in a Bathroom with Plated Metal Cover Molds and Formica Basing and Cap Molding



Formica Paneling in an Office
Stump walnut pattern with wood cover molds

That Formica is capable of producing remarkably attractive decorative results is strikingly shown in these illustrations.

Its range of applications is practically unlimited.

Formica Tops for Furniture—Formica is put on bedroom furniture, coffee tables, end tables, etc. at the furniture factory, being handled similarly to a wood veneer.

Kitchen Cabinet Tops—The top is ¾-in. thick Formica on asbestos. The sink hole with square or round corners is covered with Formica. Watertight joint between top and back splash. Back splash, Formica on metal. See detail.

Elevator Cab Interiors—Built with Formica on metal or Formica on hard board.

Ornamental Signs—May be hand lettered on Formica sheet by sign writers or, if required in quantity, may be printed in gold or silver at the Formica factory.

Formica Trays—Formica trays 14x18 in. and 9½x12 in. are available in all the Formica colors; 16x20-in. molded bedside table tops for hospital rooms may also be had in all colors.

Fabrication and Distribution

The FORMICA INSULATION COMPANY has sales offices in fifteen leading centers, and factory branches with material in stock and equipment for fabricating in New York and Chicago. The material is sold through building material dealers. Formica in any form may be ordered cut to sizes desired within the limits of the standard sheets. We will fabricate the material to architects details for erection by others. We do not contract for installation.

Qualities of Formica

Formica is essentially a material to provide a decorative finish of great attractiveness and durability. It is almost inert chemically and is not therefore affected by any of the mild acids, alkalis or solvents associated with food or medicines. The surface does not lose its elasticity and craze and crack. The high gloss Formica is as smooth as plate glass. The material is much harder than marble but slightly softer than glass.

Formica Refinishing Stock

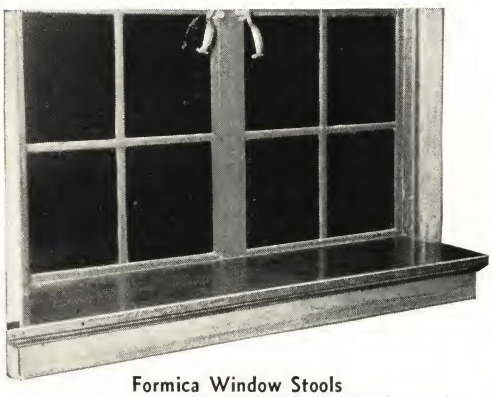
During the year Formica has perfected a new product of great utility for deal plates, counters and table tops which must stand very severe wear. This is known as refinishing stock. It is the same color throughout the sheet and can be sanded or worn through its entire thickness and at any time restored to its original color by sanding and oiling or waxing. This is available in black, brown, tan, red and green colors only and in only the satin surface.

Formica stands 300 degrees of heat, Fahrenheit, without injury. No coffee pot or tea pot containing liquid can therefore injure it in any way. It is immune to the effects of alcohol, gasoline, benzol, or any of the common solvents.

There are more than thirty colors as shown on the color chart herewith.

Service

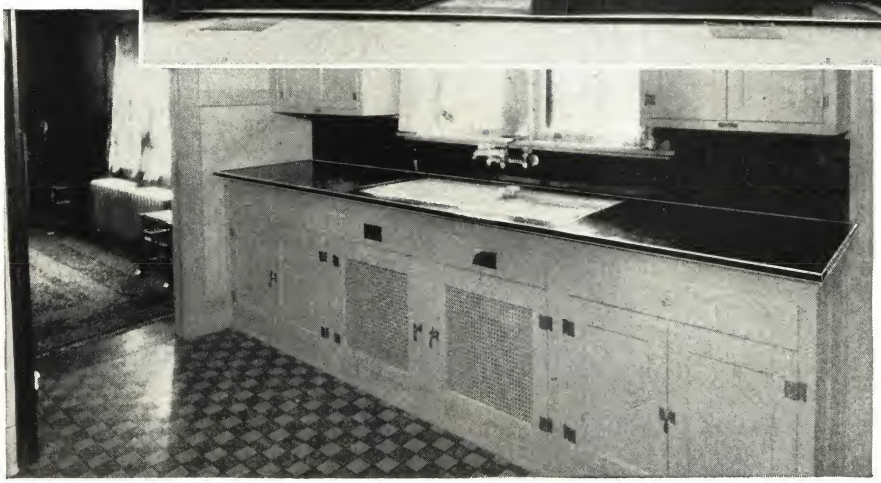
The home office or the sales offices are prepared to provide all necessary information regarding types of material, sizes, colors, prices, and methods of installation.



Formica Window Stools
A big advantage with steel sash as sweating and moisture does not affect the finish

Below:
Formica Store Front Bulkhead with Jet Black Sheet on an Asbestos Base





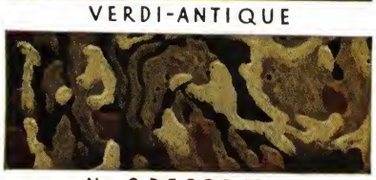
Formica Kitchen Cabinet Tops and Back Splashes
Introduce a new element of beauty and richness into the kitchen. The flexibility of the tops is a big advantage where a dishwasher is installed, as it absorbs vibration and dampens noise



BLACK *and* GOLD



VERDI-ANTIQUE



No. 2 DECORATED



No. 3 DECORATED



No. 6 DECORATED



No. 7 DECORATED



No. 8 DECORATED



No. 9 DECORATED



No. 10 DECORATED



No. 11 TAPESTRY



No. 12 TAPESTRY



No. 13 TAPESTRY



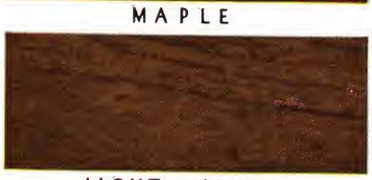
ORANGE



BLUE



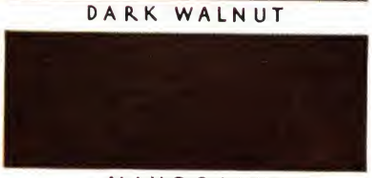
MAPLE



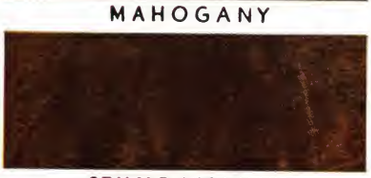
LIGHT WALNUT



DARK WALNUT



MAHOGANY



STUMP WALNUT



OAK



GREY



GREY-10



GREY-30



GREEN



GREEN-10



GREEN-20



REFINISHING NATURAL



REFINISHING BROWN



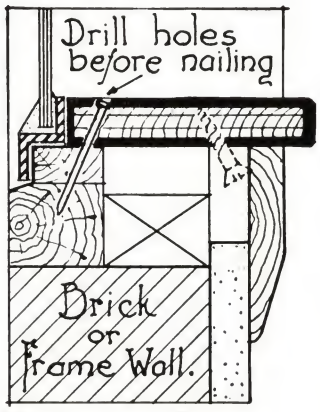
REFINISHING RED



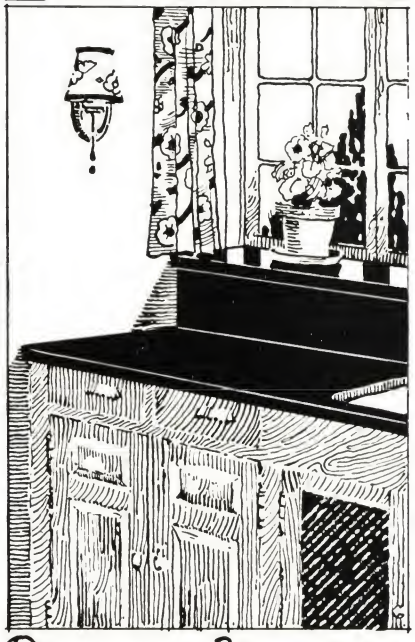
REFINISHING GREEN



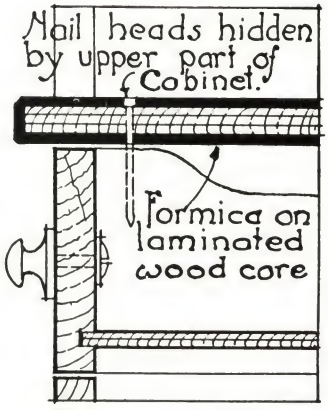
FORMICA



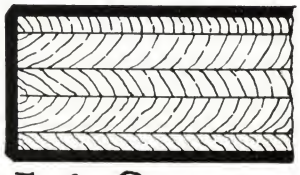
WINDOW STOOLS



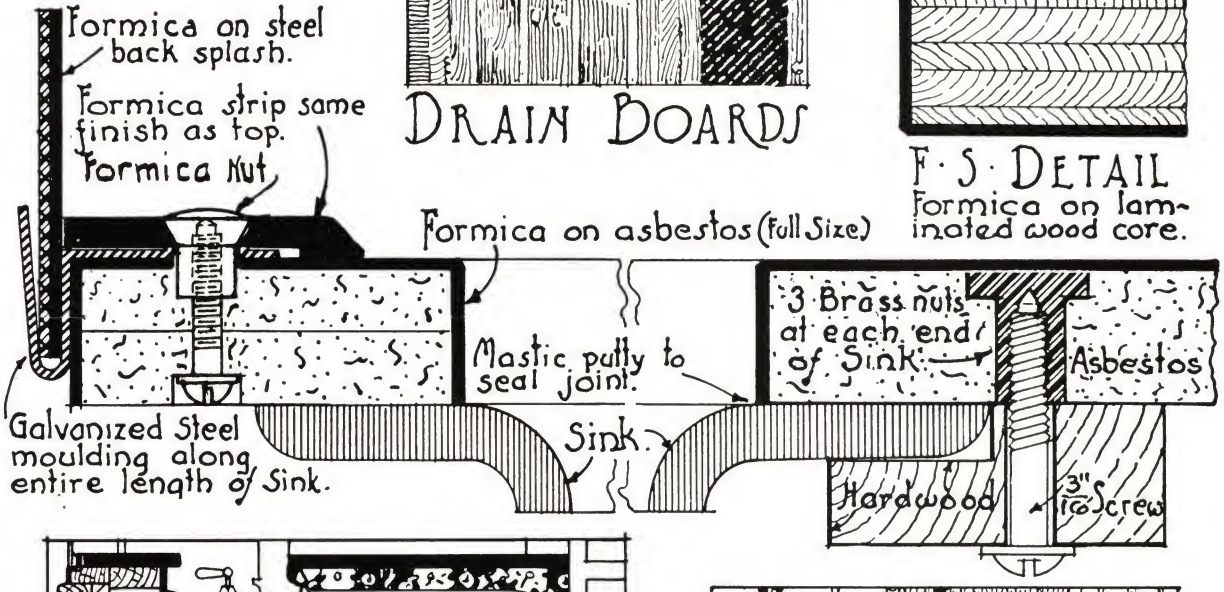
DRAIN BOARDS

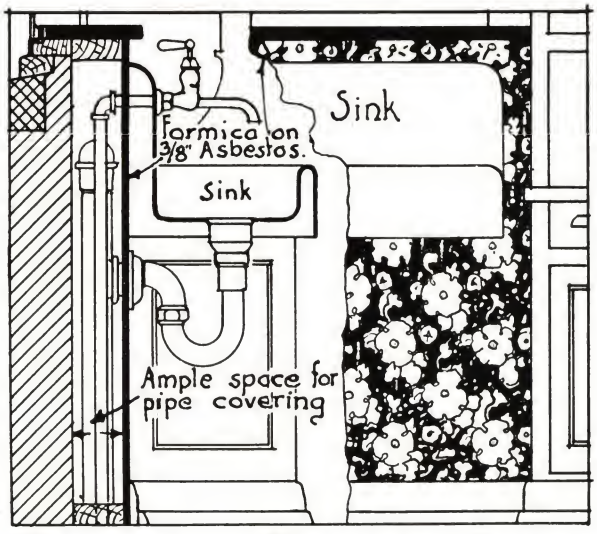


COUNTER TOPS



F·S·DETAIL
Formica on laminated wood core.

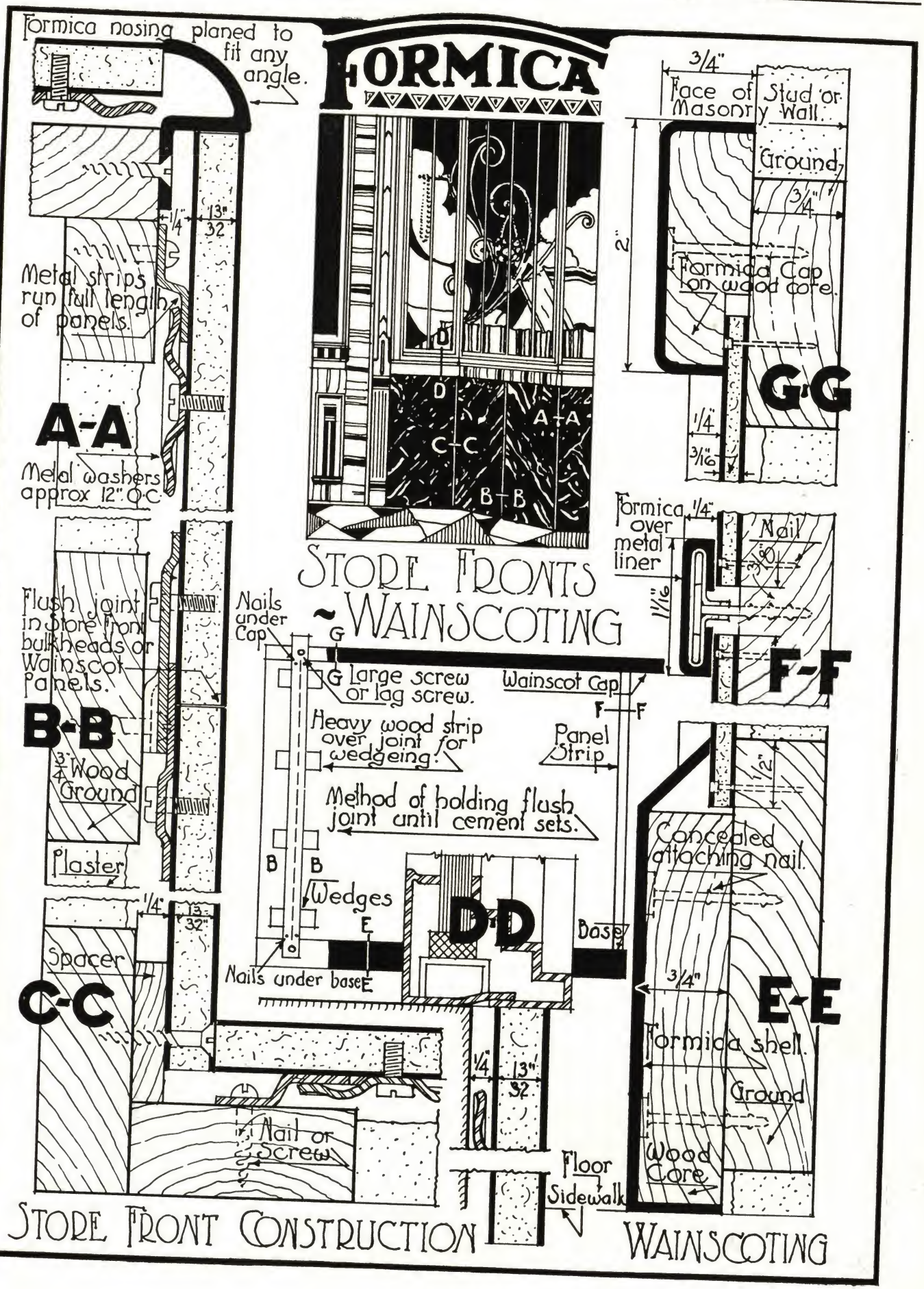




FURRING BEHIND SINK



DINING ALCOVES


Formica nosing planed to fit any angle.
FORMICA
Metal strips run full length of panels.
A-A
Metal washers approx 12" O.C.
Flush joint in Store front bulkheads or Wainscot Panels.
B-B
3/4 Wood Ground
Plaster
Spacer
C-C
Nails under Cap
G
G Large screw or lag screw.
Heavy wood strip over joint for wedgeing.
Wainscot Cap
F-F
Panel Strip
Method of holding flush joint until cement sets.
B
B
Wedges
E
D-D
Base
Nails under base
E
Nail or Screw
Floor
Sidewalk
STORE FRONT CONSTRUCTION
D
A-A
C-C
B-B
STORE FRONTS ~ WAINSCOTING
3/4"
Face of Stud or Masonry Wall.
Ground
3/4"
2"
Formica Cap on wood core.
G-G
1/4"
3/16"
Formica over metal liner
1/4"
Nail
1 1/16"
F-F
1/2"
Concealed attaching nail.
3/4"
E-E
Formica shell.
Ground
Wood Core
WAINSCOTING

ALBERENE STONE COMPANY

Interior Architectural Uses

153 West Twenty-third Street, NEW YORK, N. Y.

BOSTON, MASS., 35 Stilling Street
CHICAGO, ILL., 1700 Elston Avenue
CLEVELAND, OHIO, 425 Schofield Building
NEWARK, N. J., 17 Academy Street
PHILADELPHIA, PA., 913 Liberty Trust Building
PITTSBURGH, PA., 506 Commonwealth Annex Building
RICHMOND, VA., 203 Builders' Exchange Building
ROCHESTER, N. Y., 29 Strathallan Park
WASHINGTON, D. C., 1757 K Street, N. W.

QUARRIES AND MILLS AT SCHUYLER, VA.

Products

ALBERENE STONE, the natural quarried stone, is produced and fabricated for:

Stair Treads and Landings
Flooring and Base Border
Door and Window Sills
Window Stools, Plinths, Wainscoting and Interior Trim
Spandrels, Exterior Trim
Fireplace Linings, Hearths and Mantels

For our pages on Sanitary Equipment, Tubs and Kitchen Sinks, and Laboratory Equipment, Spandrels and Exterior Trim, see Manufacturers' Index.

Alberene Stone

"Alberene Stone" is the trade-name of the ALBERENE STONE COMPANY for the natural stone produced at their quarries and mills at Schuyler, Va.

This stone is blue-gray in color, non-stratified and free from cleavage lines, dense and close grained, uniform in texture and hardness, practically non-absorbent, easily cleaned and kept clean. It is weatherproof and moisture-resisting. It is chemically inert and highly resistant to acids and alkalis. It is flame-resistant and non-conducting. It is fireproof and not affected even by the highest temperatures. It is easily machined—bored, slotted, grooved, tongued, turned—without splitting or chipping.

This unusual combination of qualities has won for Alberene Stone, for the purposes listed above, its leading place in the architectural and industrial world.

Production Facilities

This company's quarries and mills at Schuyler, Va., are the largest in the world devoted exclusively to the production of stone products of this character. Developed quarries have a capacity for 40 years' supply, while undeveloped properties indicate a reserve ample for 200 years. Both quarries and mills have the most up-to-date machine equipment and are connected by a standard gauge railway to the main lines of the Chesapeake & Ohio R. R. Co. and the Southern Railway Co. Systems. These resources and facilities, coupled with the company's specialized experience of more than 40 years, assure a uniform high grade of material and workmanship and prompt deliveries.



Alberene Stone Treads Leading from Main Lounge, Mitten Memorial, Philadelphia, Pa.
WILLIAM H. LEE, Architect

Architectural Service

The technical department of the company is prepared and qualified to draw specifications, plans and details on all construction problems involving the use of Alberene Stone. The experienced counsel of the company's specialists is freely offered to all who may wish to avail themselves of it—without obligation.

Stair Treads, Landings, Floorings, etc.

A selected hard stone is used for this purpose, a stone which has a pronounced "toothed," non-slipping surface. This material reduces the fire hazard, because it will not crack or break under heat, or even when cold water is turned upon it when the stone is at a high temperature. This makes Alberene Stone a superior material for stair treads, landings and flooring where safety and durability are factors. Many instances are known where these treads have been in hard service for more than 25 years. Our mill capacity and supply of uncut stone enable us to make reasonable deliveries in any quantity.

Alberene Has Color Value

There is a wide variety of tones and textures in natural soapstone, and we suggest that you send for "Architectural Alberene" which contains plates in full color showing how perfectly Alberene blends with various stones commonly used in building construction.



Alberene Stone Floor, Base and Stair Treads, St. Paul's Presbytery, Pittsburgh, Pa.
CARLTON STRONG, Architect

B 2533

FLOOR AND WALL TILE

◆ ◆ ◆

RESILIENT FLOORING

AMERICAN ENCAUSTIC TILING COMPANY, LTD.

INCORPORATED 1878

Floor, Wall and Decorative Faience Tiles of Every Description » Made in the U. S. A.

EXECUTIVE OFFICES AND SHOWROOMS
Aetco Building, 16 East 41st Street
NEW YORK, N. Y.

OFFICES AND SHOWROOMS

ZANESVILLE, OHIO, Linden Avenue
PHILADELPHIA, PA., Packard Building
SAN FRANCISCO, CAL., 3 Arcade, Monadnock Building
CHICAGO, ILL., 332 So. Michigan Avenue
LOS ANGELES, CAL., 2030 E. 52nd Street
DALLAS, TEX., Sante Fe Building

FACTORIES

ZANESVILLE, OHIO — MAURER, NEW JERSEY — LOS ANGELES, CALIFORNIA — HERMOSA BEACH, CALIFORNIA

AETCO PRODUCTS

Aetco Products include every type of Floor, Wall and Decorative Tile. Among staples are the following simplified classifications:—

Members of the Associated Tile Manufacturers

WHITE WALL TILE

Brights or Matts

Manufactured at Zanesville, Maurer, Los Angeles and Hermosa plants. Brights and Matts with standard size trim in Standard and Second Grades.

MATT WALL TILE

IRIS MATTS

Manufactured at Zanesville (write for A. I. A. Iris Matt Folder).
Iris Matt Color Numbers

A500 Dark Green	A510 Buff	A520 Dark Pink
A501 Medium Green	A511 Cream	A521 Medium Pink
A502 Light Green	A512 Ivory	A522 Light Pink
A505 Dark Blue	A515 Dark Gray	A525 Black
A506 Medium Blue	A516 Medium Gray	A526 White
A507 Light Blue	A517 Light Gray	A528 Peach Blossom

BRIGHT ENAMELS & SEMI-MATTS

PARISIAN C. SERIES

Manufactured at Maurer and Zanesville. Colors marked (*) Manufactured at Zanesville only.

C100 Dark Green	C110 Dark Yellow	C120 Dark Pink
C101 Medium Green	C111 Medium Yellow	C121 Medium Pink
C102 Light Green	C112 Light Yellow	C122 Light Pink
C105 Dark Blue	*C115 Dark Gray	*C125 Tan
C106 Medium Blue	*C116 Medium Gray	*C126 Light Tan
C107 Light Blue	*C117 Light Gray	*C127 Ivory

REFLECTA TILE

A series of pattern tiles in all standard enamel and semi-matt colors in which the decorative effect is achieved by the light reflection on contrasting planes. Manufactured at Zanesville; 4¼ x 4¼ only. (Write for A. I. A. Design Bulletin Plate A6.)

PERMATILE

A series of bright and semi-matt colors on special body for heavy wall duty. Manufactured at Zanesville, 4¼ x 4¼ only. Write for A. I. A. Permatile Folder.)

GOBELIN MATTS

ON SEMI-VITREOUS BODY

A series of colors presenting a soft satiny finish on a durable body, practical for surfaces subject to wear. Manufactured at Zanesville.

FAIENCE

Plain and decorated Faience tile of every type. (Communicate with our Art Department for special design treatments.)

FOUNTAIN AND SCULPTURAL PIECES

Sculptural pieces of special design are executed by our Aetco Studio specializing in distinctive and original ceramic creations.

CERTIFICATE OF GRADE

To insure proper protection in securing the quality of tile specified, ask for a grade certificate covering every detail on the invoice.

ARCHITECT'S DESIGN SERVICE

A trained force of designers is available to co-operate with the architect in working out distinctive designs for every type of building and for preparing color sketches from architect's blueprints.

FLOOR TILE

VITREOUS & SEMI-VITREOUS FLOOR TILE
In Standard Sizes
OHIO FLINTS — HYDRAULIC TILES

HERMOSA TILE

Bright and Matt Enamels
Manufactured at Maurer, N. J., in standard sizes.
See page 2 for color chart

BRIGHT ENAMELS AH. SERIES

Manufactured at Hermosa Plant.

AH-3 Turquoise Blue	AH-10 Champagne
AH-6 Sea Green	AH-21 Light Tan
AH-7 Light Green	AH-23 Heliotrope
AH-9 Pale Lilac	AH-31 Light Gray

HERMOSA MATT ENAMELS

BH. SERIES

Manufactured at Hermosa Plant.
Staple Colors

BH-1 White	BH-34 Goldyellow Mottle on white
BH-3 Light Turquoise Blue	
BH-6 Sea Green	BH-39 Goldbrown Mottle on green
BH-7 Light Cream	
BH-21 Light Tan	BH- 53 Black Matt
BH-23 Heliotrope	

BRIGHT ENAMEL A. SERIES

Manufactured at Los Angeles Plant.

A-2 Cerulean Blue	A-22 Blue Black
A-3 Light Green	A-28 Cream
A-7 Medium Naples Yellow	A-29 Sea Green
A-9 Lilac	

MATT ENAMEL B. SERIES

Manufactured at Los Angeles Plant.
Staple Colors

B-4 Burnt Rose	B-18 Light Pea Green
B-5 Orchid	B-20 Jade Green
B-10 Black	B-23 Ivory
B-12 Light Tan Orchid	B-54 Purple Wine

QUARRY TILE

See Manufacturers Index for Carlyle-Labold Catalogue
(Subsidiary Company to American Encaustic Tiling Co.)

CAMPAGNA SEMI-VITREOUS PAVING TILE

V-1337 Oatmeal Brown	V-1266 Black
V-1335 Light Oatmeal	V-1286 Green

V-1339 Dark Oatmeal Brown

CANTERBURIC TILES

A range of red and brown tiles of variegated shades for hallways, outdoor walks and verandas. (Write for illustrated folder.)

LOMBARDIC MOSAIC

(Write for illustrated catalogue)

CERAMIC MOSAIC & SISTINE CERAMICS

(Write for illustrated folder A. I. A. 23A11)

For special designs communicate with our Architect's Service Department.

VITREOUS BATHROOM ACCESSORIES

Aetco Flange Fixtures . . . Aetco Apartment Fixtures
Aetco Dowel Fixtures
(Write for A. I. A. Aetco Accessories Catalogue)

HERMOSA TILE

We have recently had the pleasure of presenting to the architectural profession and to the tile trade generally the latest and most important development in the history of our company, namely, our HERMOSA TILE, the "Tile Beautiful".

We are manufacturing and marketing this tile for distribution in the territory East of the Rocky Mountains from our plant at Maurer, N. J., the Western territory being supplied from our factory at Hermosa Beach, California.

The HERMOSA TILE is protected by United States Patents in regard to body, glaze and methods of firing and possesses a surface similar to that of the highest grade porcelain. It is manufactured in both White and Colored glazes, which in turn are subdivided into Bright and Matt surfaces.

HERMOSA TILE cannot be surpassed for brilliancy of glaze and smoothness of surface, while uniformity of shade and size is assured on each shipment.

Finally, we guarantee this tile against crazing.

The specifying of HERMOSA TILE by architects ensures the use by the tile contractor of the highest grade product manufactured today.

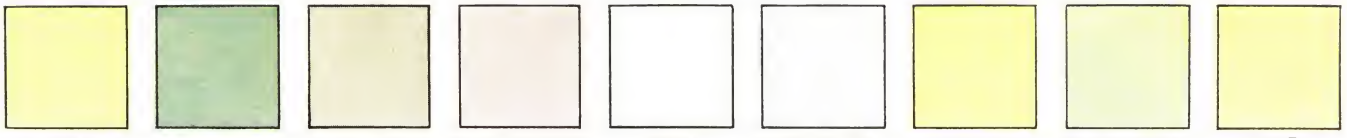
All the colors in our HERMOSA Color Palette have been specially selected with a view of harmonizing with the shades of color used in sanitary fixtures.

HERMOSA TILE is marketed in one grade only and is supplied in all standard sizes including trim.

HERMOSA TILE COLOR CHART

with color numbers of both Bright and Matt finish

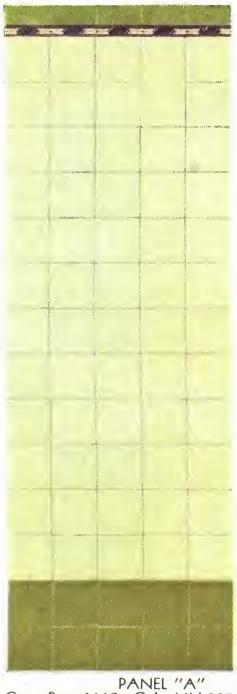
Bright Glaze colors are 300 Series
Matt Glaze colors are 400 Series



Light Lemon	Light Jade	Light Pearl Grey	Light Orchid Pink	White	Light Sky Blue	Light Yellow	Light Fern Green	Light Tan
MH-331 MH-431	MH-301 MH-401	MH-316 MH-416	MH-321 MH-421	MH-351 MH-451	MH-306 MH-406	MH-311 MH-411	MH-336 MH-436	MH-326 MH-426



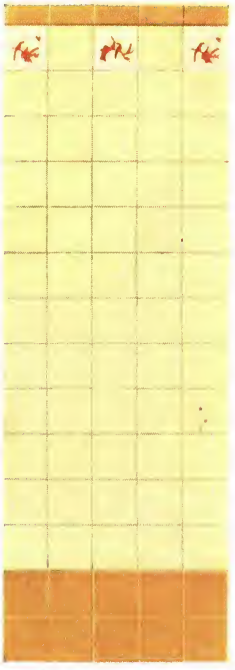
Dark Lemon	Dark Jade	Dark Pearl Grey	Dark Orchid Pink	Black	Dark Sky Blue	Dark Yellow	Dark Fern Green	Dark Tan
MH-330 MH-430	MH-300 MH-400	MH-315 MH-415	MH-320 MH-420	MH-350 MH-450	MH-305 MH-405	MH-310 MH-410	MH-335 MH-435	MH-325 MH-425



PANEL "A"
Cap—Pat. 1117, Col. MH-335, Dark Fern Green.
Dec. Strip—Pat. Z-139, Dec. 968.
Field—4¼"x4¼", Col. MH-326, Light Tan.
Base Courses—4¼"x4¼", Col. MH-335, Dark Fern Green.



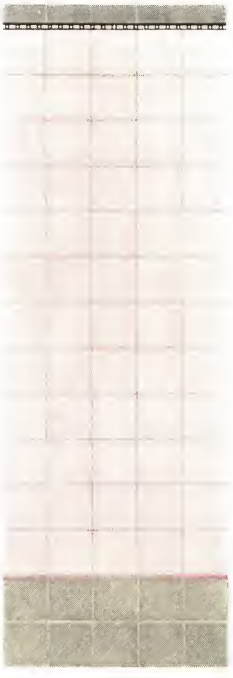
Cap—Pat. 1002, Col. MH-315, Dark Pearl Grey.
Border—4¼"x4¼", Dec. Z-150 and Z-151, Pink on White.
Field—4¼"x4¼", Col. MH-321, Light Orchid Pink.
Base—4¼"x4¼", Col. MH-315, Dark Pearl Grey.
Floor—¾"x¾", Sistine Ceramics, Pink and White.



PANEL "B"
Cap—Pat. 1117, Col. MH-325, Dark Tan.
Dec. Inserts—4¼"x4¼", Pat. Z-150, Pat. Z-151.
Field—4¼"x4¼", Col. MH-326, Light Tan.
Base Courses—4¼"x4¼", Col. MH-325, Dark Tan.



PANEL "C"
Cap—Pat. 1117, Col. MH-310, Dark Yellow.
Dec. Strip—Pat. 9943-Dec. 887.
Field—4¼"x4¼", Col. MH-311, Light Yellow.
Base Courses—4¼"x4¼", Col. MH-310, Dark Yellow.



PANEL "D"
Cap—Pat. 1117, Col. MH-315, Dark Pearl Grey.
Dec. Strip—Pat. R1871.
Field—4¼" x 4¼", Col. MH-321, Light Orchid Pink.
Base Courses—4¼"x4¼", Col. MH-315, Dark Pearl Grey.



PANEL "E"
Cap—Pat. 1117, Col. MH-305, Dark Sky Blue.
Field—4¼"x4¼", Col. MH-306, Light Sky Blue.
Base Courses—4¼"x4¼", Col. MH-305, Dark Sky Blue.

HERMOSA TILE has been used for wall surfaces in each of the buildings illustrated below

HERMOSA TILE is the ideal material for the service portions of residences, hotels, schools and hospitals, where in the case of the latter institutions, its use is particularly adaptable for walls of sterilizing and operating rooms.

HERMOSA TILE—either in white or colored glazes is to be recommended for chemical laboratories, swimming pools, bathrooms, kitchens and dairies, in fact in every case where a clean and decorative wall surface is desired.

Even stairways in the service portion of a building may well be lined with HERMOSA TILE from floor to ceiling.

The porcelain-like face (or glaze) of HERMOSA TILE not only assures a perfect sanitary surface but gives a clean and spotless appearance to the walls.

We have illustrated a few of many modern buildings in which HERMOSA TILE has been installed.



UNION LEAGUE CLUB
Morris and O'Connor, Architects
L. Del Turco & Brothers, Inc., Tile Contractors



ST. LUKE'S HOSPITAL
Crow Lewis and Wick, Architects
Robert Huddelson, Jr., Tile Contractor



ST. MARKS NURSES' HOME
Crow Lewis & Wick, Architects
Atlas Tile & Marble Works, Inc., Tile Contractors



CHARLOTTE HUNGERFORD HOSPITAL
Crow Lewis & Wick, Architects
White & Clark, Inc., Tile Contractors

ACME BRICK COMPANY

Manufacturers of Floor Tile, Roof Tile and Face Brick

DANVILLE, ILL.

PRINCIPAL DISTRIBUTORS

CHICAGO, ILL., Wisconsin Lime & Cement Co.
CINCINNATI, OHIO, E. F. Grand Brick Co.
CLEVELAND, OHIO, Geist-Kemper Material Co.
DETROIT, MICH., Dresden Brick Co.
LOUISVILLE, KY., Stearns Coal Co.
MINNEAPOLIS, MINN., Wunder-Klein-Donohue Co.
NEW YORK, N. Y., Walton N. Cable
PHILADELPHIA, PA., Drehmann Paving & Construction Co.
ST. LOUIS, MO., Richards Brick Co.
WINNIPEG, MAN., CANADA, Alsip Brick, Tile & Lumber Co.

DEALERS IN ALL PRINCIPAL CITIES

Products

"RYLTYLE" FLOOR TILE—FLOOR BRICK and QUARRY TILE.

"RYLTYLE" ROOF TILE—SHINGLE, MISSION and SPANISH TILE.

"FACE BRICK OF CHARACTER"—"PERSIANTEX," "VINE-WOVE" and "CAYUGA MATT."

"Ryltyle" Floor Tile

Made of finely ground plastic Pennsylvanian shale and fire clay by our special machinery and hard burned in our modern Minter System plant, thus insuring a smooth, dense surface.

Floor Brick—For industrial floors, resisting acids, chemicals, salts, fats and oils, producing a durable, sanitary, and economical floor for severe trucking.

These tile are used successfully in dairies, ice cream plants, refrigeration plants, packing houses, dye-houses, tanneries and chemical plants.

Fats and oils are easily cleaned from "Ryltyle" floors, hence their use in bakeries, commissaries, kitchens, canneries, candy plants, power plants, warehouses, factories, garages.

"Ryltyle" Floor Brick are made with either smooth or rough surfaces, and should be laid with tight joints to insure maximum durability.

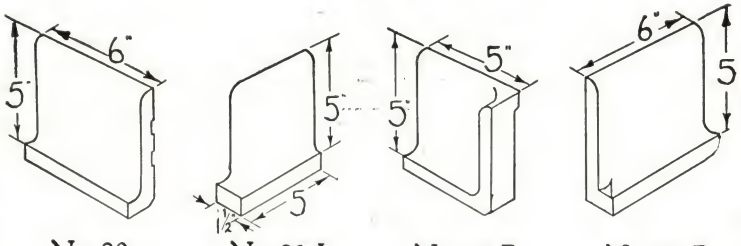
Owners have realized long, satisfactory service from "Ryltyle," under conditions where other types of flooring have failed.

Quarry Tile—For floors, roofs and terraces of residences, apartments, hotels and public buildings. In deep red or buff, or colorful fire-flashed blends—all produced naturally without artificial colors. "Ryltyle" make permanently beautiful floors with smooth surfaces, easy to clean

AB C

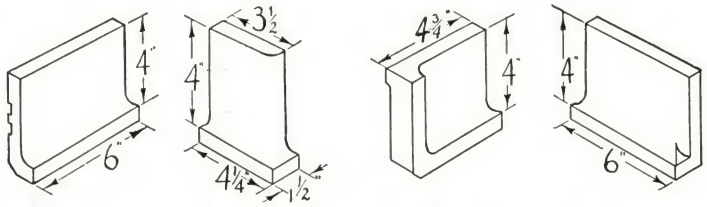
RYLTYLE "REAL TILE"

SHAPES



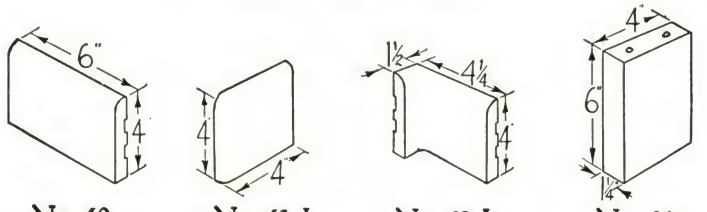
No. 20 No. 21 L No. 22 R No. 23 R

Round Top Cove Base



No. 30 No. 31 R No. 32 L No. 33 L

Square Top Cove Base



No. 40 No. 41 L No. 42 L No. 45

Wainscot Bullnose

DIMENSIONS AND WEIGHTS

Description	Size, in.	Number of pieces per sq. ft.	Weight, lbs. Each	Weight, lbs. Per sq. ft.
Floor brick	4 x 8 x1½	4½	3.3	14.85
	4 x 8 x1¾	4½	4.0	18.0
Quarry tile	6 x 6 x ¾	4	2.0	8.0
	4 x 4 x ¾	9	.95	8.55
	2¾x 2¾x ¾	16	.5	8.0
	4 x 8 x ¾	4½	1.9	8.55
	2¾x 6 x ¾	8	1.0	8.0
		(Per 100 sq. ft.)		(Per 100 sq. ft.)
Shingle roof tile	6 x12 x ⅝	480 (5" expos.)	3.15	1512
Mission roof tile	8 x15 x ⅝	230 (11" expos.)	5.5	1265
Face brick—shale	2¼x 8 x3¾ avg.		4.7	
fire clay	2¼x 8 x3¾ avg.		4.55	

Half and diagonal half tile for all sizes floor tile.
Shapes for wainscot—see diagram above.
All necessary shapes for roof tile.
Octagon and bullnose shapes for face brick.

Grades—*Select*—Carefully selected for shade and mechanical perfection. Wire-cut ends ground after burning to insure exact size.

Standard—A superior quality, sorted for size, shade, and mechanical excellence.

Industrial—A good quality sorted for approximate size and shade with only slight defects.

Warehouse—Slight irregularities, slightly chipped corners or edges.

Random Rubble—Irregular sizes and shapes of uniform thickness—for walks and terraces.

"Ryltyle" Roof Tile

Shingle, Mission and Spanish tile made in both smooth and roughened surfaces and with necessary shapes, in the same color combinations as listed under Quarry Tile.

"Face Brick of Character"

Are furnished in straight shades and in various blends of carefully combined colors. All produced naturally without artificial means.

"Persiantex"—A superior brick having a unique granular surface, resembling the texture of a Persian rug, producing an attractive combination of light and shadow with a delightful and harmonious variation.

"Vine-Wove"—A vine-like design woven into a matt surface, resulting in added interest and depth of shadow.

"Cayuga Matt"—A wire-cut surface of great uniformity producing soft, mellow tones.

"Ryltyle" Service

Our Engineering Department will gladly furnish expert advice concerning installation of our materials for unusual conditions. Samples and information upon request.

ASSOCIATED TILE MANUFACTURERS

Wall and Floor Tiles, Ceramic Mosaic, Faience, and Quarries

220 Graybar Building, 420 Lexington Avenue

NEW YORK, N. Y.

ALHAMBRA TILE COMPANY
Newport, Ky.

AMERICAN ENCAUSTIC TILING CO., LTD.
New York, 16 East 41st Street
Zanesville, Ohio
Philadelphia, Pa., Packard Building
Los Angeles, Cal., 729 South Western Avenue
Dallas, Tex., Santa Fe Building
Chicago, 332 South Michigan Avenue
Ironton, Ohio

THE ARCHITECTURAL TILE COMPANY
Keyport, N. J.
New York, 101 Park Avenue
Boston, 11 Beacon Street

CAMBRIDGE TILE MANUFACTURING CO.
Cincinnati, Ohio, Box 836
New York, 101 Park Avenue

FEDERAL TILE COMPANY
Columbus, Ohio
New York, 101 Park Avenue

FRANKLIN POTTERY
Lansdale, Pa.

MATAWAN TILE COMPANY
Matawan, N. J.

THE MOSAIC TILE COMPANY
Zanesville, Ohio
Matawan, N. J.
New York, 327 West 42nd Street
Chicago, 1336 West Washington Boulevard
St. Louis, 6742 Chamberlain Avenue

NATIONAL TILE COMPANY
Anderson, Ind.
New York, 551 Fifth Axenue
Chicago, 228 North La Salle Street
St. Louis, Railway Exchange Building
San Francisco, 670 Third Street

OLEAN TILE COMPANY
Olean, N. Y.

THE C. PARDEE WORKS, INC.
Perth Amboy, N. J.
New York, 101 Park Avenue
Philadelphia, 1600 Walnut Street

PENN TILE WORKS COMPANY
Aspers, Adams County, Pa.

THE SPARTA CERAMIC COMPANY
East Sparta, Ohio
Cleveland, 5005 Euclid Avenue

THE STANDARD TILE COMPANY
Zanesville, Ohio
New York, 101 Park Avenue

UNITED STATES ENCAUSTIC TILE WORKS
Indianapolis, Ind.
New York, 103 Park Avenue
Chicago, Monroe Building

UNITED STATES QUARRY TILE CO.
Parkersburg, W. Va.
New York, 101 Park Avenue
Chicago, 1524 South Western Avenue

THE WHEATLEY TILE & POTTERY CO.
Cincinnati, Ohio, Box 836
New York, 101 Park Avenue

WHEELING TILE COMPANY
Wheeling, W. Va.
New York, 11th Avenue and West 26th Street

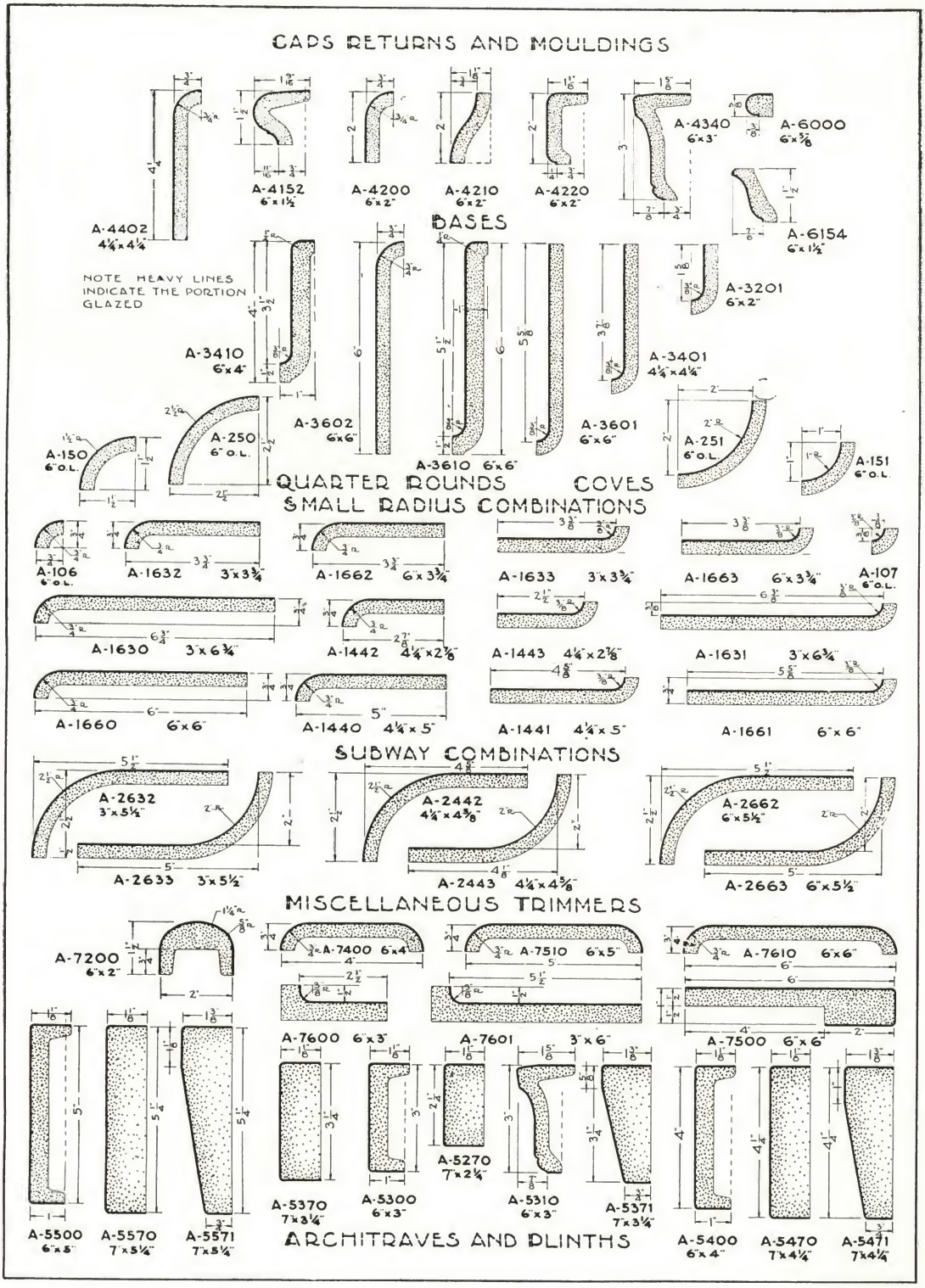
CONDENSED LIST OF TILES

THEIR CHARACTERISTICS & USES

KIND OF TILES	GRADES*	THICKNESS	SHAPES AND SIZES	COLORS	SURFACES AND GLAZES	GENERAL USES
CERAMIC MOSAIC	STD. and SEC.	¼	Square - 2 3/16 · 1 13/16 · 1 1/16 · ¾ · ½ · 11/32 Oblong - 2 3/16 × 1 1/16 · 1 13/16 × ¾ · 1 1/16 × ½ Hexagon - 1¼ · 1 Pentagon - 2 3/16 Trapezoid - 2 3/16 × 1 1/16	See Vitreous and Semivitreous Tiles, Also Flat and variegated colors such as Textures, & Flashings	Unglazed	Floors Walls Swimming Pools Plunge Baths Kitchen Sinks Interior Exterior
ENAMEL MOSAIC GLAZED MOSAIC	STD.			See Dull Glazed Tiles	Bright	
DULL GLAZED MOS. MATT GLAZED MOS.					Dull Matt	
FAIENCE MOSAIC	STD.	VARIABLE	Any Shape or Size Less Than 2¼ Square Inches in Area	See Faience Tiles	Plain or Embossed Bright, Dull or Matt	
PLASTIC MOSAIC				See Plastic Tiles	Plain or Embossed Unglazed	
VITREOUS TILES	STD and SEC.	½	Square - 3 - 2⅛ - 1½ - 1 1/16 Oblong - 3×1½ - 3×1 - 3×½ - 2⅛×1 1/16 - 1 1/16×½ Hexagon - 3 - 2 Octagon - 3 Triangle - 3 - 1 47/64 - 1 5/32	White, Celadon, Silver-gray Green, Blue-green, Light-blue Dark blue, Pink, Cream, and Granites of these Colors	Unglazed	Floors Walls Fireplaces Interior Exterior
GLAZED					Bright	
DULL GLAZED MATT GLAZED				See Dull Glazed Tiles	Dull Matt	
SEMIVITREOUS TILES	STD		Same as Vitreous Tiles, Also: Square - 6 - 4¼ Oblong - 9×3 - 6×4 - 6×3 - 6×2 - 6×1½ 6×¾ - 6×½ - 4¼×2⅛ - 4¼×1 1/16 Hexagon - 6 - 4¼ - 6×3 - 4¼×2⅛ Octagon - 6 - 4¼ Pentagon - 5 5/16 - 2⅛	Buff, Salmon, Light-gray, Dark gray, Red, Black, Chocolate, and Granites of these Colors	Unglazed	
GLAZED					Bright	
DULL GLAZED MATT GLAZED				See Dull Glazed Tiles	Dull Matt	
FLINT PAVING TILES HYDRAULIC	STD and SEC.	¾	Square - 6 - 4¼ Oblong - 6×4 - 6×3 - 6×½ Hexagon - 6 - 4¼ Octagon - 6	White, Light gray, Dark gray Celadon, Sage, Light blue Dark blue, Green, Cream	Unglazed	Floors-Walls Interior-Exterior
	STD	¾ and 21/32	Square - 6 - 4¼ Oblong - 10×5 - 9×3 - 6×3 - 6×½ Hexagon - 6 - 4¼	See Semivitreous Tiles		Floors Interior-Exterior
WHITE GLAZED TILES	STD. and SEC.	½ and ⅜	Square, Oblong, Hexagon, Octagon Basic Sizes For Fields: 6 - 4¼; 6×3; 3 - 2; 3 Other Sizes: 3 - 2⅛ - 1½ - 1 1/16 - ¾ - ½; 6×2 - 6×1½ - 6×1; 6×¾ - 6×½ - 4¼×2⅛; 4¼×1 1/16 - 3×1½ - 3×1; 3×½ - 3×¼ - 2⅛×1 1/16	White	Plain or Embossed Bright	Walls Interior
DULL GLAZED TILES MATT GLAZED TILES	STD and SEC.	⅜, ½		• Unlimited Color Range • Selection must be made from Samples and Colors Specified by number	Plain or Embossed Dull Matt	Walls Fireplaces Interior
ENAMELS					Bright	
PLASTIC TILES	STD.	½ and over	Obtainable in all of the above, and special shapes and sizes	Colors that result from firing of natural clays	Plain or Embossed Smooth or Rough Unglazed	Floors Walls Fireplaces Interior Exterior
FAIENCE	STD and SEC.			See Dull Glazed Tiles	Plain or Embossed Bright, Dull or Matt	
QUARRY TILES	STD. and SEC.	½, ¾, ⅞, 1¼	Square - 12 - 9 - 6 - 4¼ - 3 Oblong - 12×6 - 9×6 - 9×4¼ - 9×3 - 6×3 Hexagon - 8×4	Red, Gray, Buff, Brown and Flashed	Unglazed	Floors Interior-Exterior

*STD - Standard Grade, SEC. - Seconds

INDEX OF STANDARDIZED WALL TILE TRIMMERS



The chart above shows the Wall Tile Trimmers which have been adopted as standards for the tile industry.

The 56 trimmers on the chart, together with their complementary angles, corners and stops, are designed to care for every normal trimmer requirement. A selection from this group will not only simplify the work of specification but will insure prompt delivery.

The letters and numbers labeling the trimmers when used in specifications will at once definitely identify the desired shape. No further description—except the required color—is needed to enable any member factory to supply the correct trimmers.

Architects should specify all tile containers to be "grade sealed" according to the provisions of United States Department of Commerce Simplified Practice Recommendation R-61-30. Master grade certificates also should be called for to insure installation of the exact grade specified.

BATCHELDER TILES

BATCHELDER-WILSON COMPANY

540 No. Michigan Avenue
CHICAGO, ILL.

2633 Artesian Street
LOS ANGELES, CALIF.

101 Park Avenue
NEW YORK, N. Y.

Product

A High Fired, Clay Product of varied types, Glazed and Unglazed, with a common factor which permits unique combinations of color, glaze and texture.

TILES; PAVERS; PATINA GLAZES; TERRA COTTA; CRINKLE MOSAICS.

Drinking Fountains

See Sweet's Manufacturers' Index for Batchelder Drinking Fountains. We show typical wall and pedestal fountains in Patina Glazes.

Complete Data

We issue various illustrated catalogues and price lists available to architects:

Catalogue of Mottled Finish Materials
Mantel Catalogue
Drinking Fountain Catalogue
Ornamental Fountain Catalogue
Paver Catalogue
Staircase Construction
Special Fireframes
Patina Glaze Catalogue

Batchelder Tiles

Mottled Finish—They have a surface coloration of mineral slips fired to the same temperatures as the clay body assuring permanence. This material has a distinctive texture with many subtle color modifications. It is mellow toned, peculiarly appropriate for interior work, mantels, fountains, counters, wainscots, etc. Made in great variety of shapes, sizes and designs, with figure tiles, corbels, mouldings and borders to match.

Plain Tiles—Made with slightly rounded edges for recessed pointing as in mantels, fountains, wainscots. They are 5/8 in. thick up to and including 6x6 in.

Batchelder Mantels

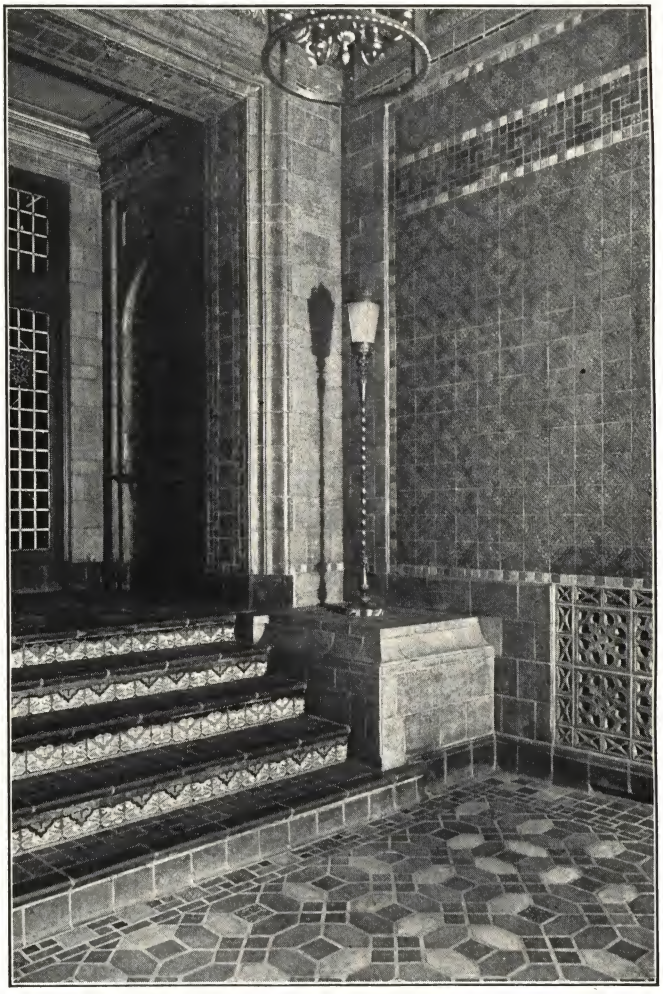
Made in mottled finish materials with many variations of style and price suitable for different environments. The distinctive characteristics are in the subtle color combinations and carefully studied designs. Spandrels, arches, hoods and many similar features are used in combination with plain tile units.

Fountains for Garden and Sunroom

These are of two general types—wall fountains with drip basin, and center fountains or pools. They are made in combinations of materials, patina, paver and mottled finish. We make many features such as bowls, drips, etc., in patina glaze useful in fountain construction.

Glazed Figure Tiles

Generally referred to as "Spanish Type." They are handmade in many designs, full glazed, with interesting color combinations. Especially useful for stair risers, wainscots, panels—in fact, wherever a mosaic of color and pattern is desirable. Made in two processes, "raised line" or "black line."



This Installation Combines All Types of Our Materials
PAUL FREDERICH OLSEN, INC., Chicago, Ill., Architects

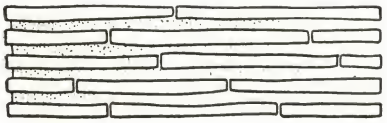
Batchelder Pavers

They are handmade, high fired, semivitreous, with a tough, compact body. They have a non-slip surface. They are unglazed, but have a color penetration throughout the thickness of the tile. Made in many shapes and sizes, and in colors from black to cream through the reds, browns and grays. Also made in greens.

Note: This material was originally intended for pavement installation only, but its wealth of soft toned colors has made it acceptable for wainscots, counters, and other similar uses. It has a very interesting texture contrast when used with our other materials.

Paver Random Strips

Are hand cut irregular strips approximately 3/4 in. wide, 1 3/4 in. thick, with a maximum length of 12 in. Particularly interesting in color and form for firebox linings.



BATCHELDER PAVER RANDOM STRIPS - VARIED RANGES OF COLOR

Batchelder Patina Glazes

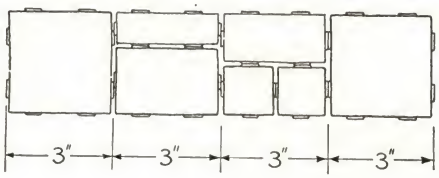
A full glazed product with a pleasing texture and without excessive gloss, made in a sequence of color blends—yellow, tan, gray-blue, blue, blue-green, green, orchid, gray-lavender, ivory, black. One value of these harmonious blends is in the dominant color note which may be established with other subordinate notes to catch the minor tones of a decorative treatment.

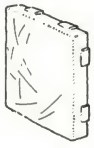
For bathroom use these tiles are made in 3x3-in. size, ½ in. thick, to set 12-in. joint centers with self-spacing lugs to insure proper joint widths. Cap, base, trim and fixtures to match.

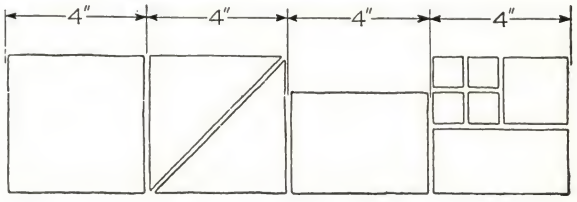
Patina blends are also made in 4x4-in. size in color schemes generally darker than bathroom tiles, but contrasting favorably with them. They are ½ in. thick and are set three tiles to 12 in. joint centers.

Batchelder Crinkle Mosaics

Hand cut with an irregularity of surface which adds unique character to an installation. All colors made in ⅞-in. size; certain colors also made in ½-in. size and in 1⅝-in. size. Made in solid body colors for pavements, slip glaze, dull surface colors, and full Patina glazes for wainscots, fountains, etc.



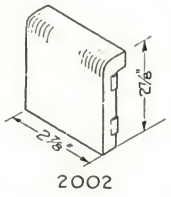


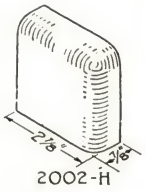


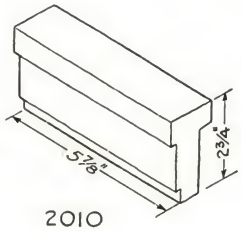


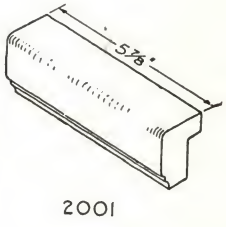
Typical Patina Inset Bathroom Accessory

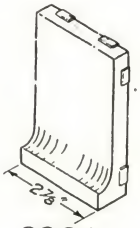
Attempt has been made to render the accessory as unobtrusive as possible rather than to make it the feature of a bathroom installation

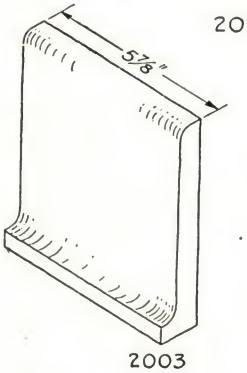


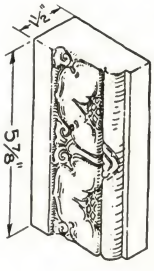


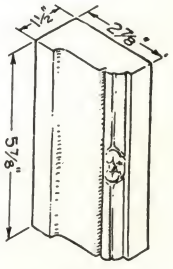






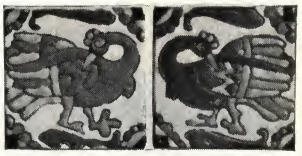








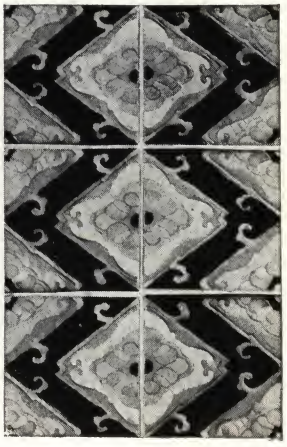


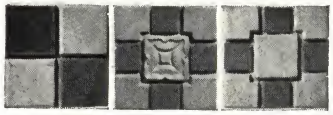


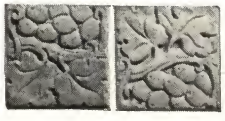














THE CARLYLE-LABOLD COMPANY

IRONTON, OHIO

A Subsidiary of

AMERICAN ENCAUSTIC TILING COMPANY, LTD.

16 East 41st Street, NEW YORK, N. Y.

SCIOTO
QUARRY TILE

Products

SCIOTO QUARRY TILE and TRIMMERS.

SCIOTO BRICKETTES.

For Floor, Wall and Decorative Faience Tiles of every description, see American Encaustic Tiling Company, Ltd., in Manufacturers' Index.

Scioto Quarry Tile

Available in a broad range of sizes and colors, Scioto Quarry Tile offer a dependable, economical medium with which to achieve countless colorful treatments.

The clay from which these uniformly dependable tile are moulded is deep-mined in a region widely known for its fine deposits.

Each tile is evenly and completely fired. The old-fashioned massing of tile in kilns has been eliminated. Using the Harrop Tunnel Kiln, small piles of tile are passed slowly through the kiln. Because the pile is small, the heat has full access to every tile—firing each one at the same, correct temperature.

Advanced manufacturing methods combined with carefully selected raw materials and thorough inspection insure the uniform excellence of Scioto Quarry Tile. An added advantage inherent in Scioto Quarry Tile is that they weigh less than most any other quarry tile. This effects a substantial saving on freight.

Manufacturing and Shipping Facilities

Carlyle-Labold own and operate one of the most modern and efficiently equipped quarry tile plants in America. Ample facilities are available for the prompt production and shipment of special as well as regular orders.

The central location of Ironton provides a favorable freight rate factor over a wide territory.

Colors and Sizes

In this catalogue standard colors and sizes are shown. All colors are true, even and brilliant. Orders for special sizes or colors are welcomed. We offer the architect the facilities and knowledge of our organization in developing shades that will harmonize with specific color schemes; in working out special patterns together with correctly sized tiles to develop those patterns.

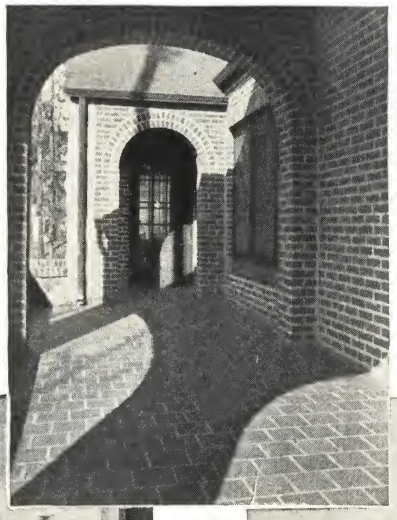
Grading of Tile

Scioto Quarry Tile are offered in three grades:

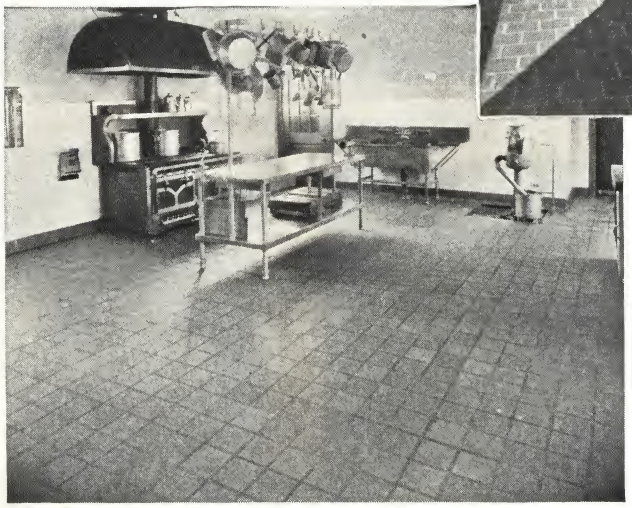
(a) Select Grade—Highest quality. Carefully sorted as to uniformity of size, shade and shape. This grade represents the best tile that it is commercially possible to produce.

(b) Standard Grade—The same as select, excepting that these tile are not sorted to any absolute uniform shade. They are "A" tile mechanically.

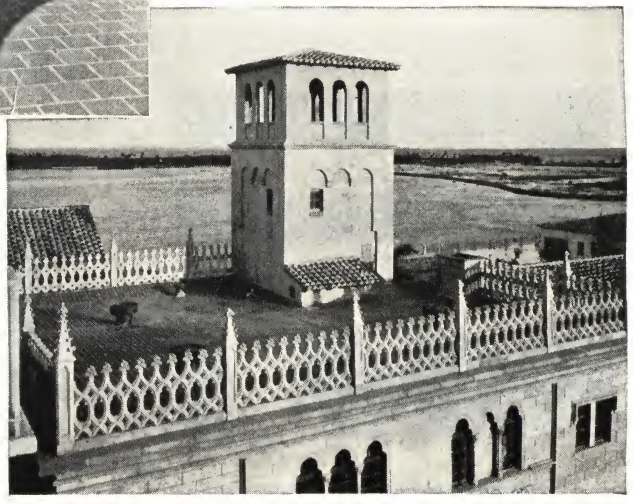
(c) Commercial Grade—Consists of slight irregularities in shape, slightly chipped corners or edges. They are not sorted to uniform shade and are furnished in two shade groups, light and dark.



Left:
Colorful Scioto Quarry Tile Enhance Beauty of This Entry Way
Floor designed and installed by SOUTHERN TILE COMPANY, Atlanta



Kitchen of Bellefaire Jewish Orphan Home, Cleveland, Ohio
A durable, easy to clean floor that will retain its good looks throughout a lifetime of use. Installed by PROSPECT MARBLE & TILE CO.



Scioto Tiled Roof on the Boca Raton Club of Boca Raton, Florida
Weather and sun hold no threat over the beauty of this roof
SCHULZE & WEAVER, Architects, New York

SCIOTO QUARRY TILE

Permanence — Beauty — Economy



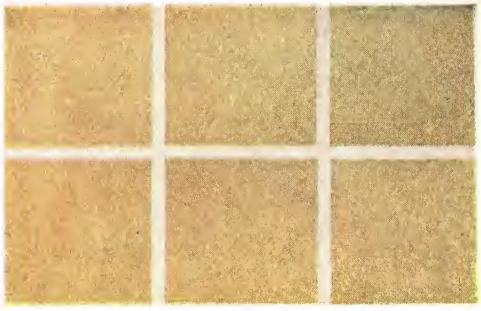
A panel made up of a mixture of our Navajo, Spanish and Indian reds, Oriental fireflash and Mecca brown, laid in a random pattern using 6 x 6, 6 x 2¾ and 2¾ x 2¾. Many very attractive patterns can be made by the use of mixtures of these various shades.



The shade shown in our new Arabian blend laid in random pattern using 6 x 6, 6 x 2¾ and 2¾ x 2¾. This shade is available from stock in 6 x 6, 6 x 2¾, 4 x 4, 2¾ x 2¾, round top cove base angles, bullnose, bullnose corners, stair treads and stair tread corners. This shade is also available in elongated hexagon and half hexagon.

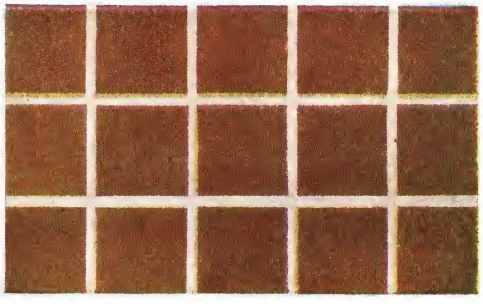
Permanence

Scioto Quarry Tile are unequalled in permanence. The rich color cannot fade or stain. The surface never checks, cracks or warps. Economical in first cost, Scioto Quarry Tile are surprisingly low in cost per year of satisfactory service.



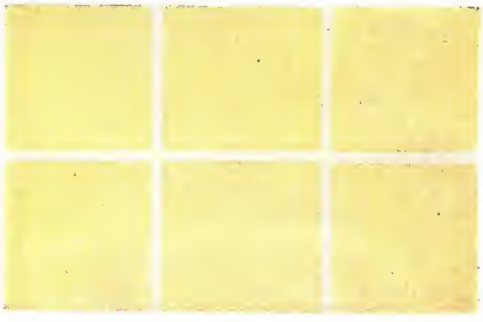
Scioto Irontone

An attractive shade of grey available from stock in 6 x 6, 4 x 4, 6 x 2¾, 2¾ x 2¾, round top covebase, angles, bullnose, bullnose corners, stair treads and tread corners. Furnished in select, standard and commercial qualities.



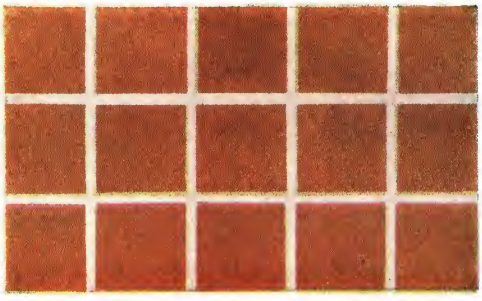
Scioto Mecca

A rich, attractive shade of plain brown, strong in its resemblance to the Welch quarries. Stock sizes are 6 x 6, 4 x 4, 6 x 2¾, 2¾ x 2¾, round top cove base, angles, bullnose, bullnose corners, stair treads, and tread corners. Select, standard and commercial qualities.



Scioto Pompeiian

A clear buff shade effective when used alone or in contrast with deeper toned tile. Stock sizes are 6 x 6, 4 x 4, 6 x 2¾, 2¾ x 2¾, round top cove base, angles, bullnose, bullnose corners, stair treads and tread corners. Available in select, standard and commercial grades.



Scioto Navajo Red

Our darkest and most desirable shade of plain red. Lighter shades—Spanish and Indian—available in limited quantities for small jobs, also as part of orders for Navajo Red to give variety in color tone. Stocked in complete assortment of sizes from 2¾ x 2¾ to 9 x 9 with all standard trim.



The effect shown is secured by the use of our various shades of plain red, Oriental fireflash, Mecca brown, Arabian blend and Irontone grey. The border is made up entirely of our Oriental fireflash.



A very attractive range of shades—a combination of the Arabian blend and Irontone grey. The 6 x 6, 6 x 2¾ and 2¾ x 2¾ sizes in these two shades are used in the field with a border of the Arabian blend. These patterns in the various colors are intended to give only an idea of the many attractive patterns and color ranges available in Scioto Quarry Tile.

SCIOTO QUARRY TILE

Beautiful

Through careful selection and grading of clay and highly developed manufacturing methods, Scioto Quarry Tile gain a colorful beauty that never diminishes. Colors are clear, pure and unfading. Correct firing of each tile assures freedom from beauty-marring checking, cracking or warping. Indoors or out, Scioto Quarry Tile afford permanent beauty, true economy and maximum utility.

Economical

Quarry Tile offer a means of securing distinctive treatments—of both indoors and outside areas—at low cost. The uniformity, fine texture and permanent color of Scioto Quarry Tile suggests their use in interiors—basement floors, entry ways, etc.—where higher priced materials are now commonly used.



Single Unit
8 x 2¼ x 3⅞ in.
also standard trim.



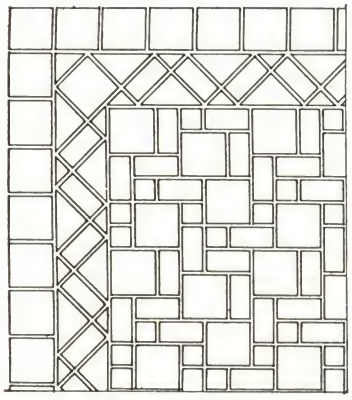
Double Unit
8 x 4⅜ x 3⅞ in.
also standard trim.

Salt Glazed Brick

A Salt Glazed brick of unusual merit, recently introduced by us. Desirable features include light color and uniform shades secured by carefully controlled manufacturing methods and the use of gas fired kilns. Surface texture is smooth, even in color and easy to clean. Here is the modern treatment for walls in school and public building corridors, kitchens, food factories, power houses and other areas where economy, appearance and ease of cleaning are major influencing factors.

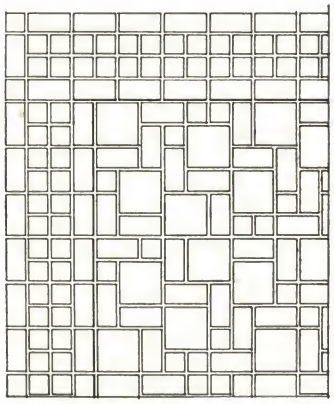
A full line of Trim for both the single and double units is regularly carried in stock.

PRACTICAL TILE TREATMENTS



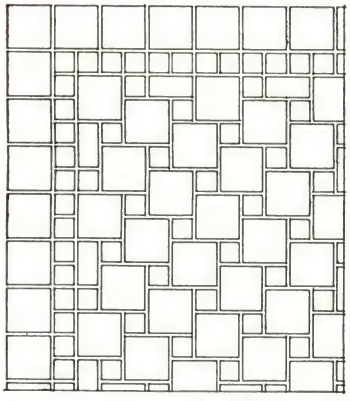
Pattern No. 101

Field: 6″x6″—2¾″x6″—2¾″x2¾″.
Border: 6″x6″ diagonal halves—2¾″x2¾″ diagonal halves—2¾″x6″.



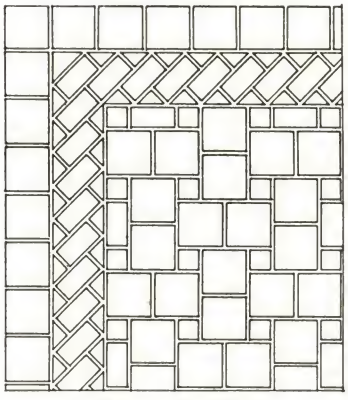
Pattern No. 104

Field: 6″x6″—6″x2¾″—2¾″x2¾″.
Border: 6″x2¾″—2¾″x2¾″.



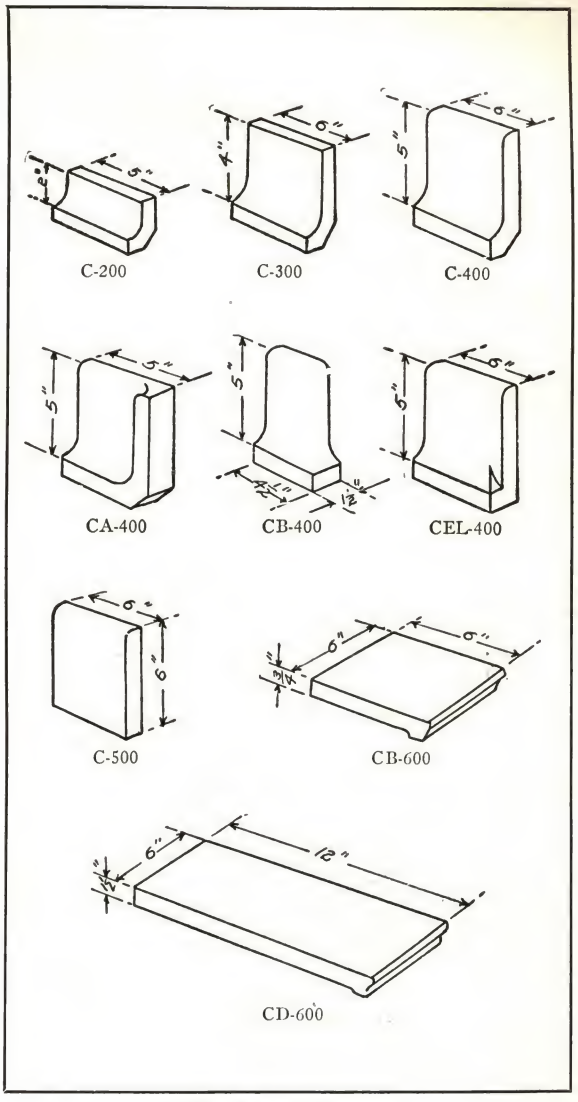
Pattern No. 102

Field: 6″x6″—2¾″x2¾″.
Border: 6″x6″—2¾″x2¾″.



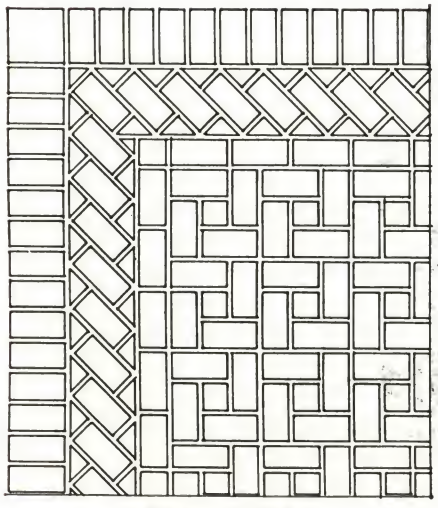
Pattern No. 103

Field: 6″x6″—6″x2¾″—2¾″x2¾″.
Border: 6″x6″ — 6″x2¾″—2 ¾″x 2¾″ diagonal halves.



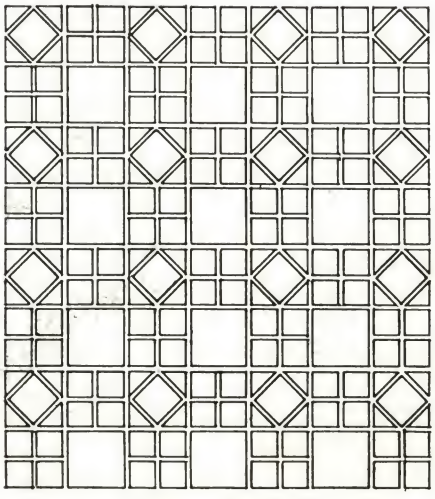
Scioto Quarry Trimmers

The trimmers shown are but a few of the broadly complete line regularly carried in stock



Pattern No. 112

Field: 6″x2¾″—2¾″x2¾″.
Border: 6″x2¾″—2¾″ diagonal halves.



Pattern No. 109

Field: 6″x6″—4″x4″—2¾″x2¾″—2¾″ diagonal halves

Some Scioto Tile Installations

Boston Sanitarium, Mattapan, Mass.
J. H. Ritchie & Associate (Boston), Architect
Elks Lodge No. 25, New Haven, Conn.
Alfred W. Boylen, Architect
Shadyside Academy, Pittsburgh, Pa.
E. P. Mellon, Architect
Regis College, Weston, Mass.
T. Edward Sheehan (Boston), Architect
Westinghouse Engineering Laboratory, Pittsburgh, Pa.
Bernard H. Prack, Architect
Commander Hotel, Cambridge, Mass.
Somers & Drisko (Boston), Architects
Pennsylvania R. R. Office Building, Philadelphia, Pa.
Graham, Anderson, Probst & White (Chicago), Architects
St. Lukes Hospital, New Bedford, Mass.
Stevens & Lee (Boston), Architects

THE CAMBRIDGE-WHEATLEY COMPANY

REPRESENTING

THE CAMBRIDGE TILE MANUFACTURING CO. **THE WHEATLEY TILE & POTTERY CO.**

GENERAL OFFICES

CINCINNATI, OHIO

BRANCH OFFICES

BOSTON, MASS., 51 Sleeper Street
BROOKLYN, N. Y., 1 Junius Street
CHICAGO, ILL., 16 E. Huron Street
DALLAS, TEX., 2403 So. Harwood Street
SAN FRANCISCO, CALIF., 1155 Harrison Street
LOS ANGELES, CALIF., 910 No. Orange Drive
NEW YORK, N. Y., 101 Park Avenue

Products

PLAIN and DECORATIVE TILE, GLAZED and UNGLAZED, for Floors and Walls (Dust Pressed and Faience).

Also "Everbrite" Tile House Numbers.

Tiles for Every Purpose

In addition to the varieties of tile here shown, THE CAMBRIDGE-WHEATLEY COMPANY produces a large and varied number of complete units for mantels, fire frames, mantel arches, fountains of all types, and similar installations.

Service

Designers are maintained at our Branch Offices, as well as at our factories, to assist architects and contractors in planning their tile work.

New Catalogues on Request

Our latest catalogues of tile will be gladly forwarded upon request. Specification sheets and full information on any specific items of the Cambridge-Wheatley line are always available.



Left:

Ceiling in First National Bank, Yonkers, N. Y.

WM. KATZ, Architect
A. TOZZINI TILE WORKS, INC., Tile Contractors

Ceiling of main lobby of this bank finished in colored Faience Tile with decorative inserts symbolizing in most interesting fashion different lines of industry and commerce

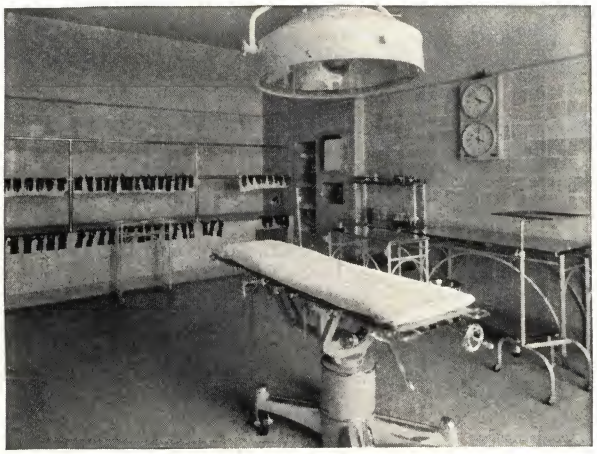
Right:

Bathroom in Presidential Suite, Starrett's Netherland Plaza Hotel, Cincinnati, Ohio

WALTER W. AHLSCHLAGER, Architect
WEIFFENBACH MARBLE & TILE CO., Tile Contractors

Finished in beautifully colored tile, designed to form a striking yet restful and harmonious effect

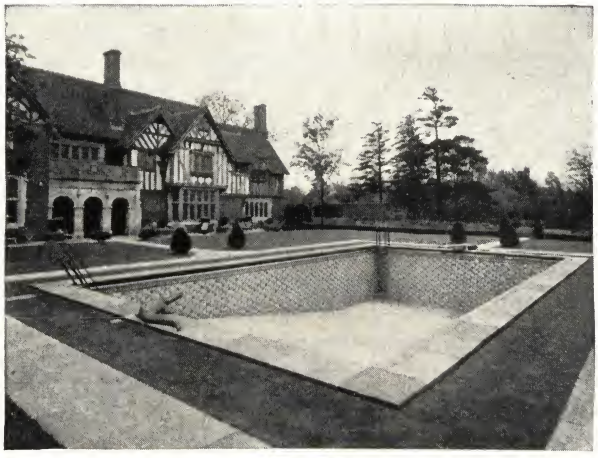




Tile Operating Room, Christ Hospital, Cincinnati, Ohio

TIETIG & LEE, Architects
MARTINA MOSAIC & TILE CO., Tile Contractors

Spotless cleanliness and perfect diffusion of light are assured by these hospital walls, finished with Cambridge tile



Swimming Pool on Estate of Powel Crosley, Jr., Cincinnati, Ohio

JAMES DWIGHT BAUM, Architect
FOY & STARR CO., Tile Contractors

Finished in Faience Tile of a design that climaxes the harmonious beauty of this estate

THE FAIRFACTS COMPANY

INCORPORATED

Manufacturers of Vitreous China Wall Tile and Vitreous China Bathroom Accessories

NEW YORK, N. Y., U. S. A.

CABLE ADDRESS: "FAIRFACTS"—CODES, A. B. C. Sixth Edition and Bentley's

BRANCH OFFICES

LOS ANGELES SAN FRANCISCO MONTREAL BUENOS AIRES

For Fairfacts Vitreous China Bathroom Accessories, See Manufacturers' Index

"FAIRFACTS TILE IS CHINA TILE"

Fairfacts Announces Another Product—Genuine Vitreous China Wall Tile

Made in White, Black and Colors—Satin Matt or Gloss Finishes

Quality

Our Vitreous China Bathroom Accessories, accepted by architects throughout the world, have for a long period demonstrated our ability as manufacturers of enduring china.

There is undoubted need and growing demand for genuine Vitreous China Tile with its everlasting quality, made of the same material as our bathroom accessories.

We believe that these vitreous china tiles can be set and cut by skilled tile setters with almost equal facility as common tile.

Colors

After several years of experimentation, our chemists have developed a means of permanently, beautifully, applying many colors and black to this same vitreous china body, when made into wall tile. It has not been found an easy task. These colors we call "Eternité Colors," because they last indefinitely. The various colors have been given numbers; for example, orchid No. 381. *See color chart on other side, illustrating a few of these colors.* This method, we hope, will be a simple way for architects to designate their color selections.



Fairfacts "Eternité Colors" on Fairfacts China Bathroom Accessories and on Fairfacts China Tile, make a fine combination, either in matched colors or in contrasting shades.

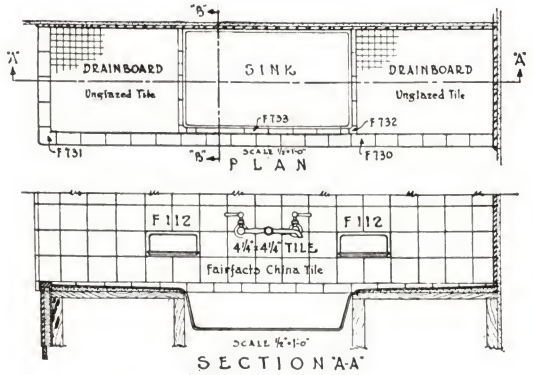
Sample color tile will be gladly mailed on request.

Uses

Interior — In residential buildings, for bathrooms, kitchens, dining rooms, loggias, etc.; hospitals; office buildings; swimming pools; etc.

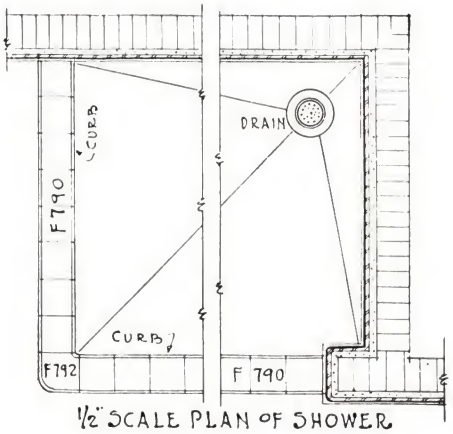
Exterior—For rich or decorative finish on all kinds of buildings, distinctive display signs, etc., in all places and in all climates.

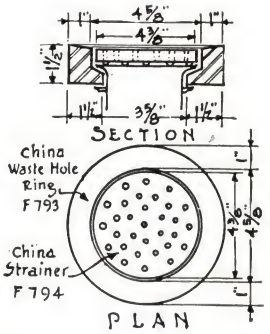
FAIRFACTS VITREOUS CHINA TRIM FOR SINKS AND SHOWER BATHS



Fairfacts China Sink Trim

Genuine Vitreous China tile and trim for sink and drainboard and for surrounding walls. White, black and colors—satin matt or gloss finishes





Fairfacts China Shower Trim

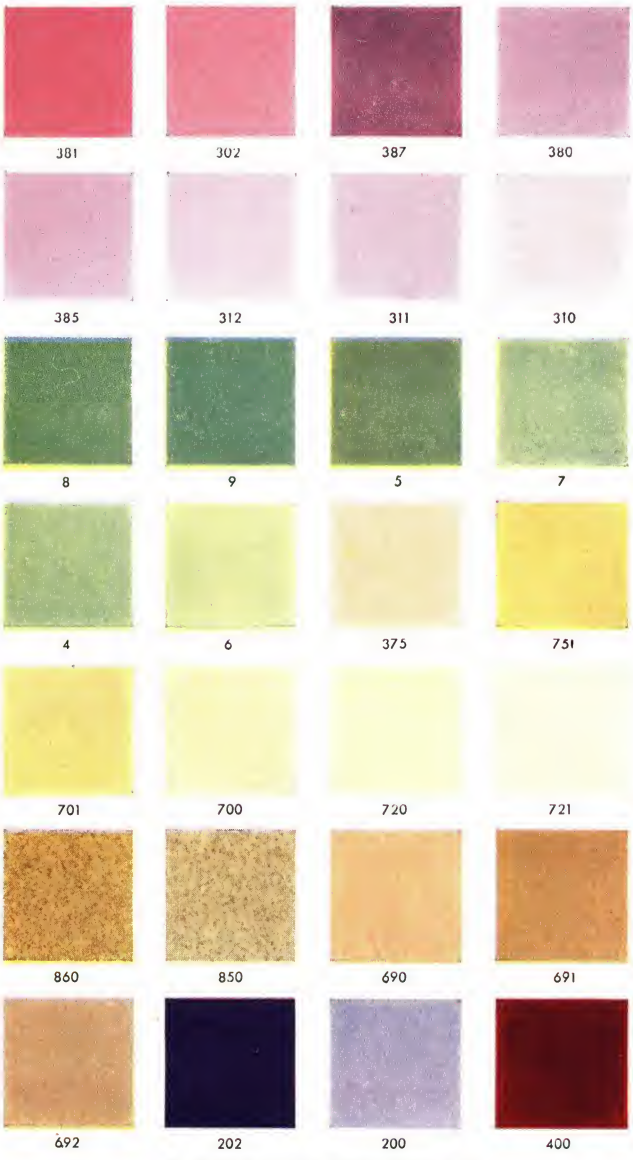
Genuine Vitreous China tile and trim for shower stalls and for surrounding walls. White, black and colors—satin matt or gloss finishes

More Details in Fairfacts Bathroom Accessories Catalogue—See Manufacturers Index

SEE OTHER SIDE

GENUINE VITREOUS CHINA WALL TILE

Colors



A Remarkable Development

When it is remembered that these colors are fired into genuine vitreous china, their unusual quality will at once be apparent, as well as our achievement in their production.

Made in white, "Mellotone White," black and "ETERNITÉ colors"—satin matt or gloss finishes.

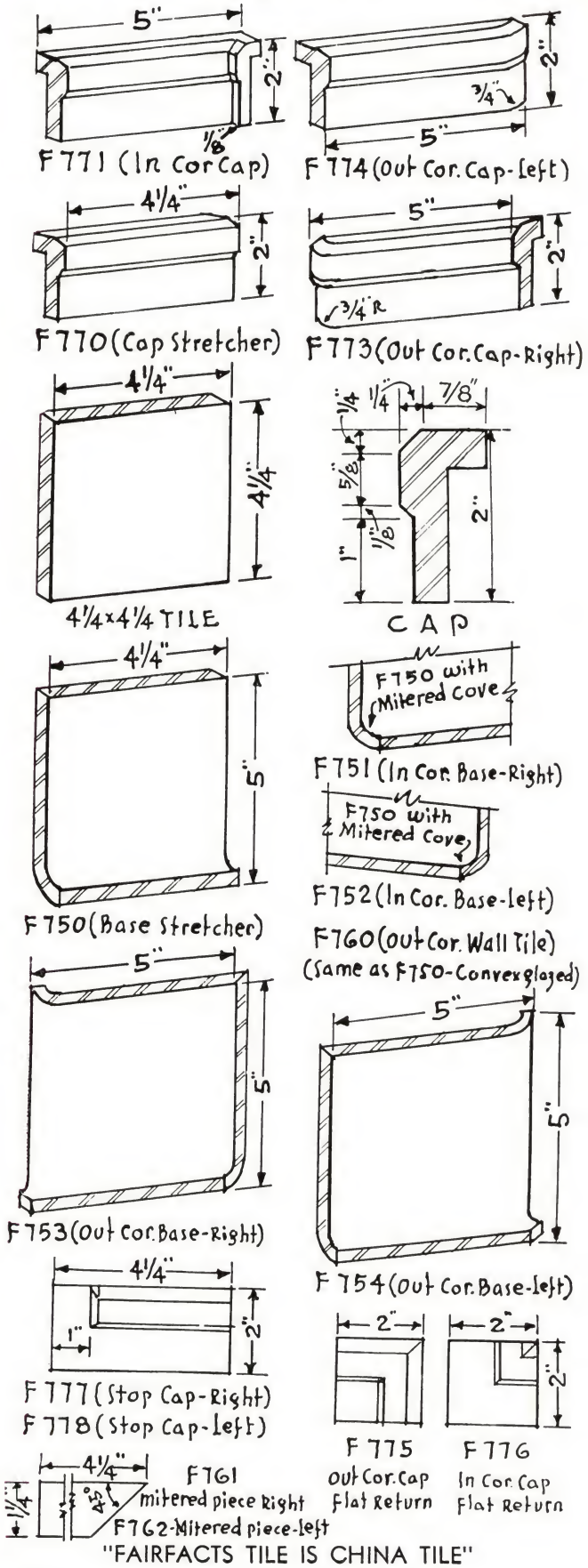
Note — "Mellotone White" is a beautiful, soft light cream—a specially fine finish.

Close approximation of shades in the various pieces may be expected. The above chart illustrates a few popular colors, available at short notice. Many other shades are made and also special colors to order from your samples. The color numbers may facilitate the designation of your selections. Fairfacts China Tile and Fairfacts China Bathroom Accessories in the same colors make very attractive bathrooms.

TRADE MARK ON EVERY PIECE

For Fairfacts Catalogue No. 32 (Bathroom Accessories), See Manufacturers Index

Sizes—4¼ x 4¼ in.



"FAIRFACTS TILE IS CHINA TILE"

SEE OTHER SIDE

ESTABLISHED 1893

HANLEY COMPANY

Manufacturers of Quarry Tiles for Floors

BRADFORD, PA.

BRANCH OFFICES AND REPRESENTATIVES

NEW YORK, N. Y., Hanley Company, 565 Fifth Avenue
E. Searfoss, 101 Park Avenue
J. P. Wooldridge, 101 Park Avenue
BOSTON, MASS., G. W. Palmer, 109 Allerton Road, Newton Highlands, Mass.
A. A. Williams, 175 Court Road, Winthrop, Mass.
PHILADELPHIA, PA., L. J. Shawman, 119 South 52nd Street, Upper Darby, Pa.
DETROIT, MICH., Francois Art Tile Company, 206 Grand River, East
CHICAGO, ILL., Edgar Francois, 20 West Austin Avenue
DALLAS, TEX., E. L. Marshall, P. O. Box 607, San Antonio, Tex.

PLANTS: BRADFORD, PA. and SUMMERVILLE, PA.

SALES REPRESENTATIVES IN ALL PRINCIPAL CITIES

Products

QUARRY and FLOOR TILES; 6x9x1 in., PROMENADE TILE; PACKING HOUSE FLOOR BRICK.

For our pages on Face Brick, refer to Manufacturers' Index.

Flame-Tone Floor Tile

These are a hand fettled tile being produced in a variety of colors never before available to the architect. The hand finish gives an appearance of age that blends well with the soft varying tan hues of the tile.

The illustration on the reverse page is a true depiction of Flame-Tone colors.

TRADE-MARK

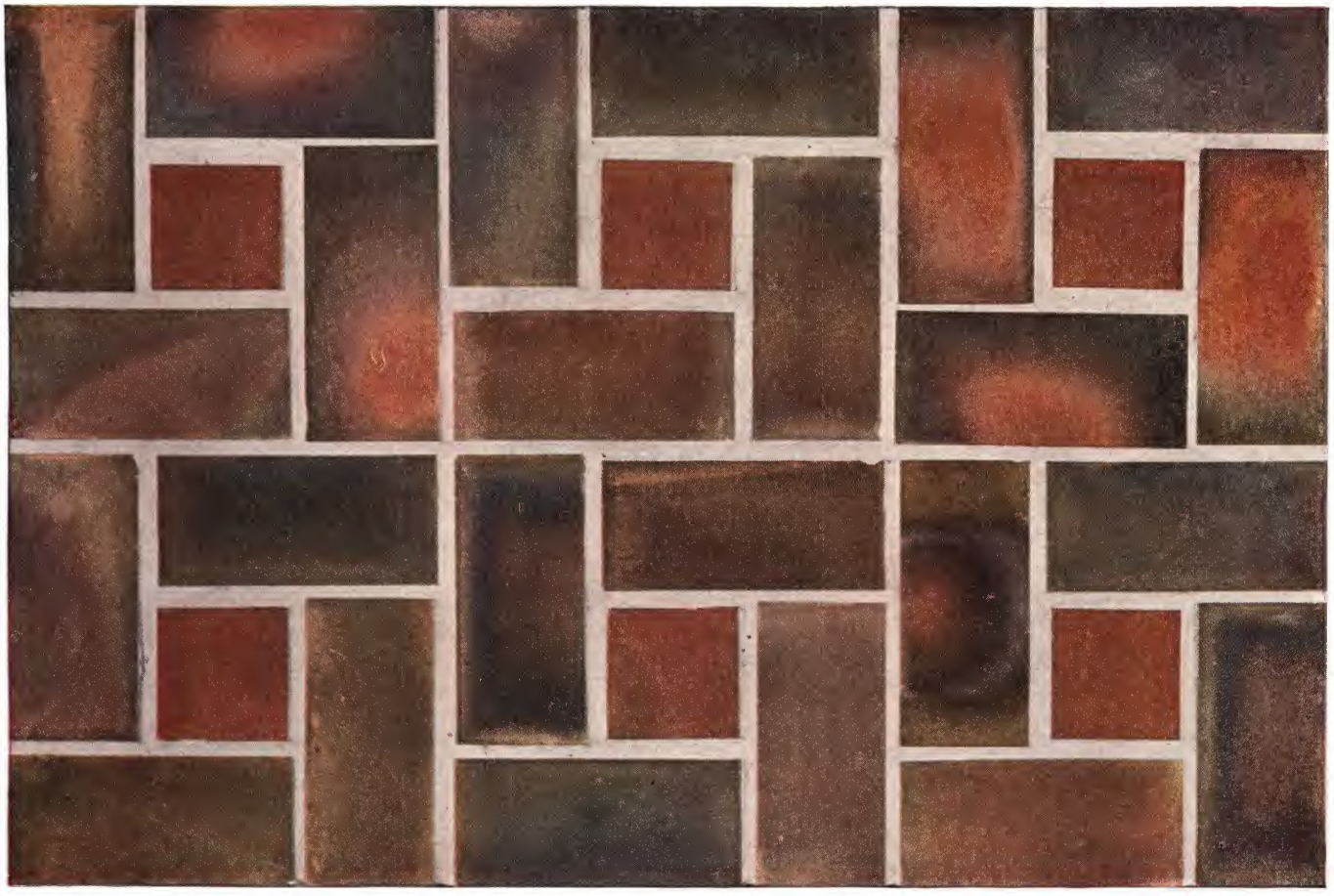
Hanley Promenade Tile

Hanley Promenade Tile are used extensively for roofs and terraces of large buildings.

These tile are available in a range of colors, including russets and fire-flashed colors, which blend with the face brick colors of the adjacent exterior walls.

Acid Resisting and Packing House Floor Brick

These specialties are made 8x4x1½ in. They are extreme in density, and are made from famous Bradford Red Pennsylvania Shale. They are mechanically perfect and resist acids and corrosive materials working into the joints.





HANLEY FLAME-TONE HAND FETTLED TILE

Tan, russet, olive—no two exactly alike . . . These hand fettled tile offer architects and decorators new decorative possibilities. In combination with Holland brick, their mellow appearance of age is particularly adaptable.

B. MIFFLIN HOOD COMPANY

Manufacturers of Floor Tile

PLANTS

DAISY, TENN., AND NORWOOD, N. C.

TELEPHONE OR TELEGRAPH, County 5606, Chattanooga, Tenn.

For Branch Offices, see page on Roof Tile

Product

HOOD'S FLOOR TILE.

For our Roof Tile page, see Manufacturers' Index.

Quality

Hood's tile is made from pulverized pottery, mixed with high grade shale.

DATA CHART—FLOOR TILE
Sizes and Thicknesses of Hood's Tile

Square		Rectangle		Triangle	
Size, in.	Thickness, in.	Size, in.	Thickness, in.	Size, in.	Thickness, in.
8 x8	¾ and 2	12x6	1½	8 x8	¾ and 2
6 x6	¾ and 2	8x4	1½	6 x6	¾ and 2
4 x4	½, ¾ and 2	8x3¾	¾	4 x4	¾ and 2
3¾x3¾	¾	6x3	½	3¾x3¾	¾
3 x3	½ and ¾	6x2¾	¾	2¾x2¾	¾
2¾x2¾	¾	6x2¼	1		
2¼x2¼	1	8x2¼	1	End Angles	
1⅝x1⅝	¾	4x2¼	1	8 x3¾	¾
		6-in. hexagon x ¾-in. thickness.		6 x2¾	¾
		8x3¾-in. elongated hexagon in ¾-in. thickness.			

Specials: Bullnose one side, bullnose two sides, roll and square top cove, base, internal and external angles, also wainscot fittings, etc., to match. Also 6x6x1½ bullnose steptreads.

Colors

Hoodbuff Tiles—Include a full range of natural colors from a light buff through intermediate tones of golden buffs, tans and warm grays to an occasional warm brown or extremely dark tan. These colors are obtained from a mixture of clay and shale.

Hoodgray Tiles—Run in a varying range of gray tones and here and there an almost invisible spot of warm tan showing. This comes out just enough to give the floor warmth, but not enough to be noticeable. This color range is suitable for the more formal floors. These colors are obtained from a mixture of clay and shale.

Pyro-Tynt Quarries—Include a full range of natural fireflashed shades in a random range, from slight flashed reds to deep greenish-bronze. The gradation of color and spotting is absolutely at random and no attempt can be made to sort for any particular color effect. These colors are produced from straight shale, and can be used to very good advantage in producing an extreme range of colors, with the lighter buff shades of the Aragon Tile.

Aragon Quarries—Include a range of shades from a light cream buff with pinkish centers and buff edges through the solid pinkish tones, to darker tans and speckled russets, with an occasional purplish-brown tone. These are produced from a mixture of straight shale and terra-cotta clays. An extremely wide range can be effected by a mixture with the Pyro-Tynt Tiles, which will give a range from light cream buffs to dark greenish and purplish bronze.

Regular Reds—*Shade 3*—Medium red tones, varying slightly.

Shade 4—Dark red, as near uniform as possible in quarries.

Grades

Perfected—Ground after firing, on all edges to produce perfect dimensions and straight edges, permitting string line fine joints.

Select—Specially selected and ground on two wire cut ends to produce exact length and straight edges.

Standard—Represents the standard of Hood's manufacture, reasonably true and uniform.

(B)—(Commercial)—A good quality of tile with minor imperfections and defects.

Rubble Random—Tile of odd and irregular shapes possessing exceptional color value resembling autumn foliage. Comes in uniform thickness. Many artistic settings are made with Rubble Random.

Shapes

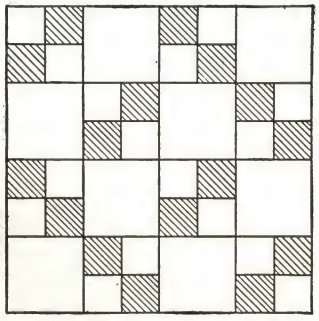
Special shapes, other than stock specials, will be executed in accordance with the architect's designs.

Samples

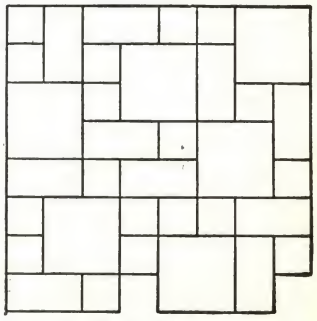
Samples and literature gladly sent on request.

Hood's "Quaramics"

"Quaramics" are mounted on paper sheets of approximately 2 sq. ft. each for shipping and setting. They are furnished in many harmonious and contrasting patterns. They are what is known as a plastic stiff mud tile as distinctive from the dry dust pressed.



Design F-23



Design—Random

They are produced in all the colors as described to the left and are quite different from anything previously on the market.

Note: Special patterns designed by the architect will be mounted and furnished for slight additional cost. Sample boards cheerfully furnished on request.

Sizes—2⅛x2⅛ in., 2⅛x1$\frac{1}{32}$ in., 1$\frac{1}{32}$x1$\frac{1}{32}$ by ¼ in. thick.

Hand Fettled Pavers

Edges rounded by hand giving irregular hand-made effects. Furnished in all colors except uniform red.

Hood's Cla-Slab Garden Blocks

Hand-made in sanded slop-mould, with weathered rocky edges, and surface. Colors are natural burned clay and flashed tones. Especially suitable for slab inserts in grass for stepping stones and garden walks, or for laying with depressed cement joint for terrace and interior slab floors.

Sizes—(1½ in. thick) 5½x5½, 5½x12, 5½x18½, 8¾x12, 12x12 and 12x18½ in. (to use a 1-in. joint when laid in ashlar pattern). We will be glad to make other special sizes to order, if practical.



"Cla-Slab" Garden Blocks

FLINT FAIENCE & TILE COMPANY

DIVISION OF THE AC SPARK PLUG COMPANY

Handmade Faience—Flintcraft Floor and Wall Tile—Vitocraft Pavers

MAIN OFFICE AND FACTORY

FLINT, MICH.

DETROIT, MICH., Emile Francois, 208 Hemmeter Building, 230 East Grand River Avenue
CHICAGO, ILL., Edgar Francois, 20 West Austin Street
SAN ANTONIO, TEX., E. L. Marshall, P. O. Box 607
WINTHROP, MASS., A. A. Williams, 175 Court Road
PHILADELPHIA, PA., L. J. Shawman, 119 South 52nd Street
NEW YORK, N. Y., Flint Faience & Tile Company, 101 Park Avenue, Room 405

FLINT QUALITIES TILES—A GENERAL MOTORS PRODUCT

Flint Faience Tiles

Flint Faience Tiles are a General Motors Product, which means that they are a quality product, priced right and dependable.

The versatility of Flint Faience is well illustrated in its innumerable and appropriate uses inside and out of the home. It has an individuality all its own. It is always decorative and in perfect keeping, no matter what the style of furnishing may be.

Flint Faience exhibits a striking variety of tonal effects, from the delicate pastel shades of boudoir charm to brilliant, *even exotic,* color contrasts of individual preference. And it always bespeaks the perfect taste of the owner.

This genuine hand-made super quality tile is available in 150 distinctive colors—deep, rich and lasting.

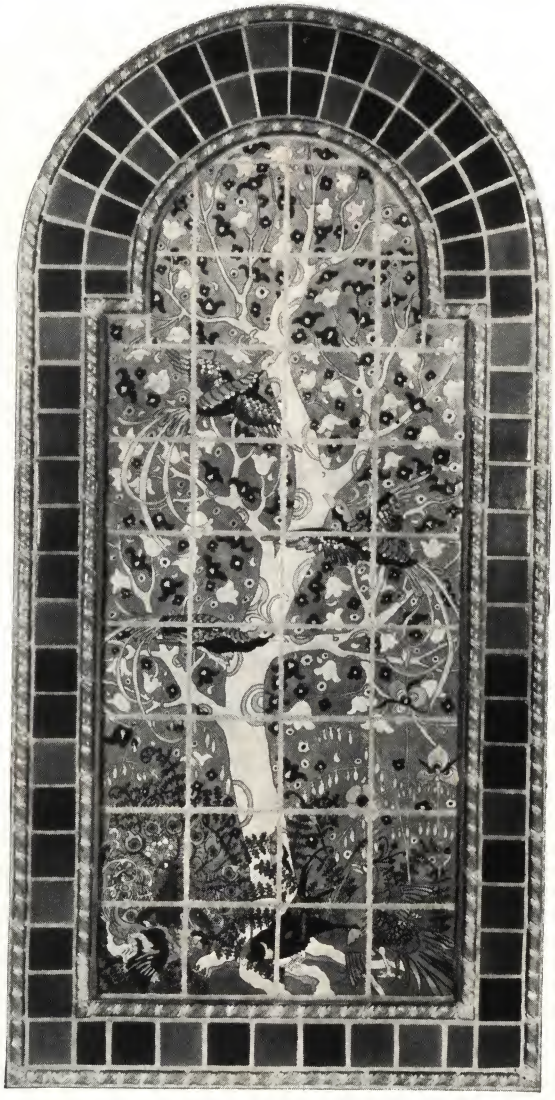
Decorative Faience

These most durable and beautiful tiles are made by raised line or inlay process in any color or design desired. They may be used any place a decorative tile is required.

Vitrocraft

A durable handmade unglazed floor tile with an impervious vitrified body. It absorbs no stain and surface dirt is easily brushed or wiped away restoring the original brilliance of the pattern.

Colors are light gray to chocolate brown—available in selected colors, dark, light or full range. Especially desirable for walls and floors.



"Tree of Life"
Cafeteria, General Motors Building, Detroit, Mich
ALBERT KAHN, INC., Architect, Detroit, Mich.
WALTER T. OZICS TILE CO., Tile Contractor, Detroit, Mich.

Flintcraft Tiles

A machine-made faience of unusual interest to architects, dealers, builders, and others who recognize the potentialities of tiles but have been denied the use of them because of the cost of genuine handmade faience.

Flintcraft Tiles, being made by machine, are uniform in size and thickness and are absolutely flat. This makes for quick easy installation even into close jointed patterns. The cost of the tiles is surprisingly low, due to quantity production and other savings made possible by the use of machines. The fadeless colors and beauty of Flintcraft Tiles make them peculiarly suitable for bathrooms, kitchens, vestibules, steps and staircases, sun rooms, living rooms, lobbies, corridors, rug borders, floors, wainscotings, arches, courts, fountains, and indoor or outdoor plunges.

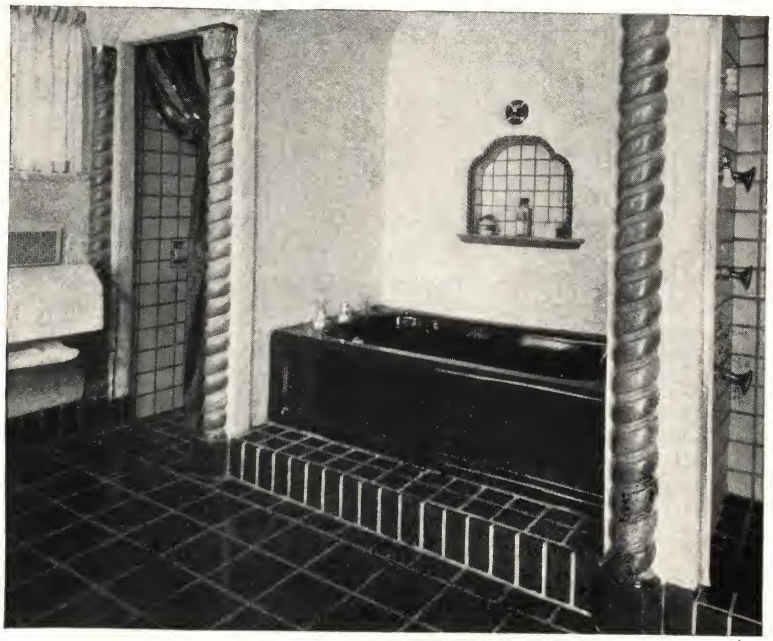
Flint Special Designs

We make a specialty of special or intricate designs to the architect's requirements. Flint artists and designers are able to create or interpret the unusual and distinctive in tile design; we have over 150 colors to choose from and a sketch service ready to co-operate in creating original designs to carry out any decorative motif.

Samples of our entire color palette in the actual tile themselves are on display at our branches and in the showrooms of representative contractors for your inspection. *Literature on all of our tile is obtainable at branch offices as well as at our main office.*



Fountain, Yaarab Temple, Atlanta, Ga.
MARYE, ALGER & VINOUR, Architects, Atlanta, Ga.
CARMICHAEL TILE COMPANY and EUBANKS MANTEL & TILE CO., Tile Contractors, Atlanta, Ga.



Bathroom, Arthur Freeman Residence, Flint, Mich.
JOSE M. SAVAGE, Architect, Flint, Mich.
ERNEST PHELPS, Tile Contractor, Flint, Mich.

Deliveries

For any and all work, deliveries are made promptly in accordance with promise.

Cost

Flint Faience tile is sold exclusively through established tile contractors from whom the installed cost may be secured. Cost varies with transportation, labor, nature of the work and other local conditions.

Specifications (Short Form)

Tile where indicated shall be of FLINT FAIENCE & TILE COMPANY'S make as per their designs and colors as approved by the architect.



Packard Showroom, Philadelphia, Pa.
PHILIP SCOTT TYRE, Architect, Philadelphia, Pa.
DAVIS MARBLE CO., Tile Contractors, New York, N. Y.



Lunch Room, W. T. Grant Store, Norfolk, Va.
ARCHITECTURAL DIVISION, W. T. GRANT CO., Architect, New York, N. Y.
R. L. RITCH & SONS, Tile Contractors, Charlotte, N. C.

HEATHERBROWN WELSH QUARRIES

MART & LAWTON, INC.
SOLE IMPORTERS

286 Fifth Avenue
NEW YORK, N. Y.

Dealers located in Principal Cities of the United States and Canada

Products

HEATHERBROWN WELSH QUARRY TILE.
HEATHERBROWN SHINGLE ROOFING TILE.
HEATHERBROWN CHIMNEY POTS.
HEATHERBROWN FIREPLACE BRICKETTES.
Also Dennis (Ruabon) Red Welsh Quarries.



Every Genuine Heatherbrown Quarry Can Be Identified by the Words "Heatherbrown, Made in Wales" Stamped in the Clay on the Back of Each Tile

Heatherbrown Quarries

Colors—HEATHERBROWN Quarries are variegated in color, ranging in shade from a light brown to a dark brown; no two tiles being exactly alike. They are too well-known for their beauty of color to require description here.

Catalogue—Our illustrated color catalogue, "HEATHERBROWN," A. I. A. File No. 23-A-12, contains color plates showing the range of colors, perspective sketches of trimmers, suggested floor designs and photographs of a variety of installations by prominent architects.

The photographs clearly show the shadings in the tile and if you have not this catalogue in your files, we shall be happy to mail it upon request.

Grades—Only selected first quality tiles are imported and these are made in individual moulds, thus assuring a high degree of uniformity in size and shape.

Sizes—We carry in stock a full range of sizes in flat tile from 4¼x4¼ to 12x12 ins. Base tile is carried in 3, 6 and 9 ins., sanitary cove with round or square top.

We also carry 3-in. moulded cap. In and out corners for base and cap are also carried in stock as are 9 and 6-in. bullnoses and double bullnoses, and plinths.

A full list of sizes, together with trimmers is contained in our catalogue.

Deliveries — Immediate delivery of almost any quantity of the standard sizes and shapes can be made.

Special shapes and sizes may be imported in from four to six weeks.

SAMPLES DISPLAYED WITH ARCHITECTS SAMPLES CORPORATION NEW YORK, N.Y.

Cost—HEATHERBROWN Quarries cost approximately the same as Red Quarries.

They are less expensive than so-called cheaper tiles because they are a "lifetime tile," noted for their extraordinary durability.

Specifications—To specify these quarries (sizes, of course, being noted) an architect need only state HEATHERBROWN Welsh Quarry Tiles, as imported by MART & LAWTON, INC., 286 Fifth Avenue, New York, N. Y.

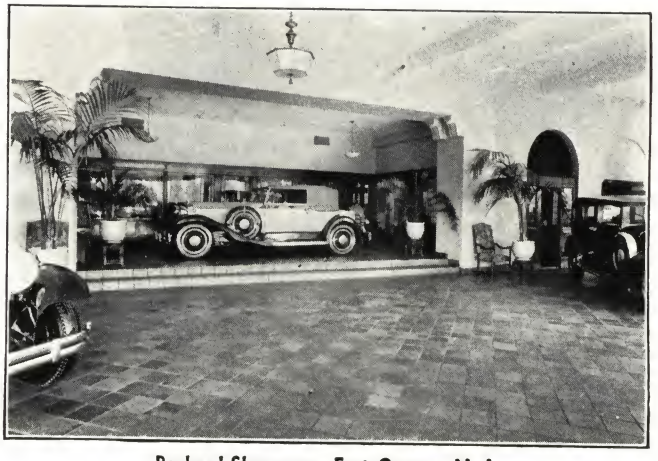
Samples—Samples will be forwarded promptly upon request.

Our local representatives in the various cities are instructed by telegraph to submit samples, when urgently needed.

Guarantee

We guarantee these quarries for outdoor as well as indoor purposes. The colors, being an integral part of the tile, are guaranteed not to fade as a result of exposure to the weather.

These quarries are impervious to moisture, stains and dirt and are especially noted for their ability to resist acids. They are easy to clean and require no polishing substances to maintain their original appearance.



Packard Showroom, East Orange, N. J.

ALBERT KAHN, Architect L. DEL TURCO & BROS., Tile Contractor
The architect's requirements for a floor combining durability, ease of cleaning, and a color which would show the finish of fine cars to best advantage, were met by the installation of 9x9 HEATHERBROWN Welsh Quarries. The steps and risers forming a platform in the background were constructed of Bullnose Quarry Tile as treads, with oblong quarry tile as risers

Identification

The trade-mark "HEATHERBROWN, Made in Wales" is stamped in the clay on the back of each tile and safeguards the owner and architect against substitution. (See illustration on preceding page.)

Heatherbrown Shingle Roofing Tile

HEATHERBROWN Shingle Roofing Tile lend that quiet dignity which one instantly associates with manor houses of distinguished architectural design. The unique color and texture appeal especially to leading architects engaged in designing homes of the better type.

For a long time—even in England—the clay which has given to HEATHERBROWN Welsh Quarry Tiles their unique color and texture has been used in the manufacture of HEATHERBROWN Shingle Roofing Tiles. The latter are made strictly in accordance with age-old English standards and customs, and by their use an absolute Old World authenticity is attained. Artistic in appearance, and extraordinarily durable, these roofing tiles which have contributed so largely to the picturesqueness of the English countryside are being more and more generally specified by architects for use in the United States and Canada.

Heatherbrown Chimney Pots

We import HEATHERBROWN Chimney Pots in a variety of attractive designs, which enhance the appearance of the finished roof. Words utterly fail to express their picturesque beauty and charm. And they are surprisingly inexpensive. Two of these parts are illustrated below.

Heatherbrown Brickettes

In the construction of fireplaces in the past, the architect faced the problem of securing a lining that would resist heat and flames and, at the same time, not detract from the beauty of a well designed fireplace.

HEATHERBROWN Brickettes overcame this problem, and numerous fireplace installations throughout the country testify to the fact that these brickettes have stood up successfully under the most severe use. The herringbone method of setting is particularly attractive, although the brickettes are frequently laid horizontally with broken joints.

Recommendations

That the most prominent architects of the country specify Heatherbrown Welsh quarries and other products year in and year out is the best testimony we can offer as to their quality, appearance, and dependability.



Heatherbrown Quarry Exhibit, Architects Samples Corporation, 101 Park Avenue, New York, N. Y.

MUELLER MOSAIC COMPANY

Tilemakers

TELEPHONE 3-0866

WORKS AND MAIN OFFICE
TRENTON, N. J.

NEW YORK SHOWROOM: 103 Park Avenue—Telephone, Lexington 0363

Products

FLOOR and WALL TILE; FAIENCE; MOSAICS; FROSTPROOF EXTERIOR TILE; MURAL DECORATIONS.

Mueller Faience and Flemish tile are handmade of plastic clays. This process enables the execution of special designs and shapes without great expense. This material is also positively frostproof and weatherproof and especially appropriate for exterior as well as interior application.

Mueller Flemish Tile

A handmade plastic clay product for extreme traffic, a strong artistic frostproof flooring product furnished with the natural undulations caused by the fire.

Mueller Faience Tile

A handmade plastic clay product with hard burned faience glaze, positively frostproof, flexible in design for architectural work, embossed designs and inlaid motifs of any intricate design.

TRADE-MARK



Frostproof Faience Fountain

Other Products

Faience Roman Mosaics—A dust pressed faience glazed tile for interiors only.

Norman Flash Mosaics—A characteristic non-slip tile for interiors.

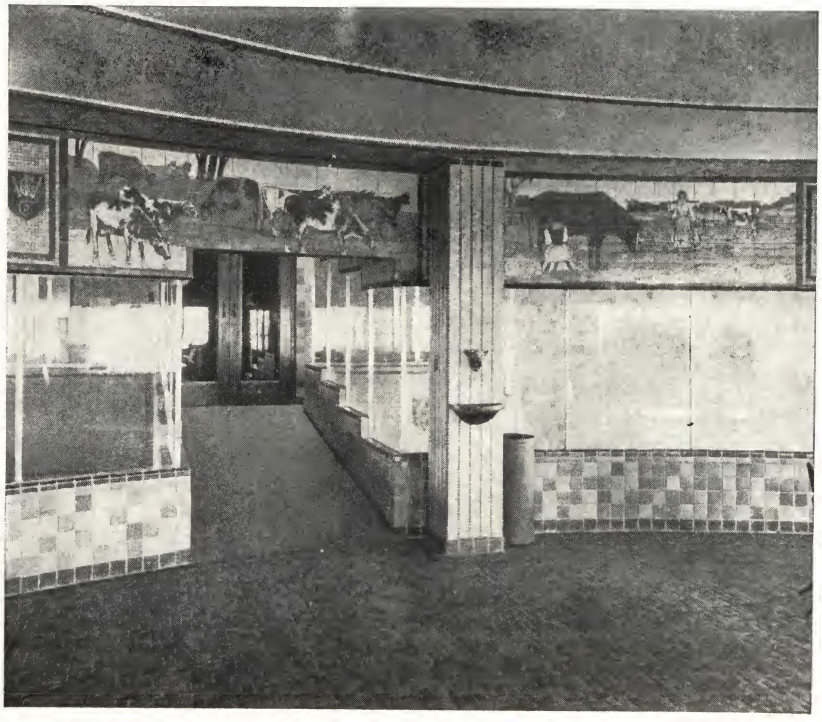
New Developments

Rusta Tile—Plastic handmade tile with a penetrating faience enamel, sanitary and easy to keep clean.

Boulder Mosaic—A plastic handmade product unglazed or faience, for pools, garden walks, floors, etc.

Catalogues and Sketches

Catalogues and other literature cheerfully mailed upon application.



Faience Tile Treatment in Rotolactor Building, Walker Gordon Plant of Bordon Company, Plainsboro, N. J.

Pictorial Panels
Polychrome faience tile
Wainscots
Handmade faience tile
Floors
Handmade Flemish tile

KRAFTILE COMPANY

HIGH FIRED COLORED AND DECORATIVE TILES FOR WALLS AND FLOORS WITH BATHROOM FIXTURES TO MATCH

Main Office and Plant

NILES, ALAMEDA COUNTY, CAL.

BRANCH OFFICES

SAN FRANCISCO, CAL., 525 Market St.
DETROIT, MICH., 814 Fox Theatre Bldg.
CLEVELAND, OHIO, 807 Union Bldg.
LOS ANGELES, CAL., 4963 Sunset Blvd.
CHICAGO, ILL., 567 East Illinois St.
NEW YORK CITY, 101 Park Ave.
ATLANTA, GA., Red Rock Bldg.
PHILADELPHIA, PA., 1718 Cherry St.

Export Office: W. W. Mitchell, Manager, Robert Dollar Building, San Francisco, Cal.

KRAFTILE PRODUCTS

HIGH FIRED SIZED FAIENCE TILE, handcraft texture and semi-mat finish for walls, floors and swimming pools.

HIGH FIRED DECORATIVE FAIENCE TILE in Moorish, Spanish, Persian and Tunisian designs.

SPECIAL OPAQUE KRAFTILE, for use in public washrooms, bathrooms, kitchens and subways, and wherever the tile is subject to stains from dampness or seepage.

SCUM GUTTERS for swimming pools. BATHROOM FIXTURES. FIXTURES. KRAFTILE TILE CUTTER.

For Kraft-Enamel Hollow Tile, Structural Tile with Wall Tile Finish and Kraft-Enamel Glazed Brick, See Manufacturers' Index

KRAFTILE HIGH FIRED FAIENCE: Unlike most tile which is made by applying the glaze after the body has been burned, Kraftile is made by the *monolithic method* by which body and glaze are burned in one long firing at tremendously high temperature. The result is that an absolute bond is created between the glaze and the body, and spalling or lifting of the glaze is prevented.

KRAFTILE ADVANTAGES: *Great Strength and Resistance to Wear: The body* is of hard burned plastic fire clay, with great tensile and compressive strength and a natural affinity for mortar which makes the tile adhere permanently and closely to the wall.

The glaze is a special formula with an exceptional resistance to temperature changes and wear. Freezing tests show Kraftile capable of resisting instant change from boiling to freezing temperature without damage of the body or glaze. Comparative wear tests show that one-quarter inch of vitrified tile, one-half inch of Portland cement and nearly three-quarters of an inch of marble will wear away before the Kraftile *glaze* is removed.

ACCURATE SIZING: All "A" size, accurate within 1/32nd of an inch, simplifying ordering. Made with beveled edge which leaves a 1/16″ wedged-shaped space for grouting, permitting a close joint and doing away with the necessity of using string or pegs. Surfaced back and front, without warps, making a true wall. Kraftile naturally lays 4 5/16″ to the tile. In detailing, this dimension is dependable.

LAID QUICKLY: The foregoing advantages afford a considerable saving of labor in setting up the wall.

KRAFTILE'S USES: *For Walls and Floors and Exterior and Interior Use:* Kraftile's strength makes it suitable for floors as well as walls. It is recommended for use back of ranges and around pilasters and counters where it is subject to rubbing and kicking.

Kraftile is widely used for bathrooms, kitchens, floors, rug borders, wainscoting, steps and stair risers, outdoor and indoor plunges, fountains, spandrels, etc. In all these places Kraftile affords fadeless, lasting beauty.

SPECIAL OPAQUE KRAFTILE: For use in public washrooms, basements and subways, we manufacture a special opaque Kraftile. Stains, originating in the back of the wall, cannot force their way through the enamel and thus mar the appearance of the tiling.

KRAFTILE FIXTURES: Kraftile Company manufactures a complete line of soap dishes, tumbler holders, hand grips, toilet paper holders, towel bars and strop hooks to match all stock shades of Kraftile and in special shades to order.

KRAFT-ENAMEL HOLLOW TILE: A structural tile with a wall tile finish. (See manufacturers' index.)

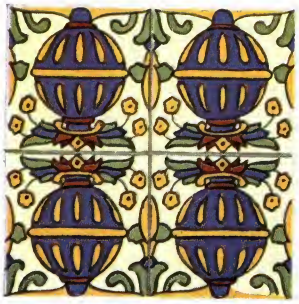
KRAFTILE CATALOG: Mailed upon request.



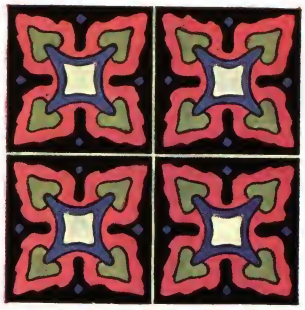
NO. R SIZE 2″ x 4¼″



NO. P SIZE 2″ x 4¼″



NO. U SIZE 4¼″ x 4¼″



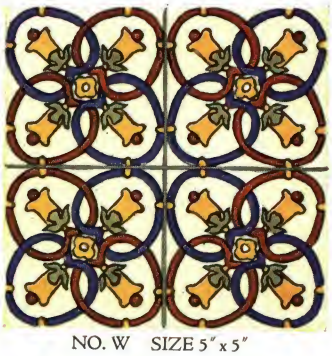
NO. T SIZE 4¼″ x 4¼″



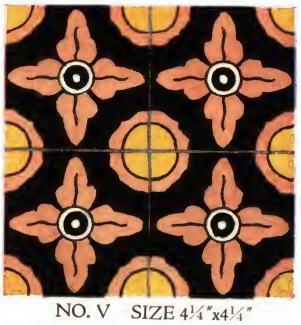
NO. S SIZE 4¼″ x 4¼″



NO. X SIZE 4¼″x4¼″



NO. W SIZE 5″ x 5″



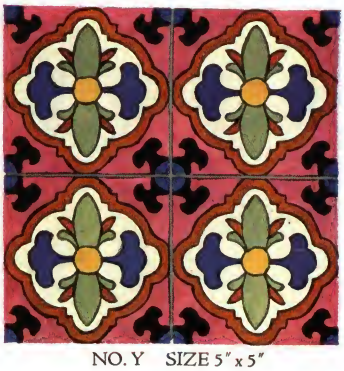
NO. V SIZE 4¼″x4¼″



NO. A-A SIZE 5″ x 5″



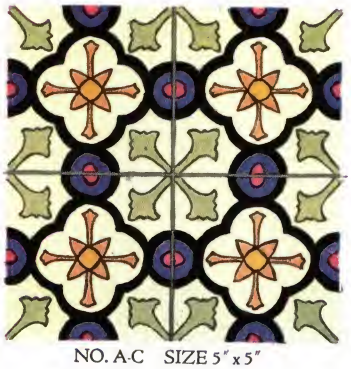
NO. Z SIZE 5″x 5″



NO. Y SIZE 5″ x 5″



NO. A-D SIZE 5″ x 5″



NO. A-C SIZE 5″ x 5″



NO. A-B SIZE 5″ x 5″

KRAFTILE HIGH FIRED FAIENCE TILE

Shown above are a few of the hundreds of the stock designs available in Kraftile's decorative tile, which has the same tensile and compressive strength and the same resistance to temperature changes, fading and wear as Kraftile plain colored faience tile. (See description on previous page.)

THE MOSAIC TILE COMPANY

Real Tiles for All Architectural and Decorative Purposes

Main Office and Factory: ZANESVILLE, OHIO Plant No. 2: MATAWAN, N. J.

NEW YORK OFFICE
327 W. 42nd Street

CHICAGO OFFICE
1336 W. Washington Blvd.

ST. LOUIS OFFICE
2016 Railway Exch. Bldg.

LOS ANGELES OFFICE
2470 Enterprise Street

SAN FRANCISCO OFFICE
568 Seventh Street

MOSAIC

PRODUCTS

(Pages referred to are in this Mosaic Tile Section)

Mosaic Tiles are in every respect high quality products, made by one of the largest, oldest and most modernly equipped plants in the industry.

FAIENCE (*pages 2-9*)

For floors and walls, both exterior and interior, also decorative uses. Plastic made, extremely hard-backed, thoroughly hand-wrought character.

DECORATIVE FAIENCE (*page 2*)

FOUNTAINS AND MANTELS (*page 3*)

FAIENCE MOSAICS (*page 9*)—Mosaic sizes in Faience colors.

DUSTPREST FAIENCE (*page 6*) is a machine-made tile with rounded edges glazed in beautiful new distinctive glazes. This material is especially attractive for bathroom walls when Mosaic Faience is not desired.

ADOBE TILE (*page 5*) is a plastic made tile with dull finish mottled glazes. This tile is available in a number of pastel shades being suitable for some types of mantels and fountains.

WALL TILES (*pages 10-13*)

SATIN FINISH MATTS (*pages 10, 11, 12*) are wall tiles having a soft glare-free satin-light finish. These pastel colors have a pleasing variation which produce very beautiful wall surfaces.

MOZANE ENAMELS (*page 13*)—Highly serviceable, economical, bright glazed tiles for walls.

DURATILE is a hard body glazed wall tile suitable for use in subways, refrigeration plants, kitchens, power plants, etc. It has been developed to meet very rigid standards of durability and sanitation.

DECORATIVE WALL BORDERS (*page 14*) are of the inlaid type and printed designs especially made for use with Satin Finish Matt and Mozane Enamel wall tiles.

FLOOR TILES, other than Faience (*pages 10, 11, 13, 15, 17, 18 and 19*)

VITROMAT (*pages 10, 11*)—Glazed vitreous and semi-vitreous tiles in same colors as Satin Finish Matts.

CERAMIC MOSAICS (*pages 10, 11, 13, 15 and 17*)—Wide range of designs, colors and shapes, in several textures. Include Aventine Ceramics, Velvetex Ceramics, Rhombic Designs, Non-Slip and Granitex Ceramics.

FLINT FLOOR TILES (*page 18*)—An unglazed type for severe wear.

IRONSTONE AND BLUESTONE (*page 19*) — Plastic made, unusually hard and durable, in soft colors, which give rich effects. Sizes up to 12 x 12. Also in small "mosaic" sizes.

BATHROOM ACCESSORIES—All Tile (*page 14*) include such fixtures as Towel Brackets, Soap Dishes, Tumbler Holders, Heaters and Light Fixtures, furnished in Satin Finish Matt, Faience, Mozane Enamels and Dustprest colors and also in White Glaze.

SWIMMING POOL DESIGNS (*page 16*) include several practical types of Scum Gutter treatments and color schemes. We are experts in the handling of swimming pool projects.

TRIM TILES—Bisque body glazed trims and vitreous and semi-vitreous trim tiles (*page 20*).



Faience Station of the Cross Panel

This is one of a group of fourteen panels depicting the Stations of the Cross in natural colors. The panels are modeled very artistically and are 20 in. by 30 in. in size.

To Specify Mosaic Tiles

Architects who want to make sure that Mosaic Tiles are used, should include in their specifications some such wording as, "tile work shall be of Mosaic Tiles manufactured by The Mosaic Tile Company, of Zanesville, Ohio." Also ask for a certificate of quality.

We also suggest the short form of the Associated Tile Manufacturers, which incorporates Basic Specifications for tile installation.

Grade Standards and Identification

"Mosaic tiles are graded and the containers grade sealed to comply with the requirements of the United States Department of Commerce Simplified Practice Recommendation R-61-30. Master grade certificates, enumerating the contents of each container, will be furnished when requested."

MOSAIC DECORATIVE FAIENCE



6 x 6
Pattern 5015
Decoration 7693



6 x 6
Pattern 5016
Decoration 7360



6 x 6
Pattern 5017
Decoration 6694



6 x 6
Pattern 5018
Decoration 7642



6 x 6
Pattern 5019
Decoration 7694



6 x 6
Pattern 5020
Decoration 7695



6 x 6
Pattern 5021
Decoration 7696



6 x 6
Pattern 5022
Decoration 7358



6 x 6
Pattern 5023
Decoration 7399



6 x 6
Pattern 5024
Decoration 7460



6 x 6
Pattern 3008
Decoration 6496



6 x 6
Pattern 3009
Decoration 6493



6 x 6
Pattern 3083
Decoration 6524



6 x 6
Pattern 4189
Decoration 3052



6 x 6
Pattern 3096
Decoration 2016



6 x 2
P. 4225
D. 6525



6 x 2
P. 4210
D. 5246



6 x 2
P. 4062
D. 2992



6 x 2
P. 4074
D. 5158



6 x 6
Pattern 3092
Decoration 6415



6 x 3
P. 4040
D.1091



6 x 3
P. 3103
D. 5396



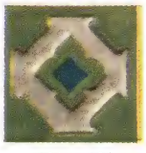
6 x 3
P. 3090
D. 5287



6 x 3
P. 3108
D. 2392



4¼ x 4¼
Patt. 3093
Dec. 2841



4¼ x 4¼
Patt. 3015
Dec. 5043



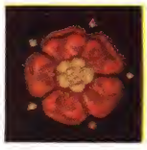
4¼ x 4¼
Patt. 3028
Dec. 6256



4¼ x 4¼
Patt. 3019
Dec. 6526



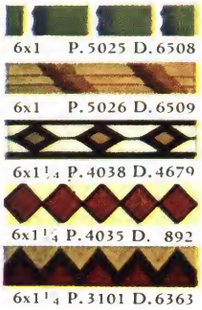
4¼ x 4¼
Patt..3074
Dec. 2810



4¼ x 4¼
Patt. 3082
Dec. 6258



4¼ x 4¼
Patt. 4226
Dec. 6527





8¾ x 4¼
Patt. 3202
Dec. 4007



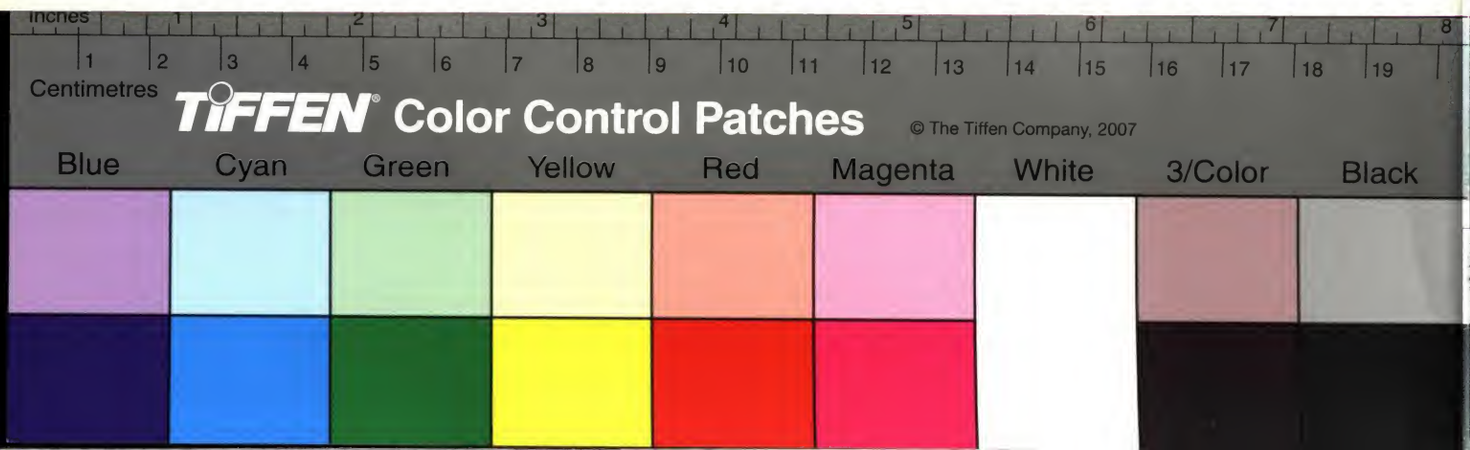
8¾ x 8¾
Pattern 3201
Decoration 6428



8¾ x 4¼
Patt. 3203
Dec. 4007



Reproduced from Tile



FOUNTAINS AND MANTELS IN MOSAIC FAIENCE TILES



Faience Drinking Fountain Design No. 538

This drinking fountain is very practical for use in corridors of schools, office buildings and other public buildings and is very attractively decorated. The colors used in decorating this fountain may be changed to suit the surroundings using any of the extensive group of Faience colors.

Mosaic Faience Tiles are ideally adapted to the creation of outstanding fountains. Their wide range of colors allows any color scheme to be followed. The beauty of the glazes is rich and lasting. The tiles are impervious to moisture, heat and cold. A large variety of other designs is available.



Faience Fountain Design No. 539

This Faience wall fountain would make an attractive feature for any garden or solarium. The Mosaic Faience material is impervious to all elements and is practical for either exterior or interior use. This fountain as well as other fountains illustrated in our catalogue is obtainable in any of the Faience colors or can be furnished in Mosaic Adobe colors which are soft pastel glazes.



Mantel Design No. 440

Mantel, 6 ft. wide; height variable to ceiling. Fire opening, 2 ft., 7½ in. wide; 3 ft. high. Top ornamental feature No. 2781. Hood panel No. 3237. Hood moulding No. 2782. Side panels, 6 x 3 tiles, No. 3238. Plain faience tiles, 4¼ x 4¼ in. No. 316 mottled brown, No. 2010 mottled red and other colors.

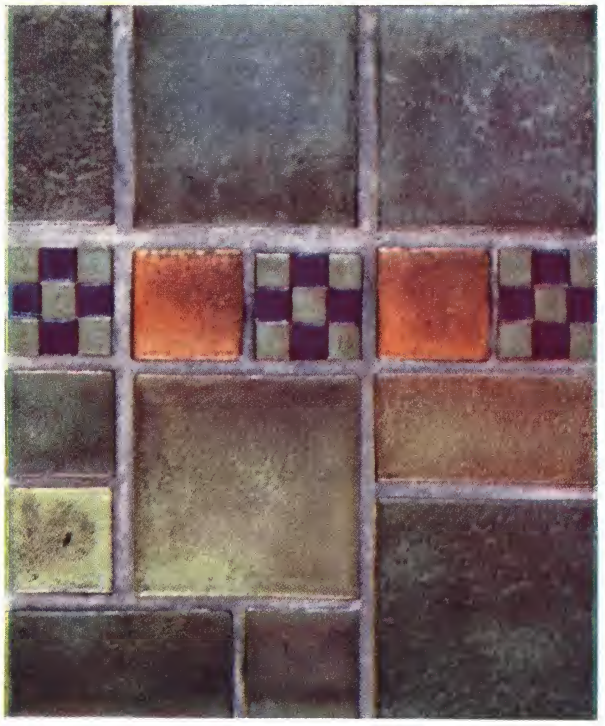
At right, Mantel Design No. 409

This design can be furnished with fireplace opening in the following widths: 30 in., 36 in., 42 in., and 48 in. The color shown is No. 388 buff in Mosaic Faience, but this mantel is equally appropriate in grays, browns and several other shades.



Baked to extreme hardness by the intense heat of fire itself, Mosaic Faience Tiles are naturally appropriate and practical for mantels and fireplaces. And no material is more beautiful, colorful and lasting. A wealth of Mosaic Mantel Designs is offered, or individual designs will be painstakingly executed.

TYPICAL MOSAIC FAIENCE FLOOR DESIGNS



Faience Floor Design No. 529

Reproduced from Tile

An interesting example of random floor treatment in green, olive and brown tones. Sizes of tile used in field: 6 x 6, 6 x 3 and 3 x 3 in colors No. 334 and No. 3151. In the border 3 x 3 tiles are used, color No. 316, with decorative insert in pattern No. 3081, decoration No. 2678. Marginal tiles are 6 x 6 in color No. 3151.



Faience Floor Design No. 531

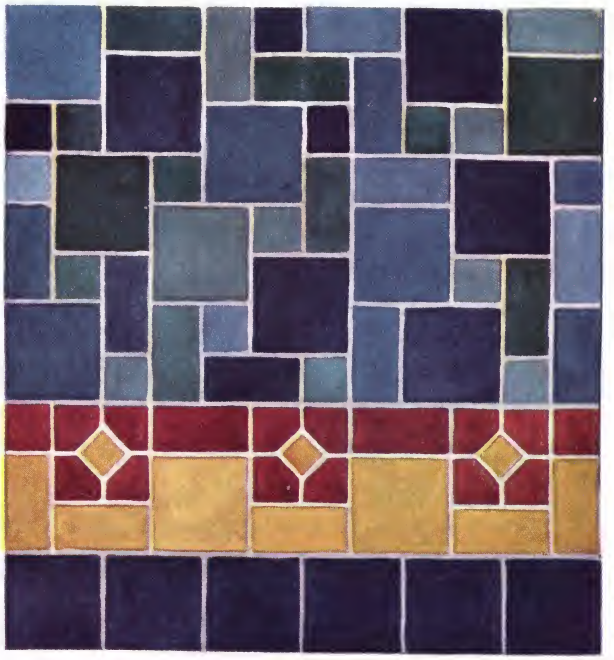
Reproduced from Tile

A monochrome treatment effective for porches, vestibules, sunrooms, conservatories, courtyards, etc. Random field in sizes 6 x 6, 6 x 3 and 3 x 3. Margin of 6 x 3 tiles. Color is No. 2010 red mottled. Oak leaf border is 6 x 3, pattern No. 4026, decoration No. 2365.



Floor Design No. 540

This floor is composed of an Ironstone field in a random design of 6 x 6, 6 x 3 and 3 x 3 sizes. The margin is of Faience, as is also the ornamental border. A floor of this kind is very practical for spaces subjected to heavy traffic. Mosaic Ironstone is an unglazed very hard floor tile having a pleasing variation and irregularity.



Faience Floor Design No. 541

This is an attractive Faience floor treatment with the field in a random design using 6 x 6, 6 x 3 and 3 x 3 tiles in various Blue Matt glazes. The Border is of tan color 316 and rose color 397. The beauty and everlasting quality of Mosaic Faience tile provide unlimited possibilities for distinctive and decorative floor treatments.

MOSAIC FAIENCE TILES FOR FLOORS AND WALLS



Entrance Hall. Faience Floor Design No. F-5609

Distinctive effects in entrance halls are secured with Mosaic Faience Tiles. The floor at the left, design No. F-5609, shows a random design of Faience tile in sizes 6 x 6, 6 x 3 and 3 x 3, in a mixture of green shades. The border and base are of 6 x 6 decorated Faience, pattern No. 3002, decoration No. 2535. The wall fountain is No. 308.

Character of Mosaic Faience Tiles

Mosaic Faience Tiles are plastic made, with a red or buff body. They are highly glazed in bright and dull finishes and possess the true characteristics of hand-wrought tiles, a fact evidenced in their slight irregularities of shape and size, which accentuate their craftsmanlike quality. They are, therefore, the highest type of tile, aristocrats of the tile world, and as such produce rich treatments both on exteriors and interiors. Mosaic Faience Tiles have also the feature of being extremely hard-backed, which makes them unusually resistant to wear and the effects of time and weather. To specify Mosaic Faience assures you of obtaining genuine Faience tile.

Sizes of Mosaic Faience Tiles

Mosaic Faience Tiles are made in all standard tile sizes, such as the following examples:

6x6	6x4¼	6x3	3x3	4¼x4¼
4¼x2	2x2	9x9	12x12	12 x 6

Special sizes and special shapes can also be furnished in Mosaic Faience.

Bathroom at Right—Modern Faience Design No. 542

This attractive treatment may also be carried out with Satin Finish Matt wall tile, Mozane Enamel or Dustprest Faience

The bathroom illustrated at the right is a modern Faience Design No. 542. This attractive bathroom treatment has features of design which make it distinctive. Slight changes in the treatment or in the color scheme can be easily made. Luxurious effects in bathrooms are easily attained with Mosaic Faience tile, due to the wide selection of colors and designs. The modern decorated inserts are of special interest. This bathroom treatment can also be carried out with other types of Mosaic tile such as Satin Finish Matt wall tile or Dustprest Faience.

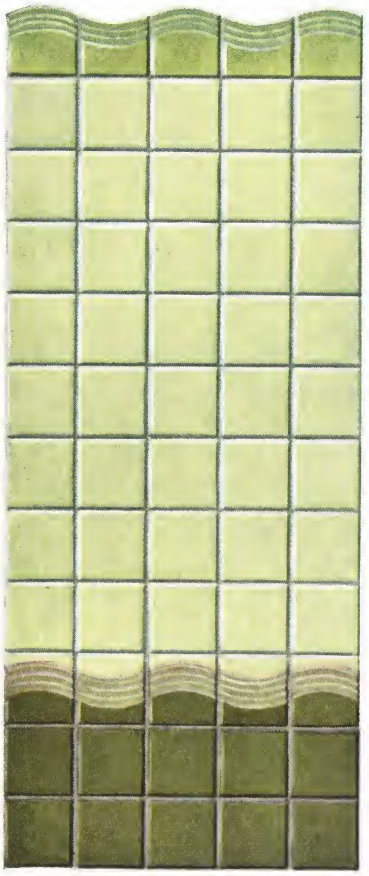


Mosaic Duratile

Mosaic Duratile is produced in 4¼ in. size only and in White, Tan and Red, although other colors can be produced when required. This material has a nearly vitrified body being very hard and durable and satisfying a demand for a glazed wall tile which can be used in places such as subway walls, creameries, kitchens, lavatories, power plants and other commercial work where beauty and durability are required.

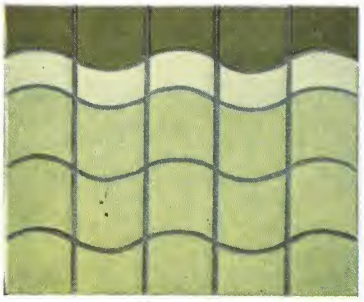
Mosaic Adobe Tile

Adobe tiles are plastic made with colored slip glazes and dull finish mottled colors. The soft pastel shades of this material make it very suitable for carrying out Spanish treatments and other types of mantels, fountains and wainscots. Adobe tile is not suitable for floor use although it is sufficiently desirable for all other purposes and Ironstone, Bluestone and Granitex floor tile can successfully be used in rooms with Adobe wainscoting.



Wall Design No. 543

4¼ x 4¼ Dustprest Wall tile in color 6005 with M-464 4¼ x 5 Cove Base in color 6007 and Caps C-221 and C-222 in color 6006.



Floor Design No. 544

A modern floor treatment in a new design of Faience tile. This color scheme and treatment is made to harmonize with the Dustprest Faience wall design above.

MOSAIC DUSTPREST FAIENCE

Buff Body Cushion-face Wall Tile
New Distinctive Glazes

Mosaic Dustprest Faience is a new development in the tile industry as are also the newly developed cap designs used in the panels on this page. Dustprest Faience is a machine made tile having slightly rounded edges giving it a cushion face and causing each unit to more noticeably stand out when installed in a wall. It is essentially a wall tile being suitable for bathrooms, corridors, restaurants and other spaces of this kind. Regular Faience Caps, Bases and Decorative Borders will be found suitable for use with Dustprest Faience and Faience, Vitromat or Flint floor tile may be used.

Illustrated below are the fifteen beautiful and distinctive colors in which Dustprest Faience is offered. These colors were produced with the definite idea of providing many pleasing and harmonious color combinations. Dustprest is the highest type of machine-made wall tile and produces effects only slightly less artistic than treatments of Mosaic hand-made Faience tiles.

The many designs and color schemes illustrated on this page and other pages in this catalogue illustrate the wide scope and flexibility of real tile as a decorative medium and as a practical surfacing material for floors and walls of practically all types of spaces. Designs in Mosaic tile are not limited to any predetermined pattern. The Architect is allowed a wide scope for the expression of his own individual ideas. Our Art Department will gladly offer suggestions of the practical type of Mosaic tile correctly designed for any purpose.



Wall Design No. 545

4¼ x 4¼ Dustprest Wall tile in color 6015 with M-464, 4¼ x 5 Cove Base in color 6012 and Cap C-223 in colors 6012, 6013 and 6015.



Floor Design No. 546

A Faience floor design of modern spirit to harmonize with the Dustprest Faience wall. The possibilities for distinctive designs and color schemes are practically unlimited in Mosaic Faience tile.

Chart of "Dustprest" Colors

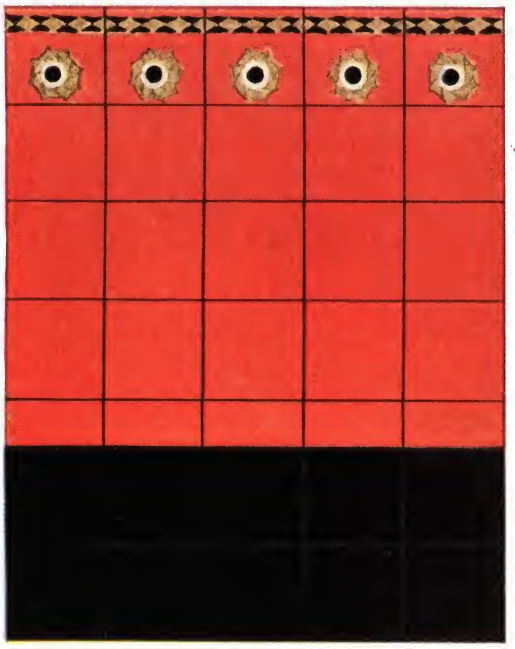


Special designs to fit any period architecture and to incorporate the architect's ideas can easily be created by experienced craftsmen with the wide variety of Mosaic products.

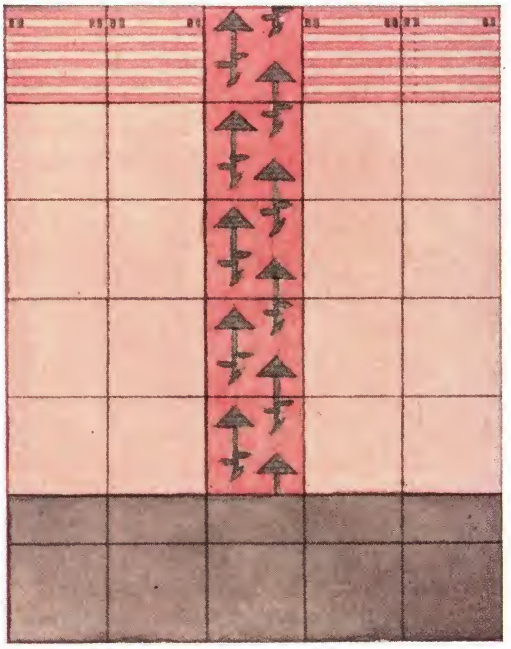
Tile treatments can be originated to correspond to the period architecture of a residence or public building. Mosaic products include decorative materials of modern style as well as period designs and the many sizes, colors and shapes provide unlimited possibilities.

MOSAIC FAIENCE TILES FOR WALLS

In Contemporary Design

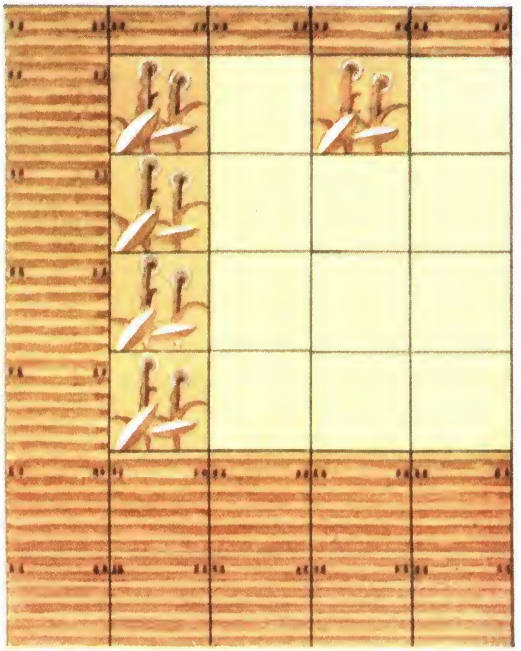


No. F-5730
Showing
Decorative Design
No. 5019



No. F-5731
Showing
Decorative Designs
No. 5015 and No. 5024

These designs in the modern spirit are suggestions which may be utilized to advantage in the decoration of wainscots or walls. In business or commercial application, such as their use for counter fronts in stores, they provide effects that are out of the ordinary. The color combinations possible in such designs have an extremely broad range, due to the large number of colors obtainable in Mosaic Faience.

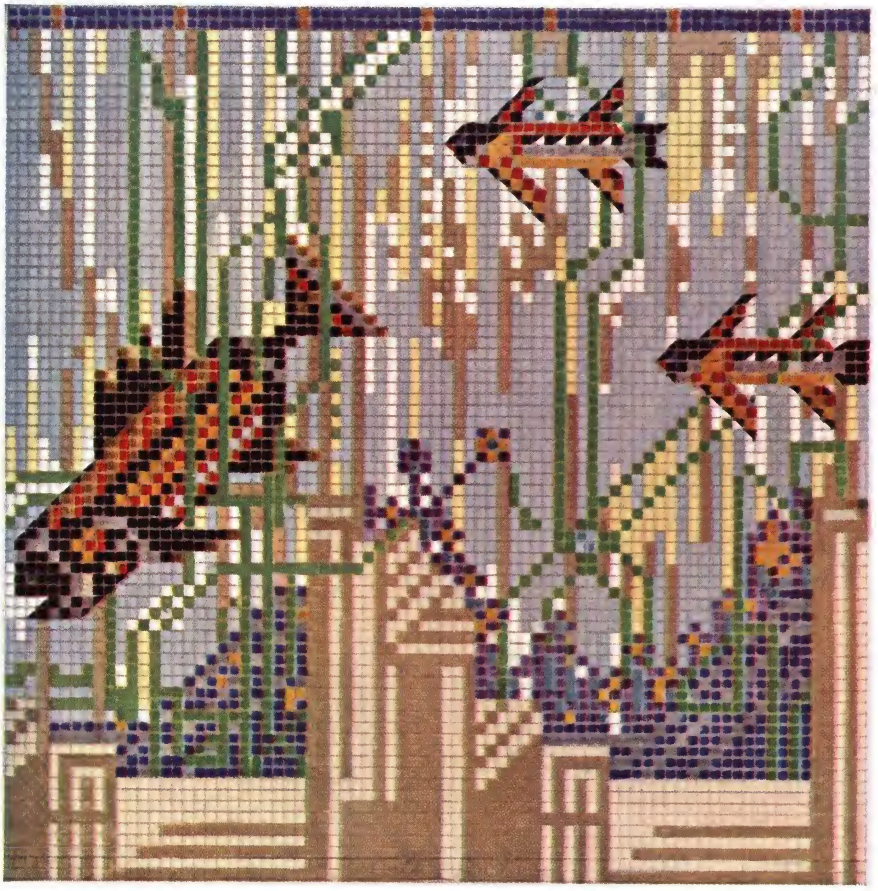


No. F-5732
Showing
Decorative Designs
No. 5023 and No. 5024



No. F-5733
Showing
Decorative Design
No. 5016

FAIENCE MOSAICS FOR WALLS AND FLOORS



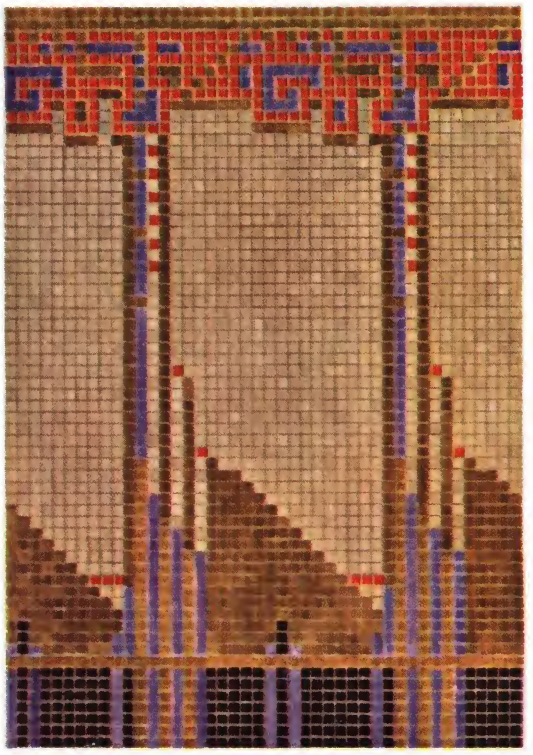
Faience Mosaic Panel Design No. 547

This panel shows the wide possibilities for design in Faience Mosaics and also the beautiful rich colorings available. The panel is composed of 1 in. squares depicting a modern marine scene. A panel such as this is suitable for decorative purposes in many types of spaces and especially in the tub recess of a modern bathroom. This is only one of the many designs possible with Faience Mosaics and special designs can be easily developed to suit individual ideas.

Faience Mosaics are made in small Ceramic sizes of the same material and with the same characteristics as the larger Faience tiles. Most of the Faience colors are obtainable in Faience Mosaics so that a wide range of color combinations is available. This material is produced in the 2 x 2, 2 x 1 and 1 x 1 sizes only and it is ⅜ in. thick. Faience Mosaics are mounted on paper for easy installation, the same as Ceramic Mosaics so that the richness and beauty of the Faience colors may be utilized at a slightly more conservative cost. Very attractive wall treatments can be carried out in this material as the small units enable a wide scope for design and it is especially practical for swimming pools, entrance and corridor wainscoting, fountains and store fronts. Attractive floor designs for use with Mosaic Satin Matt wall tile or Dustprest Faience wall tile can also be produced as well as decorative panels and borders for any surface where colored glazed tiles are desired.

Faience Mosaic Wall Design No. 548 (at right)

1 x 1 Faience Mosaics are used to produce this striking and modern wall treatment. A design such as this is extremely suitable for the entrance lobby or corridors of hotel buildings or office buildings and it merely illustrates the many possibilities attainable with Faience Mosaics. Ceramic units such as the 1 in. squares illustrated permit unlimited scope for design and artistic wainscot treatments can also be produced in the regular unglazed *Ceramic Mosaic* material.

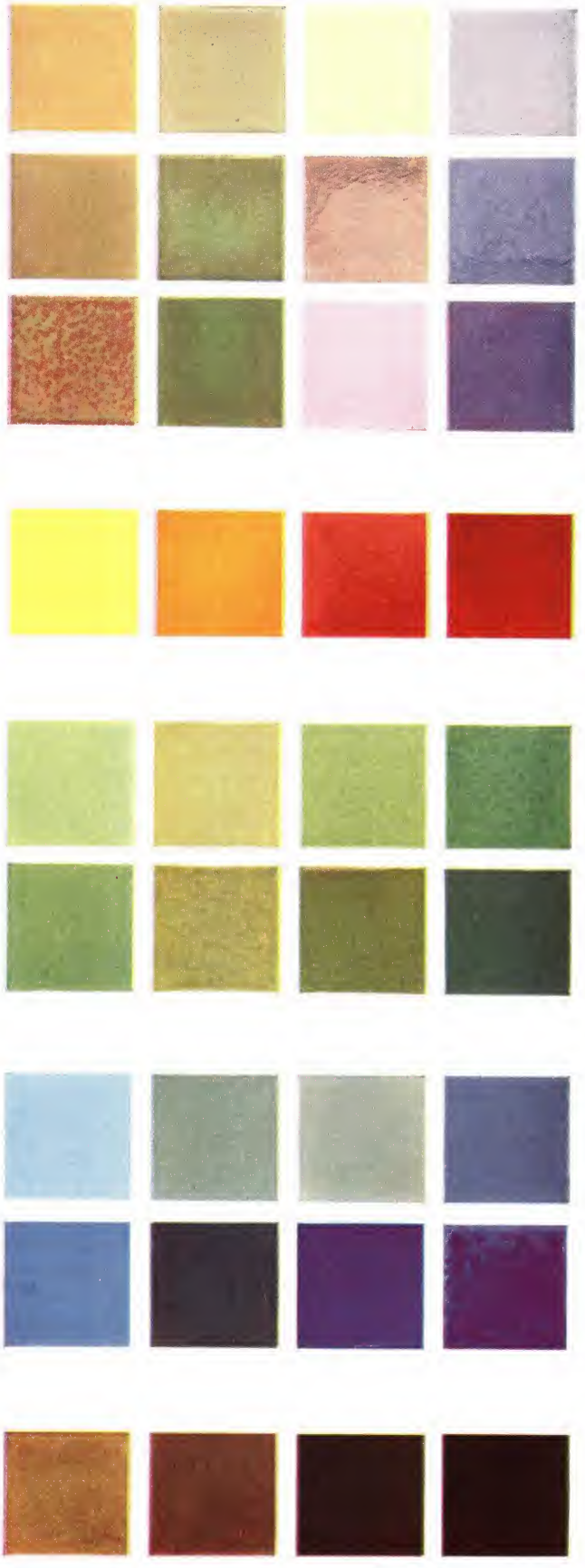


Faience Mosaic Wall Design No. 548

Glazed Ceramic Mosaics (¾″ sqs. only)

Panels such as the one illustrated on this page and also attractive wainscot treatments can be carried out in ¾ in. squares glazed Ceramic Mosaics at slightly less cost than the Faience Mosaics. The regular glazed Ceramics, of course, do not possess the beauty and unlimited range of colors obtainable in the Faience Mosaic material. Most of the Satin Matt colors are available on the ¾ in. Ceramic tiles, providing dots for use in the unglazed Ceramic floor designs and also being suitable for wall treatments. The ¾ in. squares are also available in the new crystal glaze which is a clear glaze placed over the regular Ceramic colors, producing a very bright durable glazed finish. This material is very practical for use on drainboards, counter tops, store bulkheads, as well as interior wainscots. Special designs can easily be arranged.

COLOR CHART OF MOSAIC FAIENCE TILES



Reproduced from Tile

THE range of colors in which Mosaic Faience Tiles may be obtained is almost unlimited. The chart on this page is a representative selection indicating the wide scope of effects at the command of the architect in working with Mosaic Faience.

All Faience glazes are subject to variation of shades and texture. The beauty of Mosaic Faience Tiles is in large part due to these variations, which give to the tiles a desirable warmth and softness of tone.

These variations, although natural to the process of production, are not great and when tiles of different shades are properly blended, they are in *perfect harmony*.

KEY TO COLOR CHART

COLORS ARE DESIGNATED BY NUMBERS

261	750	411	245
273	334	396	378
2010	3151	754	445
290	965	966	4001
443	247	287	464
752	288	280	347
451	468E	281	337
454	924B	342	339
316	345	345B	354

MOSAIC SATIN FINISH MATT TILES FOR WALLS

The standardized wall and floor designs illustrated on pages 10 and 11 are continually carried in stock at Zanesville, New York, Chicago, San Francisco and Los Angeles for immediate shipment



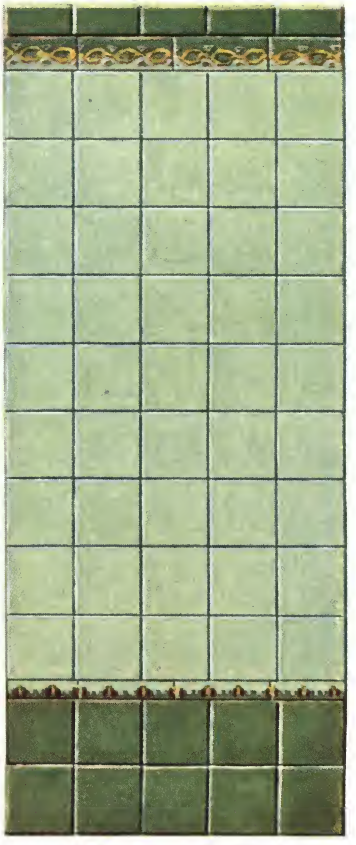
Wall Design No. 549

The field is of 4¼ x 4¼ wall tile Satin Matt color 0410 Old Ivory with C-218 Cap and M-364 Shoe in color 0261 Fawn. Inlaid Decorated wall borders are used.



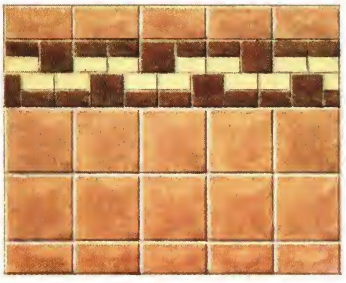
Wall Design No. 550

The field is of 4¼ x 4¼ wall tile Satin Matt color 0754 Rose Orchid with C-218 Cap and M-364 Shoe in color 0418 Rose Lavender. Inlaid Decorated wall borders are used.



Wall Design No. 551

The field is of 4¼ x 4¼ wall tile Satin Matt color 0443 Seaspray with C-218 Cap and M-364 Shoe in color 0280 Jade Green. Inlaid Decorated wall borders are used.



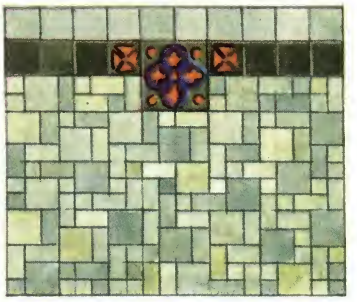
Floor Design No. 555

The field is of Vitromat glazed floor tile with a harmonizing border of Faience Mosaics.



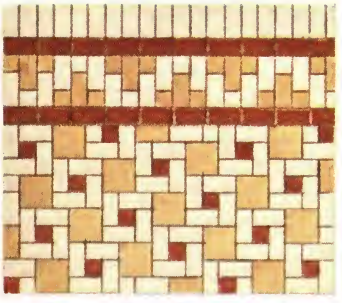
Floor Design No. 556

An attractive Faience Mosaic floor design using colors 418 and 754 to blend closely with the wall treatment.



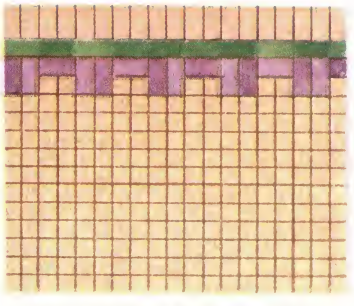
Floor Design No. 557

A Faience Mosaic pattern using several green Faience glazes which harmonize with the color 0443 Seaspray wainscot.



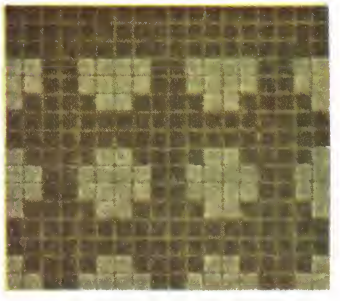
Ceramic Floor Design No. 561

This alternating spiral design is composed of $2^{3}/_{16}$ in. squares, $2^{3}/_{16}$ x $1^{1}/_{16}$ and $1^{1}/_{16}$ in. squares, unglazed ceramic colors cream, salmon and buff.



Ceramic Floor Design No. 562

The field of this ceramic design is of $1^{1}/_{16}$ in. squares, color 205 Pink Velvetex and the border is of the same color with the enrichments of Faience Mosaics in colors 418 and 752.

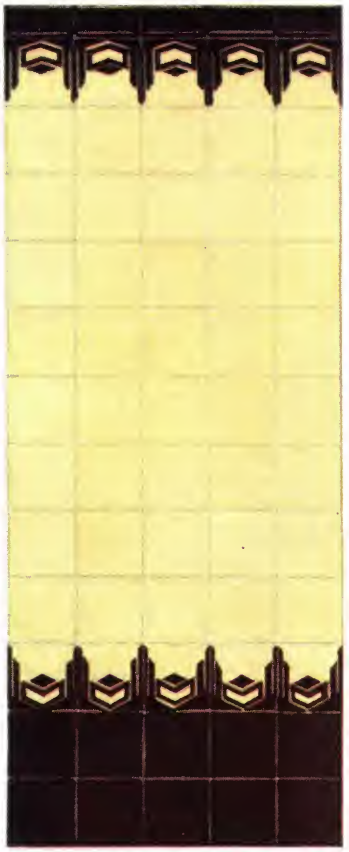


Ceramic Floor Design No. 563

This floor design is composed of $1^{1}/_{16}$ in. squares, straight joint in an attractive pattern of green and celadon.

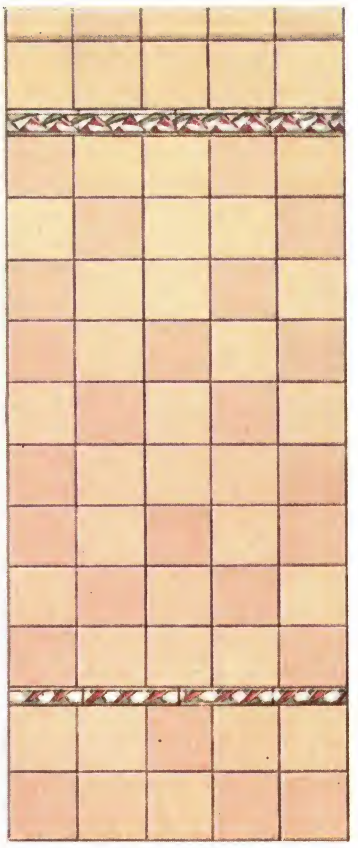
MOSAIC SATIN FINISH MATT TILES FOR WALLS

The standardized wall and floor designs illustrated on pages 10 and 11 are continually carried in stock at Zanesville, New York, Chicago, San Francisco and Los Angeles for immediate shipment



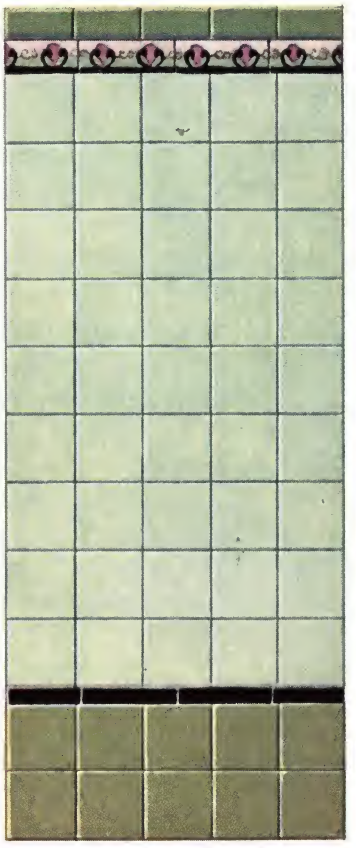
Wall Design No. 552

The field is of 4¼ x 4¼ wall tile Satin Matt color 0463-F Straw with C-218 Cap and M-364 Shoe in color 0354 Royal Black. Mozane Decorated wall borders are used.



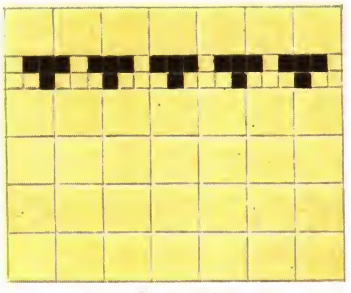
Wall Design No. 553

The field is of 4¼ x 4¼ wall tile Satin Matt color 0349 Peach Bloom with C-218 Cap and M-364 Shoe in the same color. Inlaid Decorated wall borders are used.



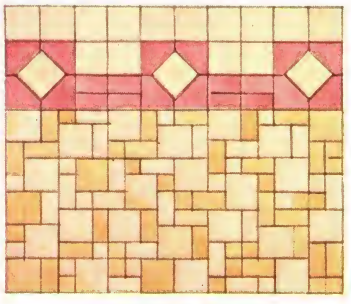
Wall Design No. 554

The field is of 4¼ x 4¼ wall tile Satin Matt color 0967 Pale Green with C-218 Cap and M-364 Shoe in color 0498 Emerald. Inlaid Decorated wall borders are used.



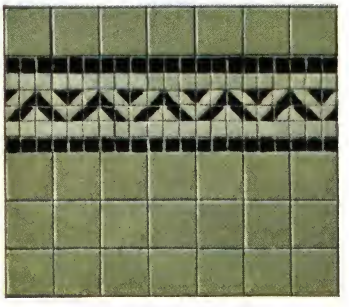
Floor Design No. 558

This floor design is of 3 x 3 Vitromat using color 0463-F straw and 354 black Faience Mosaics in the border.



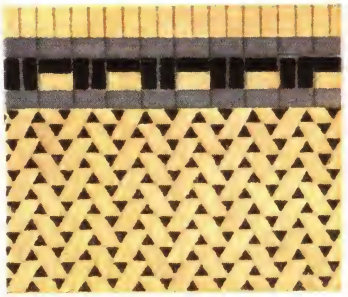
Floor Design No. 559

A Faience Mosaic treatment using soft blending colors which provide a very attractive floor for the peach bloom wall treatment.



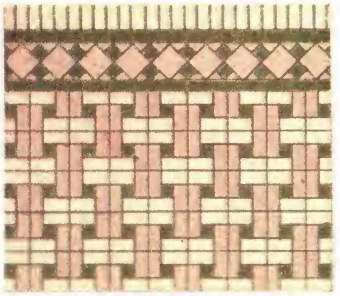
Floor Design No. 560

The field of this floor is 3 x 3 Vitromat floor tile in color 0498 with a Faience Mosaic border to harmonize.



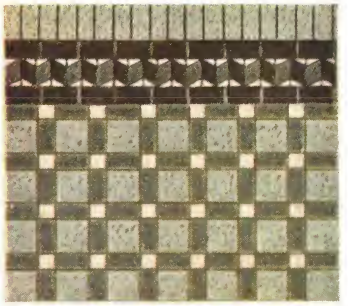
Ceramic Floor Design No. 564

The new Rhomboid tiles are used in this design to produce a modern effect. The colors are buff, black and dark gray.



Ceramic Floor Design No. 565

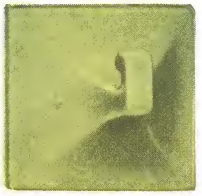
A wickerweave design using $1^{9}/_{16}$ x $^{3}/_{4}$ and $^{3}/_{4}$ in. squares in an attractive combination of green, 201 Green Velvetex and 205 Pink Velvetex.



Ceramic Floor Design No. 566

A plaid weave design in sizes $2^{3}/_{16}$ in. squares, $2^{3}/_{16}$ x $1^{1}/_{16}$ and $1^{1}/_{16}$ in. squares, employing colors 202 Light Green Velvetex, and 201 Dark Green Velvetex, cream and green.

MOSAIC "ALL-TILE" BATHROOM ACCESSORIES



B. A. 718
4¼ x 4¼
Robe Hook



B. A. 717
4¼ x 4¼
Toothbrush Holder



B. A. 730
4¼ x 4¼
Wall Light Bracket



B. A. 727
4¼ x 4¼
Projecting Soap Holder



B. A. 711
6 x 6
Roll Paper Holder

Mosaic "All-Tile" Accessories

Only a few of the Mosaic All-Tile Accessories are illustrated on this page. The line is complete providing accessories for every requirement as illustrated in our All-Tile Accessory Catalog.

Mosaic All-Tile accessories are of the same composition as Mosaic Satin Finish wall tile, and, therefore, are obtainable in all these glazes to match the wall tile closely. They are also obtainable in Faience colors, Dustprest Faience colors, Mozane Enamels and white glaze so that all uncertainty in providing accessories to blend with the wall tile is eliminated.



B. A. 712
6 x 6
Duplex Holder

Chart of Satin Finish Matt Colors



0158 Moss Green (En.)



0443 Seaspray

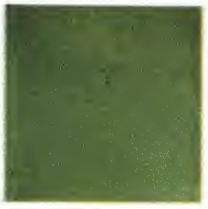
0967 Pale Green

0410 Old Ivory

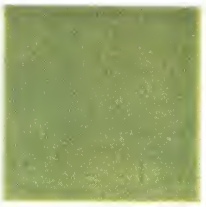
0463-F Straw



0261 Fawn



0280 Jade Green



0498 Emerald



0341 Meadow



0277 Oriental Yellow



040 Oatmeal



0404 Sienna Brown

0409 White Satin

0349 Peach Bloom



0754 Rose Orchid



0338-A Stippled Blue



0490 Ox Blood



060188-D Bracken



0354 Royal Black Matt



0485 Light Orchid



0418 Rose Lavender

0451 Sky Blue



0454 Medium Blue



0402 French Gray

MOZANE ENAMEL TILE FOR WALLS



Wall Design No. 567

Mozane Enamel wall tiles have been developed to supply the demand for a durable colored wall tile in bright glaze finish. They are manufactured with a buff clay body peculiarly adapted to these beautiful glazes and enabling them to provide very satisfactory service such as has not been possible with enamel wall tiles in the past.

This material is available in 4¼ x 4¼ and 6 x 3 sizes, ⅜ in. thick and in practically all our popular trim tiles such as C-218 cap, B-103 Base, etc. All-Tile accessories are also supplied in these colors.

Mozane Enamel tiles offer a pleasing variation from white glaze installations and are especially practical for bathrooms, kitchens, apartment buildings and wherever effectiveness and utility are required at a moderate price.

Description of Wall Design No. 567

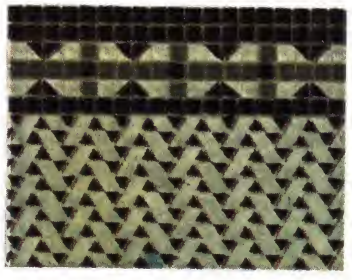
This attractive wall treatment is composed of Mozane Enamel wall tile color J-196 light green in the 4¼ x 4¼ size with C-218 cap and B-103 base in color No. 027 Egyptian Black Enamel. A Mozane decorated border is illustrated below the cap and above the base.

Description of Wall Design No. 568

Mozane Enamel wall tile color J-143 light oatmeal is illustrated in the above panel with the trim tiles in color No. 0404 Sienna Brown. The Mozane decorated borders are used to enliven this treatment. This color has been especially popular for Schools, Office Buildings and other commercial installations.



Wall Design No. 568



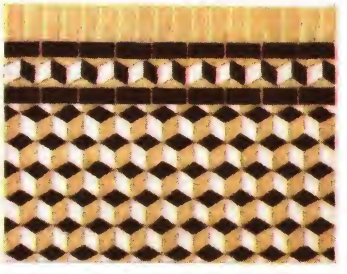
Ceramic Floor Design No. 569

Description of Ceramic Floor Design No. 569

This attractive design has been created by the use of 2⅜ x 1⅛ Rhomboids and 1⅛ triangles using a combination of celadon and black unglazed Ceramic tiles. The border is of 1⅛ squares in the same colors.

Description of Ceramic Floor Design No. 570

A modern design composed of 1⅛ diamonds arranged to produce a vanishing block effect. The colors are black, buff and cream which combination is in harmony with the No. 568 wall design.



Ceramic Floor Design No. 570

COLORS

There are ten beautiful colors in the Mozane Enamel group, as shown by chart below.



J-195 Light Orchid | J-162 Nile Green | J-147 Azure | J-144 Dove | J-139 Dusk

J-156 Pink | J-196 Light Green | J-167 Willow Green | J-197 Light Canary | J-143 Light Oatmeal

Reproduced from Tile

INLAID DECORATED BORDERS

White Wall Body



6 x 2 Patt. 70 Dec. A



6 x 1 Patt. 76 Dec. A



6 x 1 Patt. 77 Dec. A



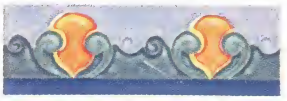
6 x 2 Patt. 71 Dec. E



6 x 1 Patt. 77 Dec. E



6 x 1 Patt. 78 Dec. E



6 x 2 Patt. 71 Dec. B



6 x 1 Patt. 78 Dec. B



6 x 1 Patt. 79 Dec. B



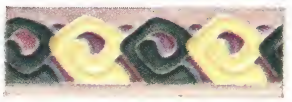
6 x 2 Patt. 70 Dec. F



6 x 1 Patt. 80 Dec. F



6 x 1 Patt. 82 Dec. F



6 x 2 Patt. 72 Dec. C



6 x 1 Patt. 80 Dec. C



6 x 1 Patt. 81 Dec. C



6 x 2 Patt. 72 Dec. I

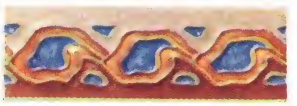


6 x 1 Patt. 79 Dec. I



6 x 1 Patt. 81 Dec. H

Reproduced from Tile



6 x 2 Patt. 73 Dec. D



6 x 1 Patt. 82 Dec. D



6 x 1 Patt. 76 Dec. D



6 x 1½ Patt. 74 Dec. H



6 x 1½ Patt. 75 Dec. G



6 x 1 Patt 80 Dec. K

MOZANE DECORATED BORDERS

White Wall or Faience Body

Reproduced from Tile



6x1 No. 18 Dec. No. 8



6x1 No. 20 Dec. No. 7



6x1 No. 21 Dec. No. 1



6x1 No. 22 Dec. No. 5



6x1 No. 23 Dec. No. 9



6x1 No. 24 Dec. No 11



6x1 No. 25 Dec. No. 6



6x1 No. 26 Dec. No. 13



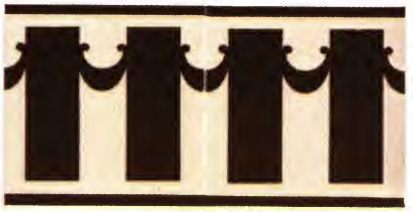
6x1½ No. 27 Dec. No. 10



6x1½ No. 28 Dec. No. 12



4¼x4¼ No. 40 Dec. No. 11



4¼x4¼ No. 42 Dec. No. 9



4¼x4¼ No. 43 Dec. No. 8



4¼x4¼ No. 44 Dec. No. 7



6x1½ No. 29 Dec. No. 32



6x1½ No. 30 Dec. No. 7



6x1½ No. 31 Dec. No. 5



6x2 No. 33 Dec. No. 11



6x2 No. 34 Dec. No. 1



6x2 No. 35 Dec. No. 32



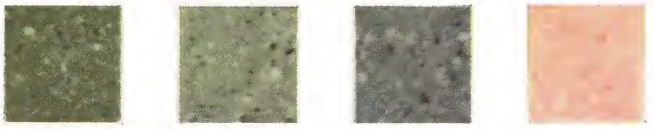
6x3 No. 37 Dec. No. 7

CERAMIC MOSAIC TILE FOR FLOORS

CHART OF COLORS



VELVETEX CERAMIC COLORS



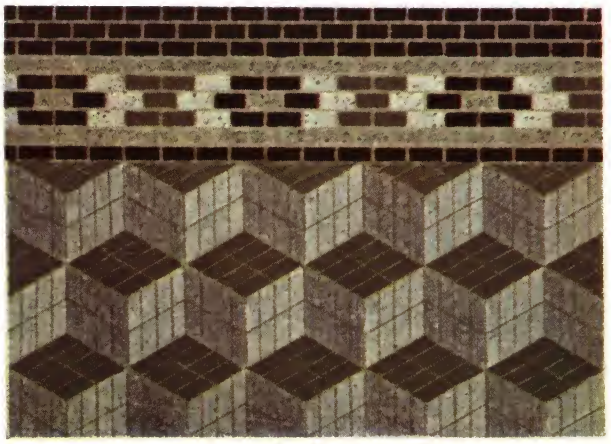
Ceramic Mosaic tiles as manufactured by the Mosaic Tile Company are small unglazed tiles in square, oblong, hexagonal, triangular, rhomboid and diamond shapes supplied in a wide range of vitreous and semi-vitreous colors as charted above.

Ceramic Mosaics are furnished in a variety of floor designs, each design being produced in any color combination desired to suit individual tastes and requirements. A number of attractive designs suitable for bathrooms, corridors, entrances and public buildings are illustrated below and elsewhere in this catalog. Ceramic Mosaics offer a wide scope for designs and special designs can easily be arranged to suit the architect's ideas and any style of architecture.

The Mosaic Ceramic line includes Aventine Ceramics which are reproductions of Roman patterns, Velvetex ceramics which are pastel colors particularly adapted for use with Satin Matt wall tile, Granitex ceramics which are non-slip texture tiles in tans and browns and the non-slip tiles containing a carborundum aggregate. (*See page 17*).

Ceramic Mosaics are available in the following sizes: $1\frac{9}{16}$ squares, $1\frac{9}{16}$ x $\frac{3}{4}$, $2\frac{3}{16}$ x $1\frac{1}{16}$, $1\frac{1}{16}$ squares, $\frac{1}{2}$ squares, 1″ hexagons, $1\frac{1}{4}$″ hexagons, $\frac{11}{32}$ squares, $\frac{3}{4}$″ squares, $2\frac{3}{16}$ squares, $1\frac{1}{16}$ x $\frac{1}{2}$, $1\frac{1}{16}$ triangles, $1\frac{1}{16}$ diamonds, $2\frac{3}{16}$ x $1\frac{1}{16}$ rhomboids.

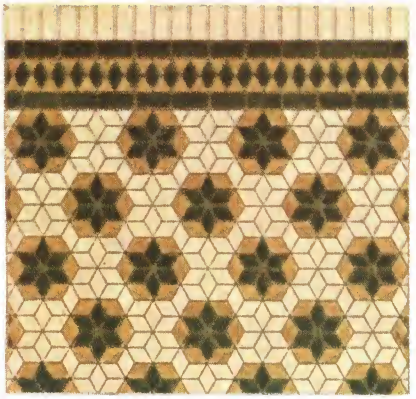
A few attractive modern designs of Ceramic Mosaic Tile illustrating the possibilities of this moderate priced floor material



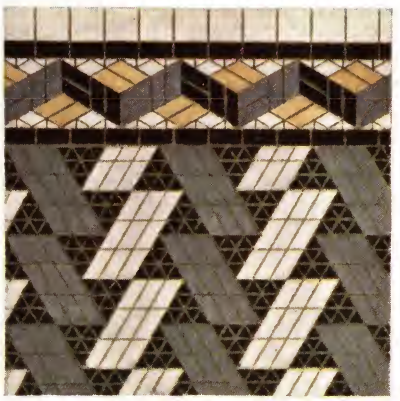
Ceramic Floor Design No. 571
A modern Rhombic design using $2\frac{3}{16}$ x $1\frac{1}{16}$ Rhomboid tiles in No. 201 dark green Velvetex, No. 202 light green Velvetex, and green. This design would be very practical for Entrances, Restaurants, Tea Rooms and other spaces where a modern treatment is desired.



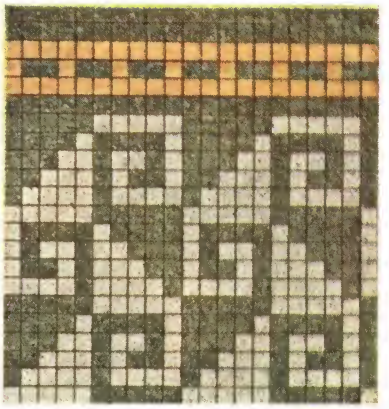
Ceramic Floor Design No. 572
This attractive design is a development of the staggered check pattern providing a floor suitable for Entrances, Corridors and similar spaces. It incorporates $2\frac{3}{16}$ in. squares and $1\frac{1}{16}$ in. squares in black, red, buff, salmon and chocolate.



Ceramic Floor Design No. 573
A Rhombic design incorporating $1\frac{1}{16}$ in. diamonds in a star pattern. Colors used are cream, celadon and buff.



Ceramic Floor Design No. 574
This modern design is composed of $2\frac{3}{16}$ x $1\frac{1}{16}$ Rhomboids together with $1\frac{1}{16}$ triangles in an attractive color combination of light gray, dark gray, black and buff.



Ceramic Floor Design No. 575
A conventional yet attractive floor treatment using $1\frac{1}{16}$ squares in unglazed ceramic colors buff, No. 201 dark green Velvetex and No. 202 light green Velvetex.

CERAMIC MOSAICS IN SWIMMING POOLS



Natatorium and Pool Design No. 576

The illustration above shows a colorful, yet practical, Natatorium treatment which can effectively be carried out with Mosaic products. White ¾ in. squares Ceramic Mosaics unglazed are used for the lining of the pool with colored ceramic tile for borders and markings. The floor is of 1 1/16 in. squares Granitex non-slip and the wainscoting is of suitable Satin Matt wall tile colors. Mozane Enamels, Dustprest Faience or regular hand-made Faience tiles can also be used to carry out the wall treatment.

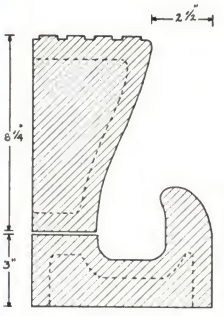
Advantages of Ceramic Mosaics for Pools

Ceramic Mosaics are a preferred material for swimming pool and natatorium construction on account of the beautiful effects obtainable, sanitary qualities, non-absorbence, imperviousness to wear and economy of upkeep.

The mounting of Mosaic Tile Ceramics insures even jointing and close fitting of contours and corners. Unglazed ceramics in ¾-in. squares, white, are most widely used for the pool, because of low cost, rapidity of installation and durability.

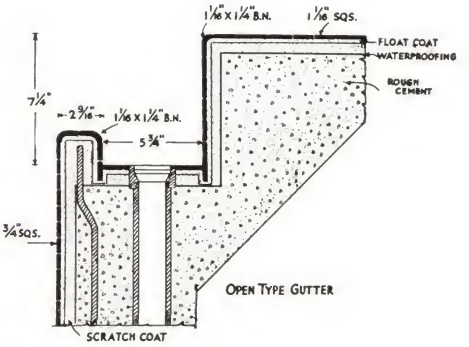
Colors are generally used for numerals, swimming lines, hand rails, etc., and frequently for the entire field of the pool. *Non-slip Granitex Ceramics are ideal for runways, gutters, stairs, etc.*

Sections of Practical Pool Gutters

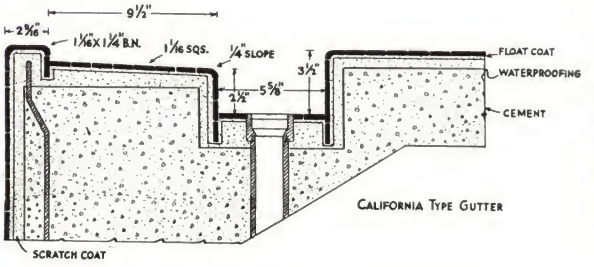


A Two-Piece Faience Gutter

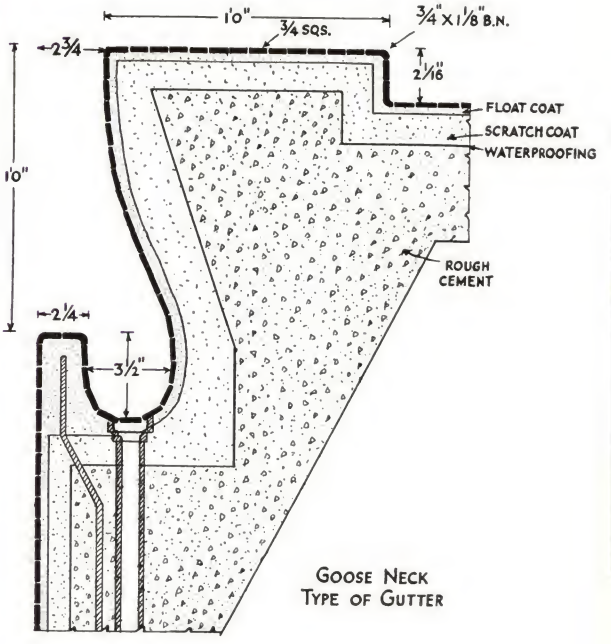
The gutter treatments illustrated below have been developed through years of experience in swimming pool construction. Special treatments can be created and executed to suit specific requirements.



OPEN TYPE GUTTER



CALIFORNIA TYPE GUTTER

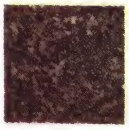


GOOSE NECK TYPE OF GUTTER

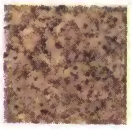
NON-SLIP CERAMIC MOSAIC FLOOR TILE

Mosaic Granitex Colors

Non-Slip Tan and Brown Texture Tiles



No. 1222
Brown Granitex



No. 1221
Tan Granitex



No. 1223
Buff Granitex

The Non-Slip Ceramic Mosaic colors illustrated above have pronounced non-slip qualifications which make them extremely suitable for use on Runways around Swimming Pools, Lobbies and Entrances of public buildings, Theatre Entrances and for floors of this type subjected to heavy traffic.

The Granitex Ceramic Mosaics have a stippled or granite effect and a slightly rough texture which provides the non-slip feature and produces a very attractive appearance. These colors are non-absorbent and vitrified and are supplied in $2\frac{3}{16}$ in. squares and $2\frac{3}{16}$ x $1\frac{1}{16}$ and $1\frac{1}{16}$ in. squares. The Granitex colors can be combined with regular ceramic colors or the carborundum non-slip tiles to produce attractive designs.

Non-Slip Ceramic Mosaic Tiles

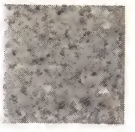
With Carborundum Aggregate



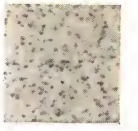
No. 61 Black



No. 63 Red

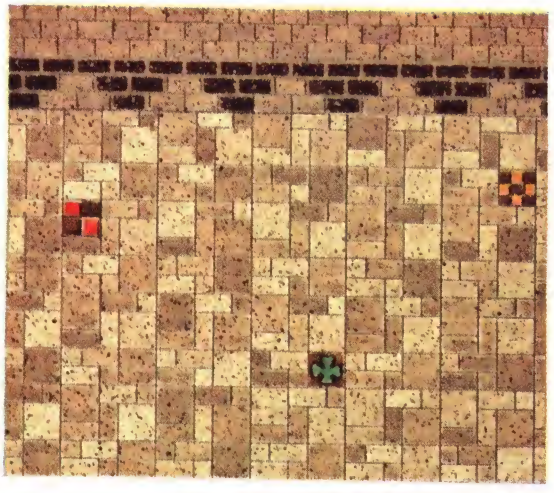


No. 31 Gray



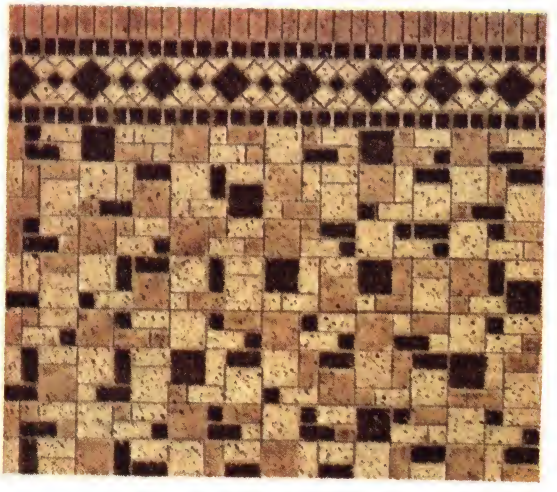
No. 32 Gray White

The non-slip Ceramic Mosaic tiles with carborundum are the regular ceramic colors to which the corborundum abrasive material has been added making them extremely non-slip and at the same time very durable. This material is produced in $\frac{3}{4}$ squares, 1 in. hexagons, $1\frac{1}{16}$ squares and $1\frac{1}{4}$ in. hexagons and other sizes on demand for special jobs.



Granitex Ceramic Floor Design No. 577

This design is a random pattern composed of $2\frac{3}{16}$ in. squares, $2\frac{3}{16}$ x $1\frac{1}{16}$ and $1\frac{1}{16}$ in. squares, incorporating colors No. 1221 tan Granitex, No. 1223 buff Granitex with scattered 2 x 2 Faience inserts. These inserts are made $\frac{3}{8}$ in. thick especially for use with Ceramic Mosaic tile.



Granitex Ceramic Floor Design No. 578

A striking random pattern incorporating $2\frac{3}{16}$ squares, $2\frac{3}{16}$ x $1\frac{1}{16}$, and $1\frac{1}{16}$ squares in Granitex colors No. 1221 tan Granitex, No. 1223 buff Granitex and No. 1222 brown Granitex.



Granitex Ceramic Floor Design No. 579

A design of $1\frac{1}{16}$ squares, straight joint, providing a conventional pattern suitable for large spaces. The colors combined in this design are No. 1221 tan Granitex, No. 1223 buff Granitex, Salmon, Red, Chocolate and Black.



Granitex Ceramic Floor Design No. 580

This modern pattern is developed with the use of $1\frac{1}{16}$ squares and diagonal halves in a combination of salmon and the Granitex colors No. 1221 tan, No. 1222 brown and No. 1223 buff.

MOSAIC FLINT FLOOR TILES

Unglazed vitreous and semi-vitreous paving floor tiles (extremely durable)



Public Building Interior Showing Flint Floor Design No. 581

This pleasing design incorporates 6 x 6 Flint floor tiles in the three shades of Granitex colors No. 1221 tan, No. 1222 brown and No. 1223 buff.

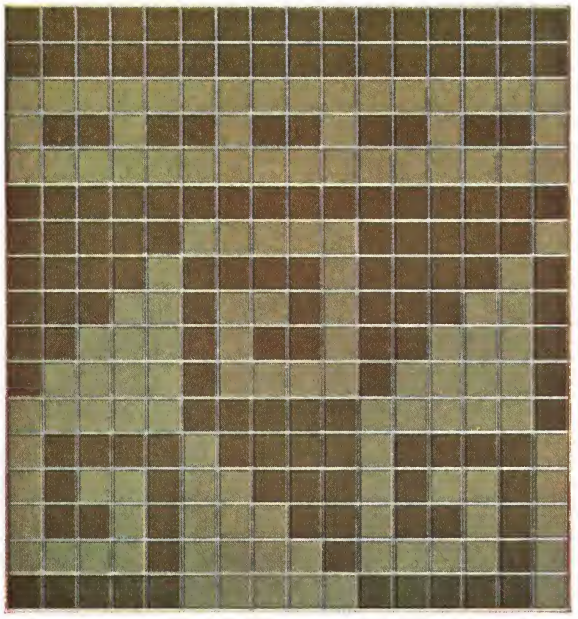
This design is modern in effect and would be especially practical for buildings such as Post Offices, Banks and Courthouses. Material such as Granitex floor tile would be very suitable as also would any other of the Flint colors and the design might be carried out in other Flint sizes as well as the smaller ceramic Mosaic sizes.

Mosaic Flint floor tiles are unglazed vitreous and semi-vitreous tiles which are highly resistant to wear and impervious to moisture or liquids of practically every description. This material is the highest type of floor tile obtainable for public buildings, corridors and stair treads and other places subjected to severe wear.

The vitreous colors such as white, light gray, gray granite, green, etc., are acid resisting and will withstand every test including the severe ink test as they have absolutely no absorption. These tiles have square, oblong, hexagonal and octagonal shapes in sizes from 1½ in. squares to 6 in. squares.

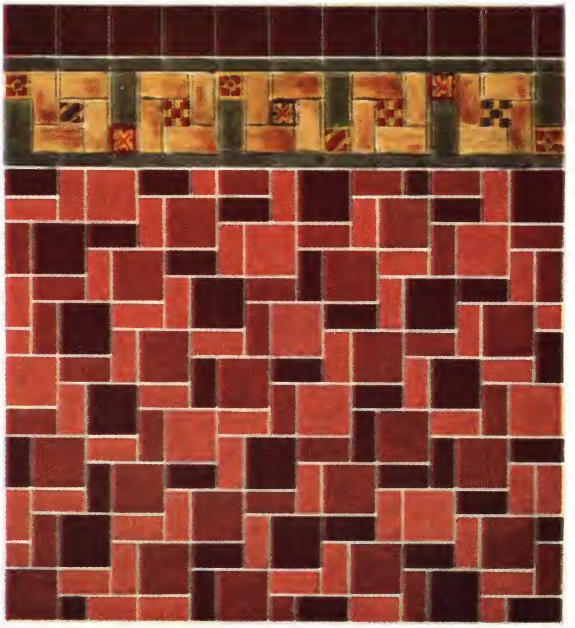
CHART OF FLINT COLORS





Flint Floor Tile Design No. 582

This design illustrates 4¼ x 4¼ Flint floor tiles in green and celadon providing a floor which would be attractive and at the same time extremely serviceable.



Flint Floor Tile Design No. 583

A floor design incorporating 6 x 6 and 6 x 3 Flint tile units using colors chocolate, red and salmon. This very attractive pattern can be carried out in many other combinations of Flint floor tile colors.

MOSAIC IRONSTONE AND BLUESTONE FLOOR TILES



Ironstone Floor Design No. 534

Here is a harmonious blending of various shades of red, tan and buff. The sizes indicated are 6 x 6, 6 x 3 and 3 x 3.

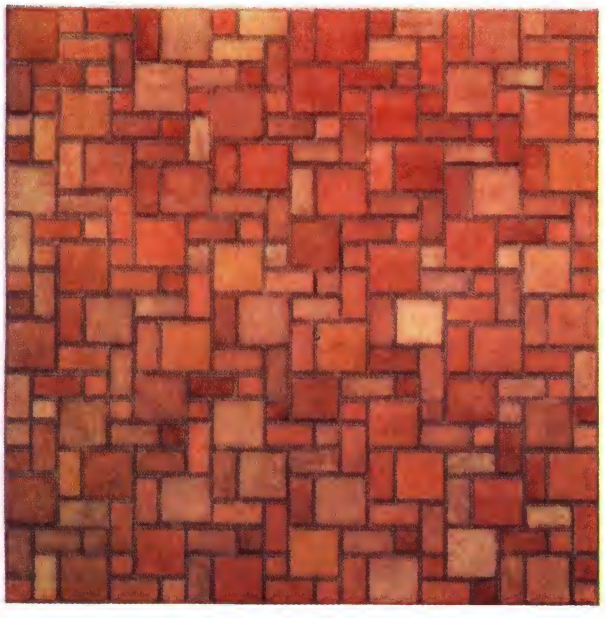
Mosaic Ironstone Tiles are unusually hard, plastic made tiles. Unglazed, they reproduce floors of the true, old-time, craftsmanlike character. The colors in which they come are soft tones of red, brown, tan and buff. They are available in sizes up to 12 x 12, and are recommended for floors in libraries, large living-rooms, billiard-rooms, porches, vestibules and wherever extraordinary durability is required.



Bluestone Floor Design No. 535

A most attractive floor in several shades of blue, green and gray. The illustration shows sizes 6 x 6, 6 x 3 and 3 x 3.

Mosaic Bluestone Tiles have the same characteristics and qualities as are possessed by Mosaic Ironstone Tiles. Due to the fact that they are a superior type of unglazed floor tiles, they are extremely hard and durable and thus are ideal for floors in vestibules, entrances and spaces where permanence and beauty are desired. In soft blue, green and gray shades, charming combinations may be made with the more colorful Faience. Sizes up to 12 x 12.



Ironstone Mosaics, Design No. 1832-I

A random pattern of various reds, tans and buffs. The sizes are 2 x 2, 2 x 1 and 1 x 1.

Ironstone and Bluestone Mosaics are of the same material and have the same characteristics as the larger units of these tiles described above. They are available in the same soft colors—reds, tans, buffs, blues, greens and



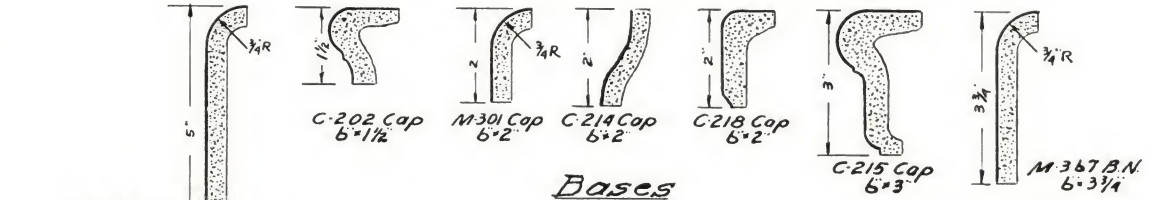
Bluestone Mosaics, Design No. 1832-J

A combination of pleasing blues, greens and grays in the following sizes: 2 x 2, 2 x 1 and 1 x 1.

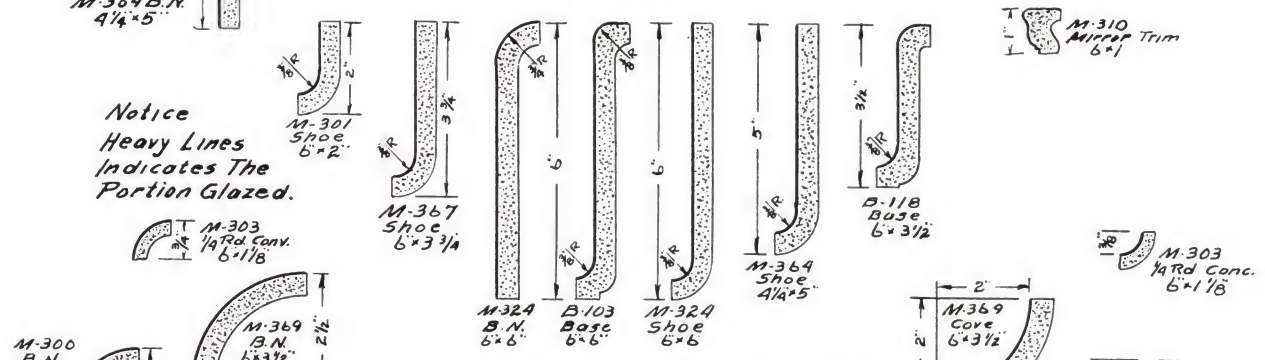
grays. The sizes in which they are furnished are 2 x 2, 2 x 1 and 1 x 1. They come mounted on paper to be applied like Ceramic Mosaics.

MOSAIC TRIM TILES

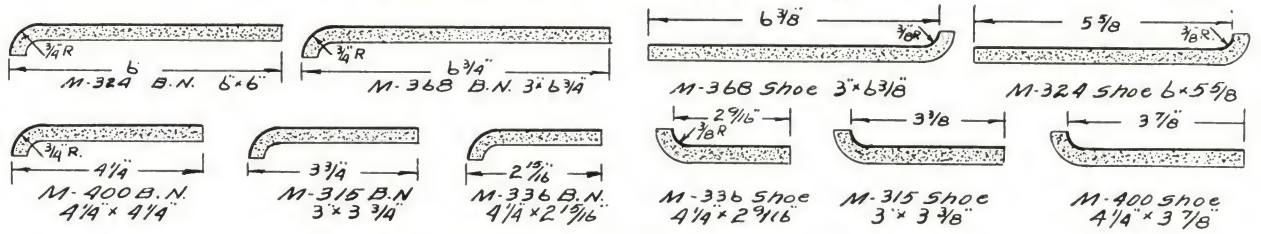
Caps Returns And Mouldings



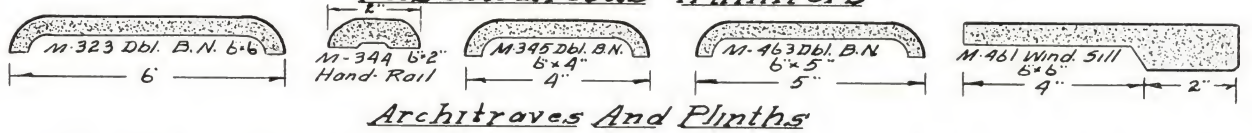
Bases



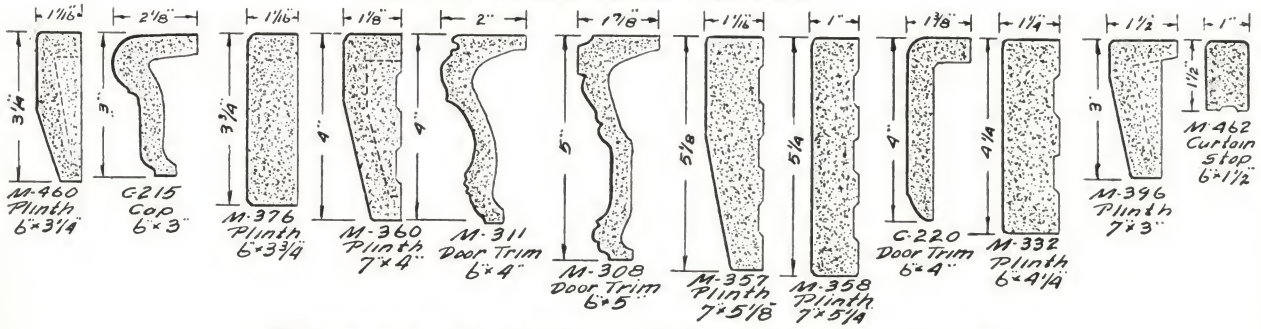
Quarter Rounds — Coves
Small Radius Combinations



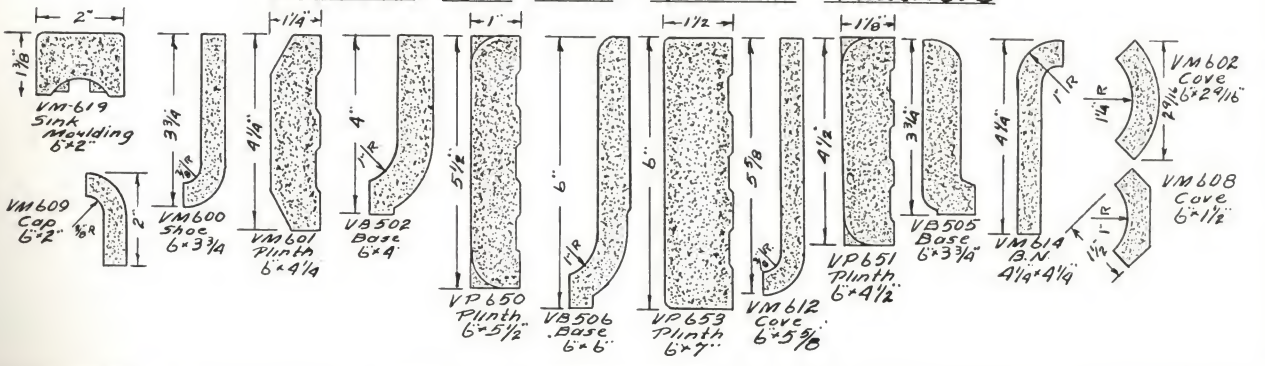
Miscellaneous Trimmers



Architraves And Plinths



Vitreous And Semi-Vitreous Trimmers



MURRAY TILE COMPANY

INCORPORATED

Manufacturers of Quarry, Promenade and Roofing Tile

CLOVERPORT, KENTUCKY

SALES REPRESENTATIVES

WITH WAREHOUSE STOCK

NEWARK, N. J., Jersey Tile Distributors, 659 Market St.
CHICAGO, ILL., Frank O. Neubacher, 1201 So. Clark St.
DETROIT, MICH., Walter B. Shelar, 2115 Alter Road
HOUSTON, TEX., E. G. Spencer, 414 Merchants & Manufacturers Building
JACKSONVILLE, FLA., Southeast Tile Sales Co., 132 E. 14th St.

WITHOUT WAREHOUSE STOCK

NEWTON, MASS., J. A. Desmond, 41 Lewis St.
WEST HARTFORD, CONN., D. K. Goodwin, 21 Westfield Road
BROOKLYN, N. Y., G. L. Rixford, 1 Junius St.
NEW YORK, N. Y., Morton Roth, 101 Park Ave.
UPPER DARBY, PA., J. C. Dickinson, 223 Shirley Road
MINNEAPOLIS, MINN., E. C. Lefman, 3935 Chicago Ave.
FOLSOM, LA., W. P. Magee
ATLANTA, GA., L. D. Oglesby, 1159 St. Louis Place
MIAMI, FLA., Southeast Tile Sales Co., 1235 S. W. 6th St.

Products

MURTICO QUARRY TILE for Floors and Wainscot; SPECIAL STAIR TREADS and RISERS; BEVELED THRESHOLD TILE; WINDOW STOOLS and RETURNS; PLINTH BLOCKS; PACKING HOUSE QUARRY TILE; PROMENADE TILE for Flat Roofs.

For Roofing Tile, see Manufacturers' Index.

Murtico Quarry Tile

Description—Murtico Quarry Tiles are made from high-grade shale burned to high temperatures, resulting in a hard vitreous body. They are impervious to moisture, stains and greases, and have a smooth, unglazed, abrasive resisting surface which is easily kept bright and clean. Being freeze-proof, they may be used outside freely where most extreme weather conditions prevail. The following comparative test results bear evidence as to their abrasive and absorptive resisting qualities.

Results of tests on floor coverings made at the Mellon Institute, Pittsburgh, Pa., in 1925, with apparatus producing actual conditions of wear and in accordance with Navy Department's absorption test Specifications 29L1C of Sept. 1, 1916:

	Percentage of Loss Abrasion Test	Percentage of Gain Absorption Test
Vitreous Tiles	4.5	0.0
Semi-vitreous Tiles	8.6	5.1
Terrazzo	16.1	2.6
Portland Cement	16.8	9.6
Marbles	23.3	0.1
Slates	58.2	0.3

Results of tests on Murtico Quarry Tile made in 1930 by R. W. Hunt Company, Testing and Consultation Engineers, Chicago, Ill., in the same manner and with similar apparatus as tests made at the Mellon Institute:

	Percentage of Loss Abrasion Test	Percentage of Gain Absorption Test
Murtico Quarry Tile	3.8	0.45



Cafeteria, Fair Park High School, Shreveport, La.
Murtico Sunburst (Red Fire Flashed) 6x6 in. and 2¾x2¾ in.

Colors

Murtico Red—Attractive, vivid shades of red, light to dark, different from other domestic quarries. Color is bright and stimulating.

Murtico Brown—Reddish to chocolate brown shades.

Murtico Buff—A soft creamy shade of even color distribution.

Murtico Gray—A smooth light gray with slight variation in shade.

Murtico Sunburst—Red fireflashed tiles, composed of harmonious blends of red, tan, and gun ,metal, with touches of green.

Murtico Golden Glow—Fireflashed effects of buff shades, producing variegations in gold, salmon, russet and light brown tiles.

Grades

Selects—Selected very carefully, all solid and sound with straight, level and smooth surface, only slight variation in shades and sizes.

Standards — Practically same as Selects, except assorted to size only, not to shade, containing a larger percentage of medium shades.

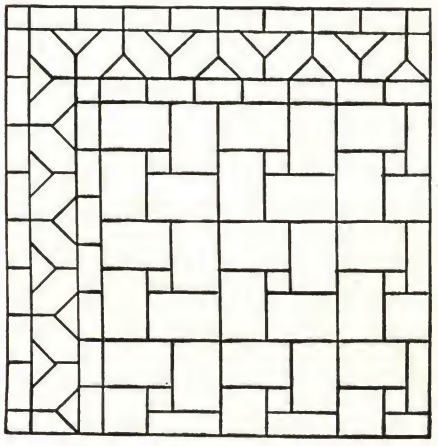
Commercials—Tile rejected from Select and Standard Grades, defects consisting of slightly chipped edges and slightly rounded ends. Will make first-class roof and very satisfactory floor where first-class tile is not required.

Promenade Tile

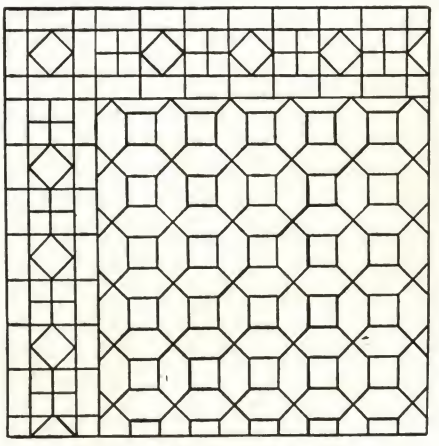
This tile is made in Murtico Red, with grooves on sides for binding joints. It has a smooth surface, is free from cracks and is made in 6"x9"x1" size; semi-vitrified and impervious to moisture.

Packing House Quarry Tile

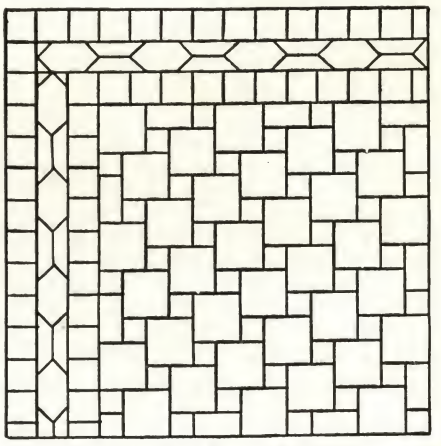
Made in Murtico Red shades, 4"x8"x1½" size, semi-vitreous and vitreous, impervious to moisture, and adapted specially for floors in packing houses, warehouses, creameries, etc., where extremely heavy wear is encountered.



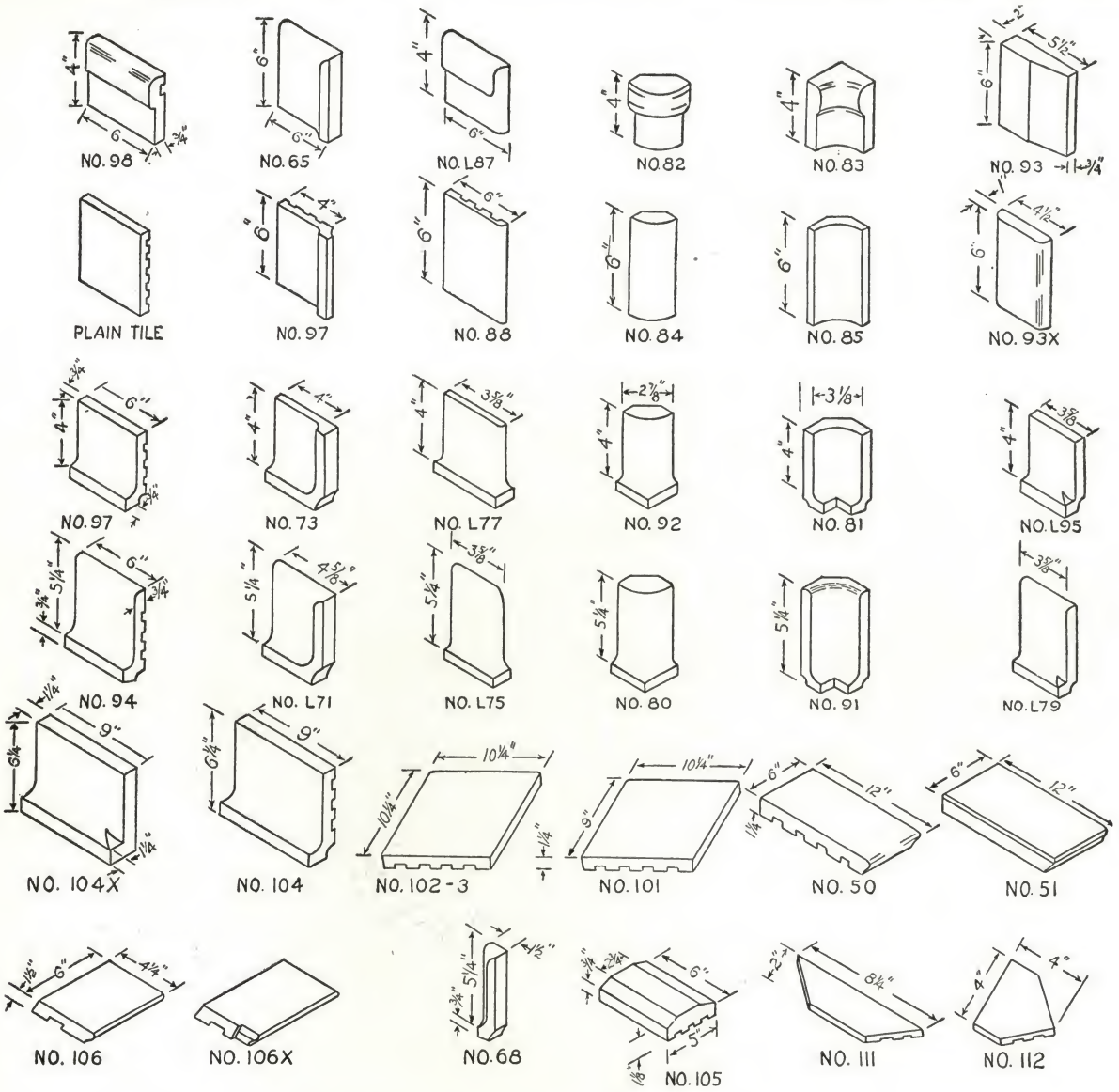
Field No. 31—Border No. 106
2¾x2¾ in.—4x4 in.—6x6 in.—Elong. hexagons



Field No. 41—Border No. 107
2¾x2¾ in.—2¾x6 in.—4x4 in. Elong. hexagons



Field No. 81—Border No. 103
2¾x2¾ in.—2¾x6 in.—6x9 in.—Elong. hexagons



SIZES PLAIN TILE

Size	Thickness	Color
3 x3	½	Red, Brown, Gray, Buff
3 x6	½	Red, Brown, Gray, Buff
4 x4	½	Red, Brown, Gray, Buff, Sunburst, Golden Glow
2¾ x2¾	¾	Red, Brown, Gray, Buff, Sunburst, Golden Glow
2¾ x6	¾	Red, Brown, Gray, Buff, Sunburst, Golden Glow
4 x4	¾	Red, Brown, Gray, Buff, Sunburst, Golden Glow
4 x8	¾	Red
4½ x6	¾	Red, Sunburst, Golden Glow
5¾ x5¾	¾	Sunburst, Golden Glow
5¾ x12	¾	Sunburst, Golden Glow
6 x6	¾	Red, Brown, Gray, Buff, Sunburst, Golden Glow
6 x9	¾	Red, Sunburst, Golden Glow
8 x8	¾	Red
9 x9	⅞	Red
4 x8¼	¾	Elongated Hexagons, Sunburst, Golden Glow

ROUND TOP BASE MEMBERS ¾" RADIUS

No. 94 Round Top Base, sizes, 4¾" high—4" and 6" wide, 6" high—6", 8" and 9" wide
No. L71 Left Internal Angles, Rights No. R70
No. L75 Left External Angles, Rights No. R74
No. L79 Left Stops, Rights No. R78
No. 68 Internal Angles, work either Right or Left
No. 80 External Angles 2¼" Radius
No. 91 Internal Angles 2¼" Radius

SQUARE TOP BASE MEMBERS ¾" RADIUS

No. L95 Left Stop
No. 97 Square Top Base, sizes, 2¼" high—6" wide, 3" high—6" wide, 4¾" high—4" and 6" wide, 6" high—6" and 9" wide
No. 73 Internal Angles, work either Right or Left
No. L77 External Angles, Right No. R76
No. L79 Left Stops, Rights No. R78
No. 92 External Angles 2¼" Radius
No. 81 Internal Angles 2¼" Radius

WAINSCOT MEMBERS FOR NO. 98 CAP

No. 97 Square Top Base
No. 81 Internal Base Angle
No. 85 Intermediate Internal Angle
No. 83 Internal Cap Angle
No. 92 External Base Angle
No. 84 External Angle
No. 82 External Cap Angle
No. L87 Wainscot Cap Stop

FOR NO. 88 BULLNOSE CAP

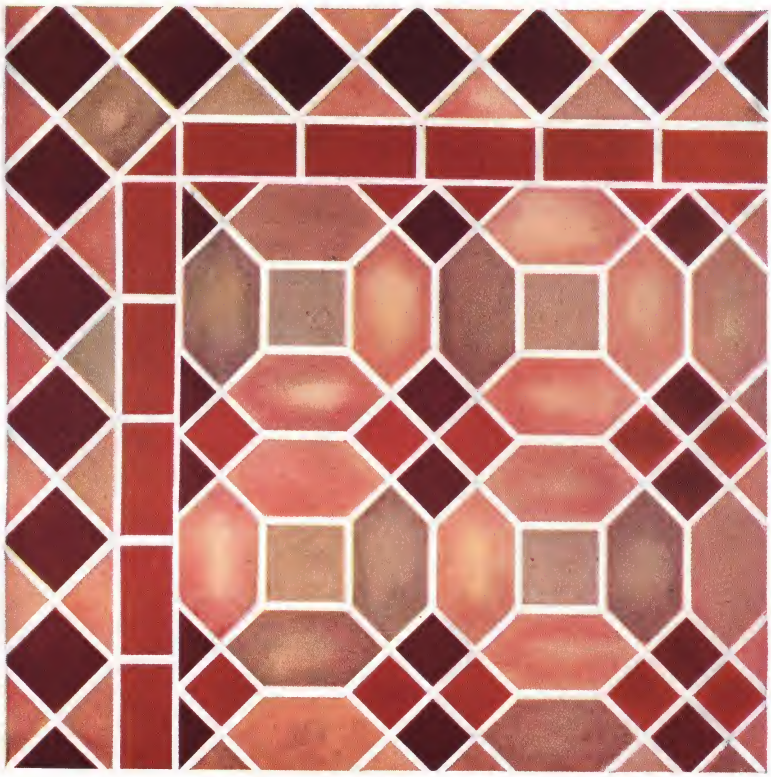
No. 97 Square Top Base
No. L73 Internal Base Angle
No. 97 Base as Intermediate Internal Angle
No. 65 Internal Cap Angle
No. L77 External Base Angle
6x6 Bullnose as Intermediate External Angles
6x6 Bullnose Corners as External Cap Angles

STAIR MEMBERS

No. 104 Square Top Cove Stair Risers
No. 104X Square Top Cove Stair Riser Stops, Rights and Lefts
No. 101 Stair Tread
No. 102-3 Stair Tread Corners, Rights and Lefts
No. 50 Stair Tread
No. 51-2 Stair Tread Corners, Rights and Lefts
6x6 Stair Treads
6x6 Stair Tread Corners, Rights and Lefts

OTHER ITEMS

No. 93 Plinth Blocks
No. 93X Plinth, double bullnosed
No. 106 Window Stool
No. 106X Window Stool Returns, Rights and Lefts
No. 105 Threshold Tile
No. 111 Long Halves, Elongated Hexagon Tile
No. 112 Short Halves, Elongated Hexagon Tile
Diagonal Halves in all sizes plain tile
Bullnose Tile in all sizes plain tile
Bullnose Corners in all sizes plain tile



Field No. 82
2¾″x2¾″ Murtico Red
2¾″x2¾″ Murtico Brown
4″x4″ Murtico Golden Glow
4″x8¼″ Murtico Golden Glow Elongated Hexagons

Border No. 108
2¾″x6″ Murtico Red
4″x4″ Murtico Brown
4″x4″ Murtico Golden Glow Diagonal Halves

This design may be employed with equal effectiveness by using Murtico Sunburst instead of Murtico Golden Glow.

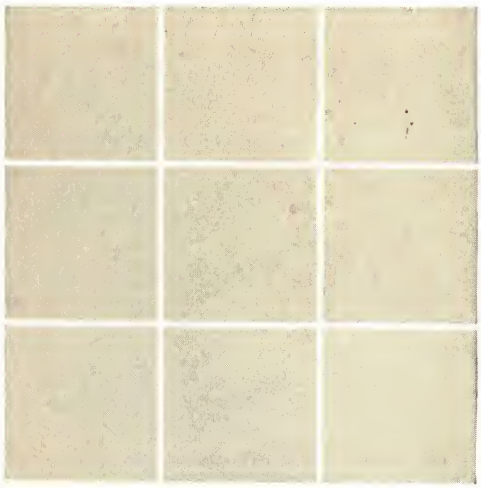
The particular bright, vivid, color tone of Murtico Red Quarry is well illustrated by the two reproductions shown below. Especially is this true of the exterior view at the left, which displays a portion of the floors in a Miami, Florida, High School. It is significant that the same shade was used for interior floors as well, since it is very important that materials used for school construction aid in maintaining the maximum amount of light. Murtico Red Quarry, due to its vivid color tone, and in contrast to dull, dark, red shades, diffuses light instead of absorbing it. For this reason, specifications which call for Murtico Red for floors and Murtico Buff or Murtico Golden Glow for walls will insure satisfactory school installations, and others as well.



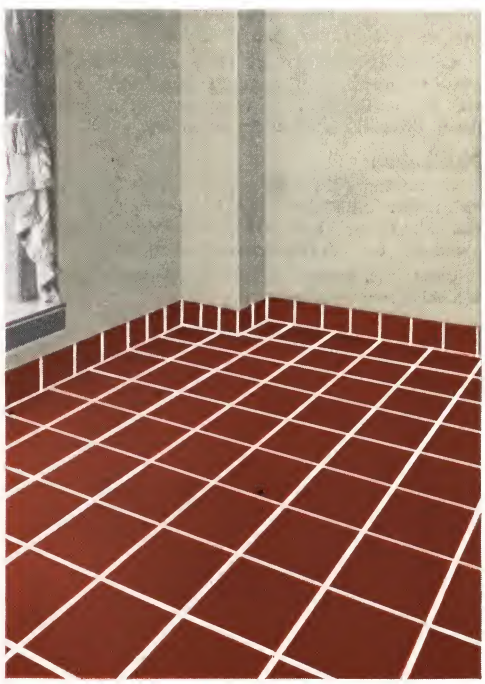
Promenade, Miami, Fla., High School
Murtico Red
6″x6″ Broken Joint



Murtico Buff
6″x6″ Straight Joint



Murtico Gray
6″x6″ Straight Joint



Corner, Automobile Showroom
Murtico Red
9″x9″ Straight Joint



Field No. 30
2¾″x2¾″ Murtico Sunburst
2¾″x6″ Murtico Sunburst
6″x6″ Murtico Sunburst

This random design is furnished in all six color ranges manufactured. Appropriate borders to harmonize can be supplied from our own stock patterns or from architect's sketches.

The attractive showroom shown below displays the beautiful effect obtained with the use of these tiles. For other color treatments Murtico Golden Glow is equally suitable, in fact, there is possibly a wider range of variegated blends in Golden Glow than in Sunburst.

Color illustrations on this page and the preceding page represent only a few of the many beautiful combinations which may be realized with Murtico Quarry Tile. Many other striking effects are available in different sizes, patterns and colors.

Distribution

Continuous satisfaction is rendered by Murtico Quarry Tile with proper installation. It is imperative, therefore, that all installations be made by experienced workers. Murtico Quarry Tile is sold only through responsible tile contractors.

Catalogues, samples and suggested specifications will be sent to architects and dealers on request.

Standard Specifications

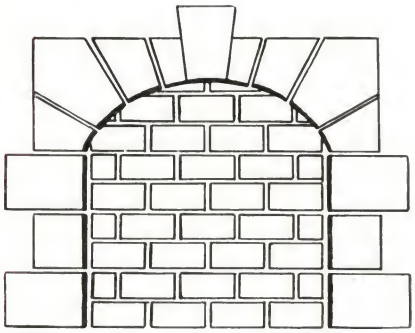
Quarry tile floors will be required in the following areas: .....; color shall be Murtico Red, Brown, Buff, Gray, Sunburst or Golden Glow in the following sizes: ....., and shall be laid in Field ....., Border ....., with ..... joint.

Color of base shall be Murtico Red, Brown, Buff, Gray, Sunburst or Golden Glow in the following sizes: ....., shall be coved, and shall have rounded top edge to project ¾″ beyond face of wainscot or plaster above, or else shall have square top edge flush with wainscot or plaster above. Necessary base angles, stops and plinth blocks shall be provided.

Quarry tile wainscot will be required at all partitions, walls and other fixed vertical surfaces in the following areas: .....; color shall be Murtico Red, Brown, Buff, Gray, Sunburst or Golden Glow in the following sizes: ....., and shall be laid in Field ....., with ..... joint. Height shall be ..... feet from the floor and necessary wainscot caps and angles shall be provided.

All quarry tile used shall be Select, Standard or Commercial Grade as manufactured by the Murray Tile Company, Inc., Cloverport, Kentucky.

Murtico Mantel Arch
No. 11-M
Showing use of 2¾″x6″ tiles for lining inside of fireplace



Arch composed of
7 Special Arch Pieces
2 6″x6″ Bullnosed
4 6″x9″ Bullnosed (on end)

Furnished in Murtico Red, Murtico Sunburst, and Murtico Golden Glow

Height inside.....26″
Height overall.....31-1/2″
Width inside.....25-7/8″
Width overall (at top).....37-7/8″

Stock sizes of plain tile and bullnose may be used to complete Mantel, if desired.

Perfected Quarry Tile

We are prepared to furnish quarry tile in stock sizes perfected for laying with string joint by grinding the two wire cut ends, also by grinding both ends and both sides, after burning, although we do not recommend it for general use on account of the increased cost. Then, too, there are many types of quarry tile installations in which a better effect is secured with regular 3/8″ joint.

Economy

There is no other floor or wall surfacing material which offers such variety and wealth of color, such durability and low maintenance cost as quarry tile, and Murtico Quarry Tile is outstanding in its field. Many installations are known to have outlasted the building in which they were placed.



Automobile Showroom, Cincinnati, Ohio
Field No. 30
Murtico Sunburst

THE NATIONAL TILE COMPANY

(Incorporated)

ESTABLISHED 1889

Factories and Main Office, Anderson, Indiana, U. S. A.

SALES OFFICES

NEW YORK, N. Y. CHICAGO, ILL. PHILADELPHIA, PA. INDIANAPOLIS, IND. PITTSBURGH, PA.
ST. LOUIS, MO. LOUISVILLE, KY. SAN FRANCISCO, CAL. LOS ANGELES, CAL.

PRODUCTS

WHITE AND COLORED GLAZED WALL TILE.

Satintex Matts (600 Line). Soft pastel colors. Glare-free, satin-like finish. Beveled edge.

Varitone Matts (450 Line). Same as 600 line, but with two satintex colors on each tile. Gives very pleasing and unusual color effects. Beveled edge.

Bright Glaze (800 Line). A wide range of beautiful colors with a bright glossy finish. Beveled edge.

Vitrobryt (1000 Line). Bright glazed tile with unusually hard body. Especially designed for exteriors, subway stations, etc. For use on walls or floors. Size 4¼ x 4¼ only. Rounded edge.

Faience Type (1200 Line). A new development by National. Deep, rich colored matt glaze on special dust pressed body. Rounded edge.

Artline. Decorative tile of all types. Stock patterns or special designs made to Architects specifications.

Accessories. Towel bars, soap dishes, etc., glazed in any National bright or dull finish color.

Glazed Ceramic Mosaic. Small hard body tile glazed in any National bright or dull finish color.

FLOOR TILE

Glazed Floor Tile.

Hard body tile glazed in any National bright or dull finish color.

Unglazed Ceramic Mosaic.

Small vitreous body tile for use on floors. Wide range of colors in various textures. Unlimited range of designs.

Unglazed Vitreous Floor Tile.

Will withstand the hardest wear. Made in the same color range as the unglazed ceramic mosaic.

NATIONAL TILE
TRADE MARK
REG. U.S. PAT. OFF.

ADVANTAGES

A superior feature of National Wall Tile is the beveled or rounded edges. Both the beveled and rounded edge tile reduce to a minimum the chance of chipped edges due to handling or to pressure caused by the settling of the building. There is also less danger of cracking or crazing as the beveled or rounded edge prevents any strains from being transmitted from the face of one tile to the face of the next tile.

National Tile is unsurpassed for beauty, quality and durability.

EXPERIENCE

Nearly half a century of manufacturing experience aided by modern scientific research methods, assures reliability of products.

SERVICE

The National Tile Company is noted for its quick and satisfactory service. A centrally located factory with large warehouses at important centers, have contributed to National's reputation for prompt service.

ART AND DESIGN DEPARTMENT

The services of a capable force of artists are offered to architects and tile contractors.

We can furnish colored sketches of our own creation or can carry out the original ideas of the Architect.

Architects are invited to use this service when confronted by special decorative problems. It is gladly given without obligation.

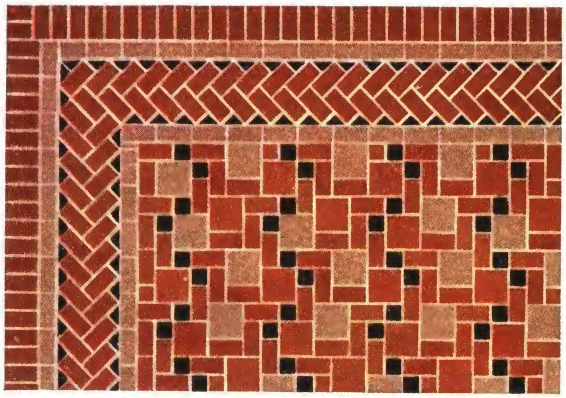
Catalogues, samples, etc., furnished on request.

ADAPTABILITY

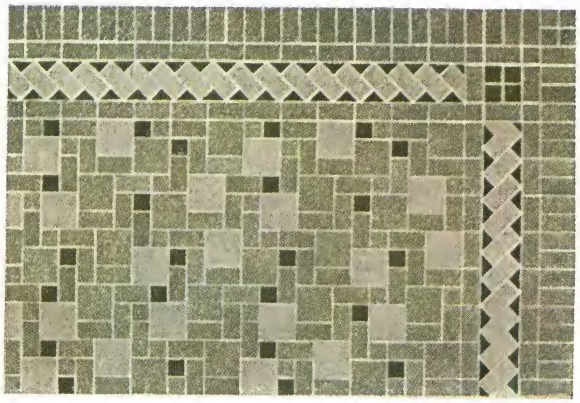
National Floor and Wall Tile is suitable for every type of public or private building where it is desired to use a highly artistic building material combined with all the practical advantages of National Tile.

Specify "THE TILE SHALL BE NATIONAL TILE OR ITS EQUAL"

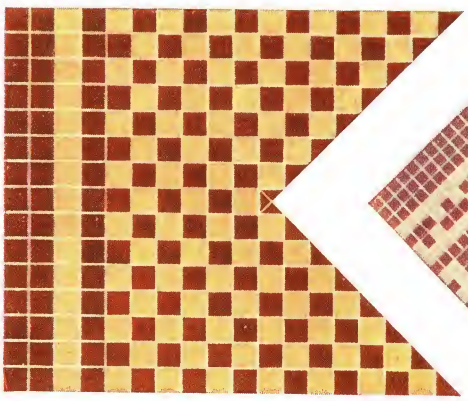
NATIONAL CERAMIC FLOOR DESIGNS



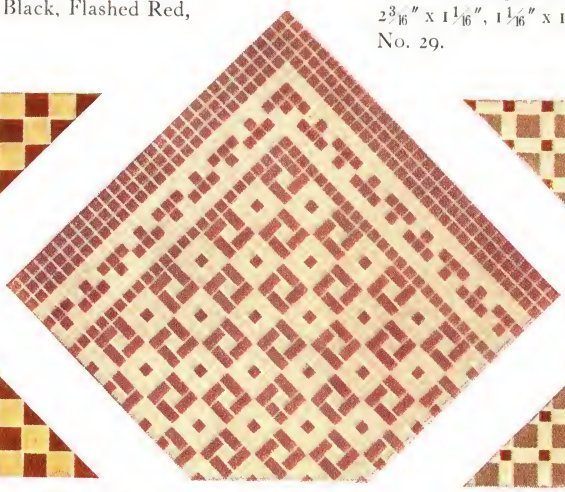
Border No. 1506. Body No. 1507. Sizes: $2\frac{3}{16}$" x $2\frac{3}{16}$", $2\frac{3}{16}$" x $1\frac{1}{16}$", $1\frac{1}{16}$" x $1\frac{1}{16}$". Colors: Black, Flashed Red, Granite No. 26.



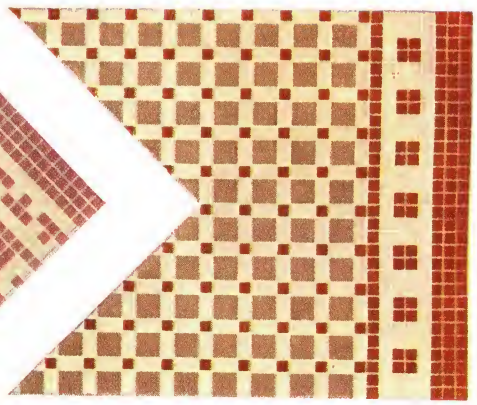
Border No. 1508. Body No. 1509. Sizes: $2\frac{3}{16}$" x $2\frac{3}{16}$", $2\frac{3}{16}$" x $1\frac{1}{16}$", $1\frac{1}{16}$" x $1\frac{1}{16}$". Colors: Green, Granites No. 28, No. 29.



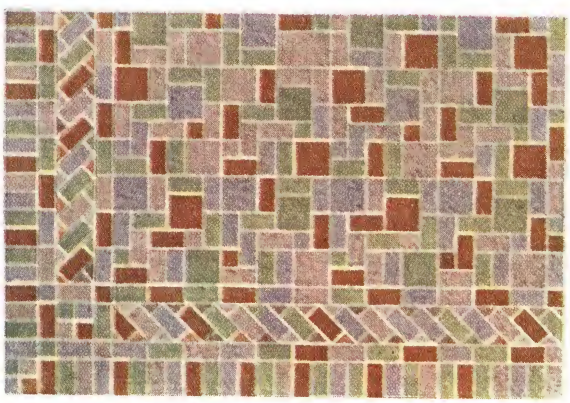
Border No. 1510. Body No. 1511. Size: $1\frac{9}{16}$" x $1\frac{9}{16}$". Colors: Buff, Red.



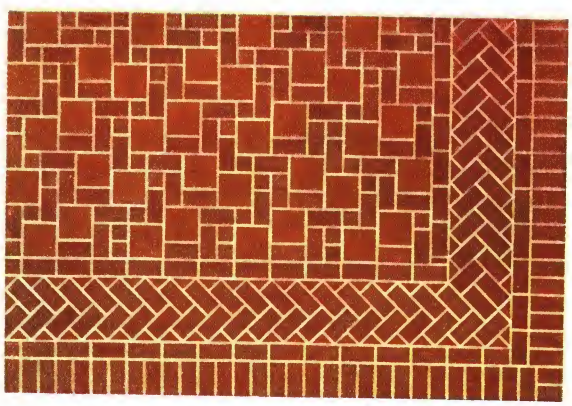
Border No. 1512. Body No. 1513. Sizes: $1\frac{9}{16}$" x $\frac{3}{4}$", $\frac{3}{4}$" x $\frac{3}{4}$". Colors: Orchid, Cream.



Border No. 1514. Body No. 1515. Sizes: $1\frac{9}{16}$" x $1\frac{9}{16}$", $1\frac{9}{16}$" x $\frac{3}{4}$", $\frac{3}{4}$" x $\frac{3}{4}$". Colors: Cream, Red, Granite No. 26.



Border No. 1516. Body No. 1517. Sizes: $2\frac{3}{16}$" x $2\frac{3}{16}$", $2\frac{3}{16}$" x $1\frac{1}{16}$", $1\frac{1}{16}$" x $1\frac{1}{16}$". Colors: Granites No. 25, No. 26, No. 27, No. 29.



Border No. 1518. Body No. 1519. Sizes: $2\frac{3}{16}$" x $2\frac{3}{16}$", $2\frac{3}{16}$" x $1\frac{1}{16}$", $1\frac{1}{16}$" x $1\frac{1}{16}$". Color: Flashed Red.

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COLOR CHART OF SATINTEX MATTS

(600 LINE)



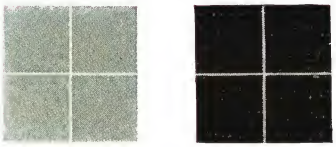
602–Cream | 633–Alice Blue | 610–Beach Sand | 623–Ocean Green | 691–Cosmos Pink | 625–Nile Green | 609–Tan

620–Pale Green | 643–Lilac | 604–Stippled Dove | 603–Peach | 621–Turquoise | 615–Rose Mist | 624–Meadow Green

642–Heliotrope | 627–Olive Green | 614–Flesh Tint | 612–Old Rose

These matt colors have a beautiful satin-like texture. They may be had on a wall tile body for use on walls, or on a floor tile body for use on floors.

The Varitone Matts—450 line— is a two-tone or mottled combination of these colors, to be used when the architect wishes to obtain unusual two-color effects.

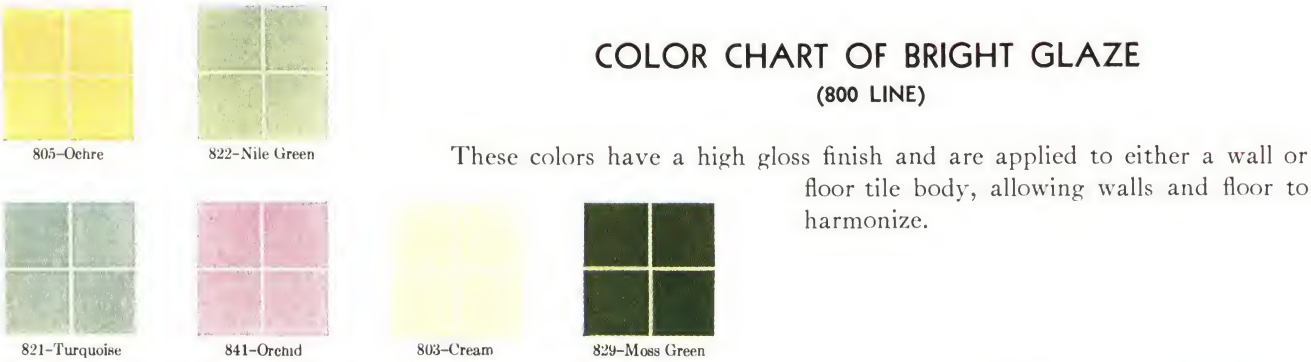


665–French Grey | 699–Black

COLOR CHART OF BRIGHT GLAZE

(800 LINE)

These colors have a high gloss finish and are applied to either a wall or floor tile body, allowing walls and floor to harmonize.



805–Ochre | 822–Nile Green

821–Turquoise | 841–Orchid | 803–Cream | 829–Moss Green

865–Mist Grey | 876–Light Tan | 890–Pink | 875–Lt. Oatmeal | 860–Silver Blue | 877–Dk. Oatmeal | 826–Azure Blue

899–Black | 810–Ivory Pink | 884–Hautville | 896–Ox Blood | 843–Lilac | 808–Sun Tan | 897–Royal Blue

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A FEW REPRESENTATIVE INSTALLATIONS OF NATIONAL TILE

BUILDING	LOCATION	ARCHITECT
Empire State Building	New York City	Shreve, Lamb & Harmon
Hotel Statler	Boston, Mass.	Geo. B. Post & Sons
Chanin Building	New York, N. Y.	Sloan & Robertson
R. C. A. Victor Building	New York, N. Y.	Cross & Cross
N. Y. Telephone Building	New York, N. Y.	Voorhees, Gmelin & Walker
N. Y. Central Building	New York, N. Y.	Warren & Wetmore
Columbia Broadcasting Building	New York, N. Y.	J. E. R. Carpenter
Kings County Hospital	Brooklyn, N. Y.	Le Roy P. Ward
Ritz Towers	New York, N. Y.	Emery Roth
Tudor City	New York, N. Y.	Fred F. French
Taft School	Watertown, Conn.	James Gamble Rogers
Y. W. C. A.	Boston, Mass.	Shephard & Stearns
River House	New York City	Bottomley, Wagner & White
London Terrace	New York City	Farrar & Watmough
Majestic Apartment	New York City	I. S. Chanin
Roxy Theatre	New York City	W. H. Ahlschlager
Fox Theatre	St. Louis, Mo.	C. Howard Crane
Y. M. C. A.	Springfield, Mass.	Lyman W. Hawes
Bronx General Hospital	New York City	L. A. Abramson
Mount Sinai Hospital	New York City	Kohn & Butler
Creedmore State Hospital	Creedmore, L. I.	Sullivan W. Jones
Baker Memorial Hospital	Boston, Mass.	Coolidge, Abbott, Bullfinch & Shephard
Park Central Hotel	New York, N. Y.	Gronenberg & Leuchtag
Hotel Jefferson	St. Louis, Mo.	Teich & Sullivan
Hotel Coronado	St. Louis, Mo.	Preston J. Bradshaw
K. C. Power & Light Building	Kansas City, Mo.	Hoit, Price & Barnes
Hawthorne Apartments	St. Louis, Mo.	Pleitsch & Price.
Wentz Swimming Pool	Ponca City, Okla.	Leonard Baily
75 Central Park West	New York, N. Y.	Rosario Candela
Beaux Arts Apartments	New York, N. Y.	Kenneth M. Murcheson
N. Y. County Lawyers Building	New York, N. Y.	Cass Gilbert
Sherrys Restaurant	New York, N. Y.	McKim, Meade & White
Mayflower Apartments	Louisville, Ky.	E. T. Hutchins
Masonic Widows & Orphans Home	Louisville, Ky.	Joseph & Joseph
South Broad Street Subway Station	Philadelphia, Pa.	Engr. of Dept. City Transit
Shephard Pratt Hotel	Baltimore, Md.	Wyatt & Nolting
Strawbridge & Clothier Store	Philadelphia, Pa.	Simon & Simon
Cleveland Terminal	Cleveland, Ohio	Graham, Anderson, Probst & White
National Town & Country Club	Cleveland Ohio	Geo. B. Post & Sons
Mount Sinai Hospital	Cleveland, Ohio	Chas. R. Greco
Elyria Savings & Trust Co.	Elyria, Ohio	Walker & Weeks
Deshler Hotel	Columbus, Ohio	C. Howard Crane
Lakeside Hospital	Cleveland, Ohio	Bullfinch & Abbott
Palmer House	Chicago, Ill.	Holabird & Root
Drake Hotel	Chicago, Ill.	Marshall & Fox
Edgewater Beach Apartment	Chicago, Ill.	Benjamin Marshall
Thompson Restaurants		Alfred Alschuler
Granada Theatre	Chicago, Ill.	Levy & Klein
Park Gables Apartment	Chicago, Ill.	James F. Denson
Park Central Apartment	Chicago, Ill.	Raymond Gregory
County Hospital	Wauwatosa, Wis.	Van Ryan & De Gelleke
Emerson Street Y. M. C. A.	Evanston, Ill.	Meyer H. Sturn
Pere Marquette Hotel	Peoria, Ill.	Hewitt Emerson & Gregg
Big Four Building	Indianapolis, Ind.	D. A. Bohlen & Son
Columbia Club	Indianapolis, Ind.	Rubush & Hunter
U. S. Veterans Hospital	Portland, Ore.	Veterans Bureau
Shriners Hospital	San Francisco, Calif.	Weeks & Day
Olympic Country Club	San Francisco, Calif.	Bakewell & Brown
Medico Dental Bldg.	San Francisco, Calif.	George W. Kelham
Highland Hospital	Oakland, Calif.	Henry H. Meyers
El Cortex Hotel	San Francisco, Calif.	Douglas, Dacre Stone
Le Moderne Apartment	Los Angeles, Calif.	Max Maltzman
Cherokee Apartment	Hollywood, Calif.	Marcus P. Miller
Casa Real Apartment	Los Angeles, Calif.	Clinton B. Kolyer
Coleman Hospital	Indianapolis, Ind.	Robert Daggett
Ball Bros. Memorial Hospital	Muncie, Ind.	John A. Scudder
Illinois Traction Station	Peoria, Ill.	Hewitt Emerson & Gregg
Medinah Athletic Club	Chicago, Ill.	Walter W. Ahlschlager
Morrison Hotel	Chicago, Ill.	Holabird & Root
Oak Park Hospital	Oak Park, Ill.	Holmes & Flynn
Nordic Hotel	Minneapolis, Minn.	Sund & Dunham
Y. W. C. A.	Minneapolis, Minn.	Hewitt & Brown
Union Station	Chicago, Ill.	Graham, Anderson, Probst & White
Masonic Temple	Rochester, N. Y.	Osgood & Osgood
The San Carlos	New York City	H. Ives Cobb
Jersey City Hospital & Nurses Home	Jersey City, N. J.	John T. Rowland, Jr.
Grasslands Hospital	Valhalla, N. Y.	Walker & Gillette
Winfield Scott Hotel	Elizabeth, N. J.	W. L. Stoddart
N. Y. Athletic Club	New York City	York & Sawyer
Cavalier Hotel	Virginia Beach, Va.	Neff & Thompson
Edison School	San Francisco, Calif.	G. A. Applegarth
Park Presidio School	San Francisco, Calif.	Wm. H. Crim, Jr.
Deaconess Hospital	St. Louis, Mo.	T. P. Barnett Co.

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ROBERTSON ART TILE CO.

TRENTON, N. J.

BRANCH OFFICES

NEW YORK, N. Y., 101 Park Avenue

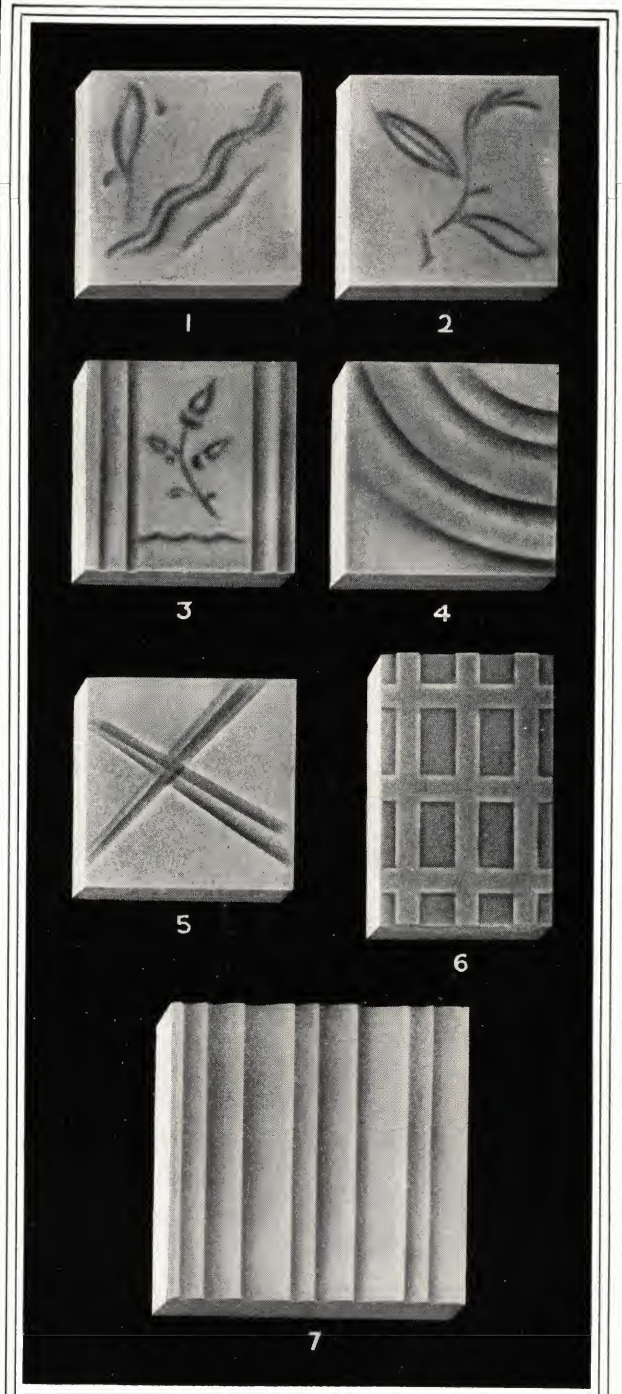
CHICAGO, ILL., 20 West Austin Avenue

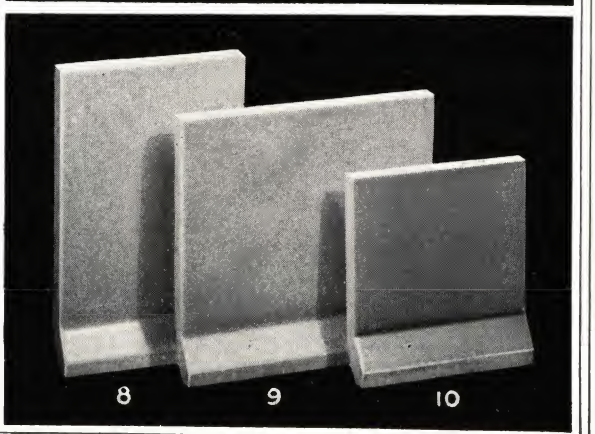
DETROIT, MICH., 206 East Grand River Avenue

Products

Manufacturers of WHITE WALL TILE, MATT and BRIGHT ENAMELS, CHROMATEX MOSAIC, CERAMIC MOSAIC, DECORATIVE TILE, TRIMMERS and the exclusive innovations—PLANATILE, INCISED or RELIEF and FLORMATEX MATT GLAZED FLOOR TILE.







Architects Will Find Unlimited Decorative Effects in the Full Line of Robertson Tiles

The special innovations featured here are: Robertson Planatile, a glazed wall tile with moulded designs; Chromatex, a special textured ceramic mosaic tile; Flormatex, a semi-vitreous glazed tile for inside floors, walls and wainscots; and decorative strips, set-back caps and buttress bases to match.

Robertson Planatile

There are two types of Planatile—incised designs and relief designs. Incised designs permit the color of the tile to become an inseparable part of the design by the controlled gradation of color tones. A single color in an incised design may flow smoothly from the most delicate tint to a full strong tone where the depth of the design permits.

A number of incised and relief designs are reproduced on this page. On the preceding page are shown in color three of the newest Robertson incised designs—*Galley, Ladder Edge* and *Plume and Stripe.*

Variety of Sizes and Finishes

In addition to the regulation 4¼x4¼-in. size, incised designs are available in the new 5½x3½-in. size. Angle Stripe, Ripple Wave and Reed Stripe (relief designs) are made in 6¾x4¼-in., a new size. The Fold Stripe (relief design) is made in the 6x6-in. proportion.

Robertson Planatile is available in the bright finish, and also in a lustrous semi-matt finish which is characterized by a rich satin sheen.

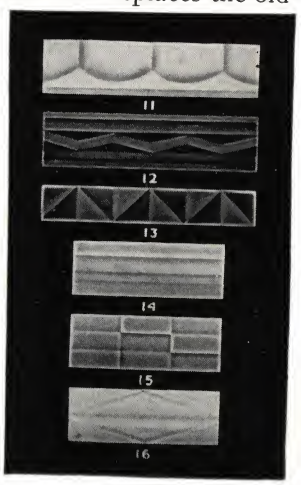
These Exclusive Planatile Designs Are Shown on This Page

(1) Leaf and Ripple (Incised).
(2) Spray (Incised).
(3) Spray and Ripple (Incised).
(4) Pond Ripple (Incised).
(5) Airport (Incised).
(6) Trellis (Incised).
(7) Fold Stripe (Relief).
(11), (12), (13), (14), (15), (16) (shown below).

Incised Planatile Strips to match Planatile in finish, color and harmonious design—sizes 6x1½, 6x1, and 4¼x1½ in.

Planatile Buttress Base

Here is a Robertson innovation that replaces the old-style standard cove bases with curve. Robertson Buttress Bases, Nos. 8, 9 and 10, represent a great improvement both in ease of cleaning and in correctness of modern design. The 45 degree plane between the right angle planes is a decorative principle that is as modern as the new types of construction. It provides no lodging place for dirt and dust. It is easier to clean and distinctive in appearance. Sizes 6x6, 6¾x4¼, and 4¼x4¼ in.



Art and Designing Department Will Co-operate with Architects and Designers

ROBERTSON ART TILE COMPANY maintains a constant and intimate service to architects, designers and builders in developing new effects in tile. Write for additional literature or for suggestions regarding any decorative problem.

These Exclusive Planatile Designs Are Shown on This Page

(17) Flash (Incised).
(18) Trileaf (Incised).
(19) Blossom (Incised).
(20) Ripple Wave (Relief).
(21) Angle Stripe (Relief).
(22) Reed Stripe (Relief).
(23) Valance (Incised).
(27), (28), (29), (30), (31), (32), (33) (shown below). Filigree Decorative Strips for use with Planatile. These designs form a distinctive series providing a higher degree of ornamentation, consisting of black, silhouetted on white ground and inlaid with silver or gold.

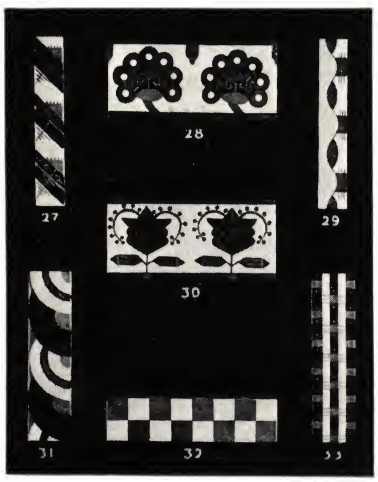
Robertson Set-back Caps

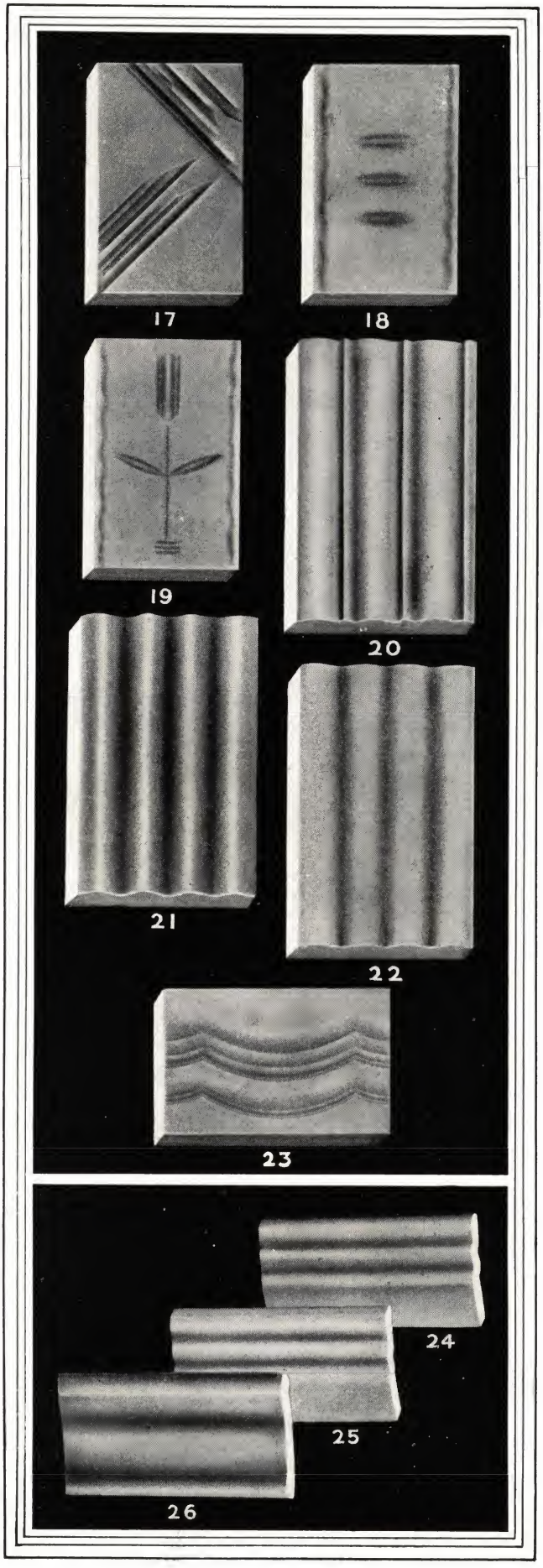
(24) and (25) Among other Robertson innovations are these new wainscot caps. In this period of set-back architecture these new Robertson Set-back Caps are particularly appropriate in design, and a departure from the old-style method of connecting the plaster and tile wainscot.

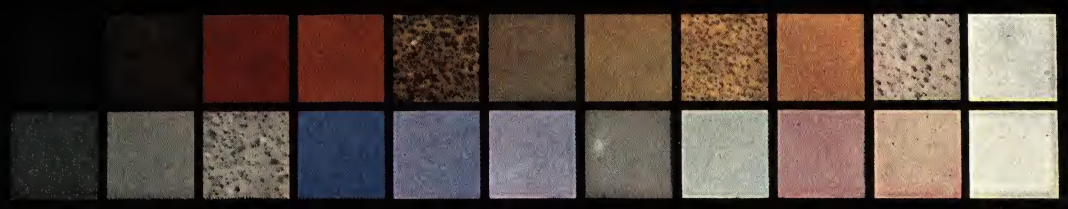
(26) *The Plastagard Cap* is another Robertson innovation which corrects a condition that has been deplored by architects. In cleaning or dusting the old-style cap, the soiled cloth left an unsightly smudge on the plaster immediately above the wainscot. The Plastagard Cap, designed to correct this, makes it unnecessary to bring the cloth in contact with the plaster wall.

Robertson Flormatex

Flormatex is the newest Robertson idea in floor tiles, providing a matt-glaze tile with a semi-vitreous body for interior floors, harmonizing or matching in color range and texture with Planatile and plain color glazed wall tile. It is excellent for use on bathroom floors, or wherever there is no excessive amount of wear. It is especially suited for matched walls and wainscots. Its use is multiplied by a wide variety of sizes: $1\frac{1}{16} \times 1\frac{1}{16}$, $2\frac{1}{8} \times 2\frac{1}{8}$, $4\frac{1}{4} \times 4\frac{1}{4}$, 3x3, $2\frac{3}{16} \times 1\frac{1}{16}$, and $2\frac{1}{8}$ and 4-in. hexagons. Flormatex has been tried out over a period of time in actual overhard usage and has stood all tests. Architects will find Flormatex an entirely new kind of tile for floors and walls.







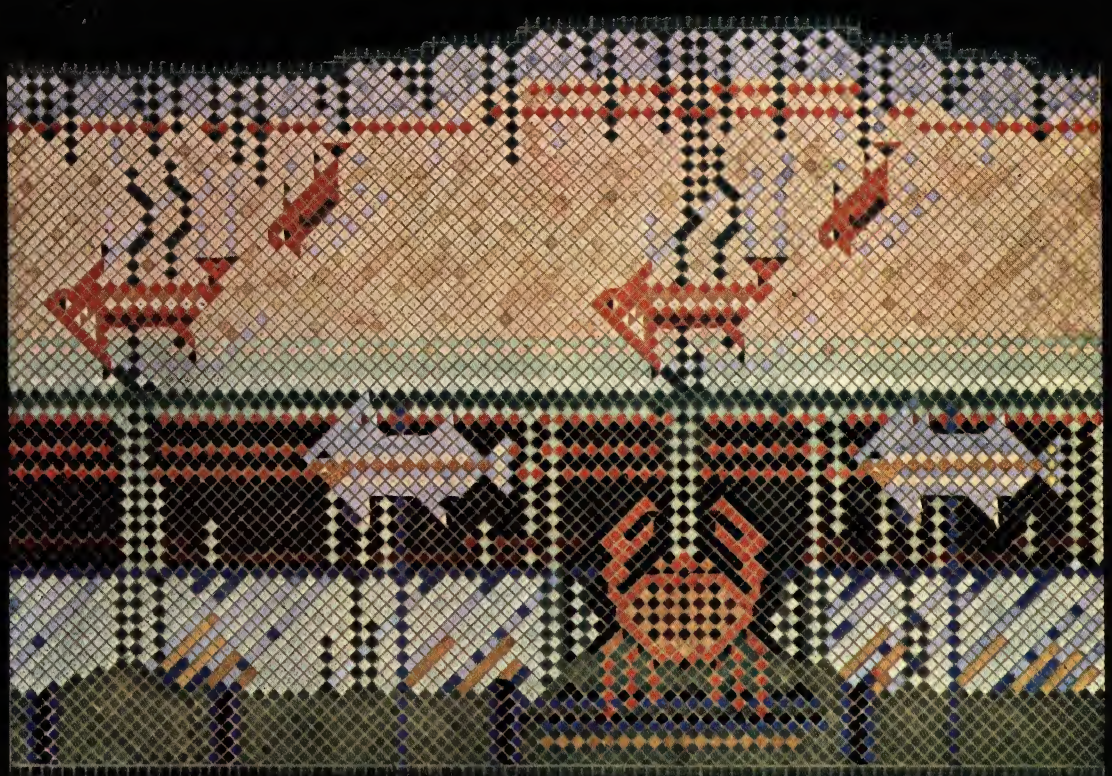
Chromatex—Another Exclusive Robertson Feature

Chromatex is a *non-slip* ceramic mosaic tile, in new sizes, with a textured surface that is equally effective for use on walls and floors. It provides opportunity for color effect and design at an installed price approximating that of white glazed tile.

The wainscot shown below is installed around the swimming pool at the Seaman's Y. M. C. A., New York. Here is an example of unusual effects to be gained by blending an almost endless variety of colors. Chromatex is especially suitable for long wearing floors and swimming pools, where a hard vitreous *non-slip* tile is required. Chromatex is made in these sizes: 1½-in., 1-in. and ½-in. squares; 2x1 and ½x1 in. Color scale above shows wide range of colors and textures available in Robertson Chromatex.

Special Swimming Pool Service

We are equipped to provide a special technical advisory service to architects in designing and construction of swimming pools, private or public. Chromatex has been widely used in swimming pools, ranging from the very first tiled pool in America at Old Point Comfort, Virginia, to the magnificent smimming pool at the St. George Hotel, Brooklyn, N. Y., one of the largest in the world.





ARCHITECTURAL HANDBOOK OF ROMANY TILES

No. 3

UNITED STATES QUARRY TILE COMPANY

Manufacturers of Romany Tiles for Floors and Walls

PARKERSBURG, W. VA.

FACTORIES: PARKERSBURG, W. VA.; EAST SPARTA, OHIO

BRANCH OFFICES

NEW YORK, N. Y., Room 508, 101 Park Avenue
CHICAGO, ILL., 1524 Southwestern Avenue
PHILADELPHIA, PA., 2401 Chestnut Street
ST. LOUIS, MO., 5535 Rosa Avenue
CLEVELAND, OHIO, 5005 Euclid Avenue
NEW ORLEANS, LA., 824 Carondelet Street
JACKSONVILLE, FLA., 1365 Edgewood Avenue
MT. VERNON, OHIO, Telephone Building
LOS ANGELES, CALIF., 445 South La Brea Avenue

Member of Associated Tile Manufacturers

QUARRY OR PROMENADE TILES
(Unglazed)

Romany Rainbow
(Made in Light Blend, Dark Blend and Full Range)
Romany Redflash — Romany Red
Romany Grey — Romany Brown

(See page 5 for illustrations)

ROMANY TILES
TRADE-MARK

GLAZED QUARRY TILES
(On Red Body)

Light Green — Brown
Dark Green — Grey
Light Blue — Amber
Dark Blue — Bright Black
Tan — Matt Black
Phantom Red

(See page 6 for color reproductions and numbers)

GLAZED WALL TILES
(On Buff Body)

MATT

Light Green — Light Grey
Dark Green — Grey
Light Blue — Dark Grey
Dark Blue — Peach
Ivory — Cinnamon

SEMI-MATT

Light Green — Dark Blue
Dark Green — Orchid
Light Blue — Black

BRIGHT

Green — Dark Buff
Blue — Black
Lilac — Grey
Clear Glaze on Buff Body

SPECIAL COLORS: Grenadine Red — Scarlet Flambé

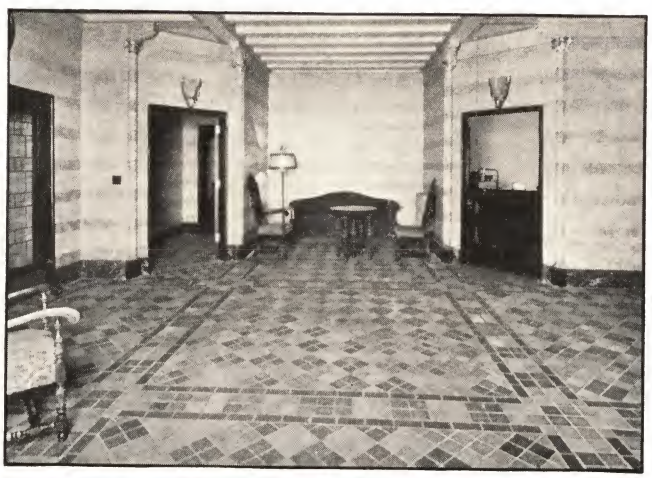
(See pages 3 and 4 for color reproductions and numbers)

GLAZED FLOOR TILES
(On Buff Body)

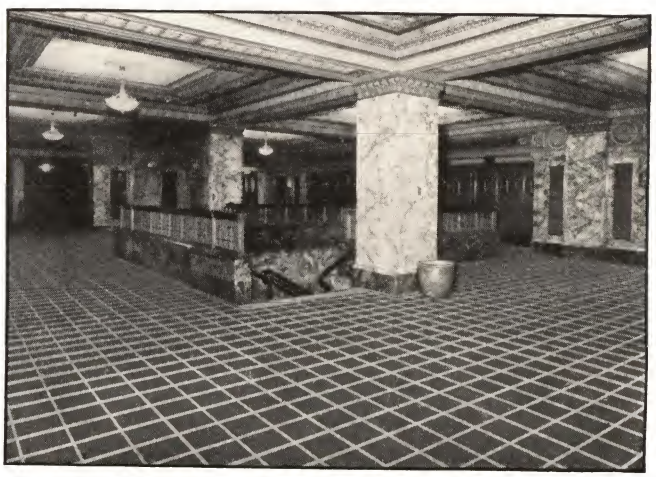
3 in. Square—3 in. Hexagon—2 in. Hexagon—All 7/16 in. thick

Furnished in all Matt and Semi-Matt colors listed above under Glazed Wall Tiles

(See page 4 for color illustrations)



Evangelical Deaconess Hospital, Cleveland, Ohio
A. E. Skeel, Architect
Addison-Branning Co., Tile Contractors



Public Auditorium, Cleveland, Ohio
J. Harold MacDowell, Architect
Brockman-Narovec Co., Tile Contractors

RENAISSANCE OF COLOR

Tiles made from clay have a history of usefulness as old as the records of man. More than six thousand years ago the ancient Egyptians and Babylonians utilized these colorful ornaments in their architecture. Many of these age-old tiles may be found in excellent state of preservation on the floors of ancient ruins which have been uncovered recently.

At the present time, we are in a period of renaissance in the use of colored tiles. Of course, the bath in American homes has, for many years, been an outstanding example of the use of this product. But even in the bath today, the old-fashioned white tiles have given way to the softer and warmer tones of tan, grey, blue, green and dark reds. And this trend is spreading rapidly to kitchens, sun-rooms, halls, living rooms and dining rooms.

In this renaissance, Romany Tiles are playing a conspicuous part. Their advantages are so obvious—their cost, measured in years of service, so comparatively low—their ease of cleaning such a boon to the housewife, and their beauty so warm and unobtrusive, that it is rare indeed today to find a home or more pretentious structure where at least a partial use of such tile is not made.

Romany Tiles are made only in the colors listed on preceding page. The specific colors have been selected with greatest care and upon the sound advice of decorators who have anticipated the trend of color popularities of the future. The possible number of colors, shades and tints are legion, but the selected group shown in the following pages, including glazed and unglazed tiles, are those which will remain in general favor—their distinctive warmth of tone can seldom be duplicated by other manufacturers.

We have long been aware of and have anticipated the trend toward color in architecture. We have directed our attention to producing tiles in a complete line of colors, textures, sizes and shapes. A Romany Tile installation in no way gives the impression of a ready-made or stock effect. There are no other products that lend themselves so readily to the execution of distinctive color treatments. The present trend toward color and textural variety, either on walls or floors, involves no sacrifice whatever of the recognized sanitary properties for which tiles are so well known.

SCALE AND PATTERN

Size of the space to be tiled and the architect's or decorator's desire to increase or decrease the appearance of size influence the size of tiles to be used. Sizes of quarry tiles range from 1-in. squares to 12-in. squares, with a score of sizes and shapes between. *(See page 5 for complete list of sizes).*

Glazed wall tiles on buff body are made in 3x3, 3x6, 4¼x4¼ and 6x6 in., with all the usual trim shapes and angles. *(See pages 3 and 4 for complete list of sizes).*

The appropriate patterns in floor designs which are suitable for period treatments can be made from the quarry tile shapes shown on page 10. Reproduction of some of the most commonly used designs for period interiors are shown on pages 11, 12 and 13, while any of the more modern patterns can be laid with the stock sizes and shapes.

The real beauty of tile lies in the great variety of patterns which may be obtained. Because of the wide variation in architectural applications, it is literally impossible to show all the effects which may be obtained through the use of Romany Tiles. Designs must be tailored, in many instances, to meet an individual requirement.

For this reason, we have a complete department which is constantly engaged in working out desirable and harmonious patterns for architects. This department is always at your service. A brief outline of your problems will receive careful study and bring complete suggestions.



Berston Field House, Flint, Mich.
FLINT TILE AND FIREPLACE CO., Tile Contractors



Holy Family School, Price Hill, Cincinnati, Ohio
KUNZ AND BECK, Architects
MARTINA MOSAIC AND TILE CO., Tile Contractors

ROMANY BRIGHT GLAZED WALL TILES
(On Buff Body)

Unusually Durable

Romany Glazed Wall Tiles represent a decided forward step in the manufacture of this type of tile. The biscuit or body of the tile is so compounded that its co-efficient of expansion and contraction is practically identical with that of the glazing coating. Due to this fact and the extremely high temperatures at which the tilcs are fired, an unusually durable tile is produced.

Surface Finish

Romany Glazed Wall Tiles have a smooth, hard surface and a depth of coloring which is most attractive.

Due to the smooth, even surface, cleaning is a simple operation. Repeated cleaning has no effect on the surface or coloring of the tile. The tiles are unaffected by strong cleaning solutions.

Sizes

All standard sizes are furnished in Romany Bright, Semi-Matt and Matt Glazed Wall Tiles as shown in the tables below each group of color illustrations. Floor tiles with Buff Body are made only with Semi-Matt and Matt Glazed colors and in the sizes shown below those color illustrations on the opposite page.

Trimmers

A complete list of the standard trimmer shapes with all angles are furnished in any of the colors and glazes shown here. The chart of trimmer shapes shown by the Associated Tile Manufacturers in the 1932 edition of Sweet's Catalogue may be followed.

Bathroom Accessories

A complete line of tile bathroom accessories which are colored and glazed to harmonize with Romany Glazed Wall Tiles; white and black pyralin towel bars; opal, clear crystal and black glass shelves are always available.

Size, Inches	*Description*
4¼ x 4¼	Robe Hook
3 x 3	Robe Hook
3 x 3	Strop Hook
4¼ x 4¼	Strop Hook
3 x 3	Door Stop
4¼ x 4¼	Door Stop
4¼ x 4¼	Towel Bar Brackets
6 x 3	Towel Bar Brackets
4¼ x 4¼	Shelf Brackets
6 x 3	Shelf Brackets
4¼ x 4¼	Tooth Brush Holder
4¼ x 4¼	Tooth Brush and Tumbler Holder
6 x 3	Tooth Brush Holder
6 x 3	Tooth Brush and Tumbler Holder
4¼ x 4¼	Recessed Soap Holder
6 x 6	Recessed Soap Holder
4¼ x 4¼	Projecting Soap Holder
6 x 3	Projecting Soap Holder
6 x 6	Recessed Sponge Holder
4¼ x 4¼	Projecting Tumbler Holder
6 x 6	Recessed Tumbler Holder
4¼ x 8½	Combination Soap and Grab
6 x 6	Combination Soap and Grab
6 x 6	Paper Holder
18	1 in. Square Pyralin Towel Bar (White or Black)
24	1 in. Square Pyralin Towel Bar (White or Black)
30	1 in. Square Pyralin Towel Bar (White or Black)
36	1 in. Square Pyralin Towel Bar (White or Black)
18	Shelf 5 in. Wide, Opal
24	Shelf 5 in. Wide, Opal
30	Shelf 5 in. Wide, Opal
18	Shelf 5 in. Wide, Crystal
24	Shelf 5 in. Wide, Crystal
30	Shelf 5 in. Wide, Crystal
18	Shelf 5 in. Wide, Black Glass
24	Shelf 5 in. Wide, Black Glass
30	Shelf 5 in. Wide, Black Glass

ROMANY BRIGHT GLAZED WALL TILE
(On Buff Body)



863—Grey | 732—Lilac | 716—Green* | 723—Blue

743—Clear Glaze | 745—Buff | 759—Black

*718—Dark Green (Slightly darker than No. 716)

SIZES, INCHES

Wall Tiles	6x6	6x3	4¼x4¼	3x3	6x1	6x½

Applications

The delicate colors of Romany Glazed Wall Tiles make them particularly adaptable for the home and apartment.

They are also appropriate for commercial and public buildings as well, being used in restaurants, flower shops, beauty parlors, display rooms, rest rooms, hallways, lavatories and similar applications. The colored tiles are especially desirable where a cheerful sunny effect is wanted.

The Clear Glaze Wall Tiles are of particular interest to industrial users. This color is adaptable to all types of commercial uses, especially when used with a trim of Bright Glaze Black Tiles.

Specifications

For specifications for Romany Glazed Wall and Floor Tiles, see the complete specifications of the Associated Tile Manufacturers, New York, N. Y.

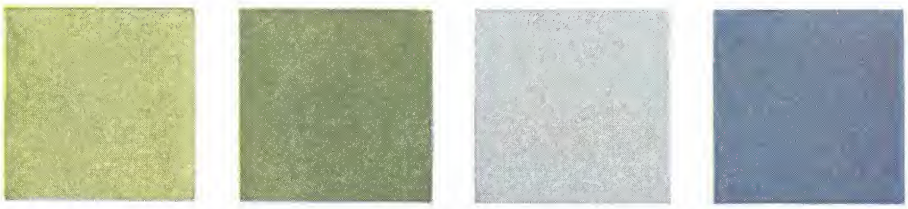
Samples

Samples of Romany Glazed Wall and Floor Tiles will be sent free of charge, prepaid, upon request.

ROMANY MATT GLAZED WALL AND FLOOR TILES
(On Buff Body)



342—Ivory | 382—Peach | 384—Cinnamon | 361—Light Grey*



314—Green | 316—Green | 322—Blue | 324—Blue

*362—Grey; 363—Dark Grey

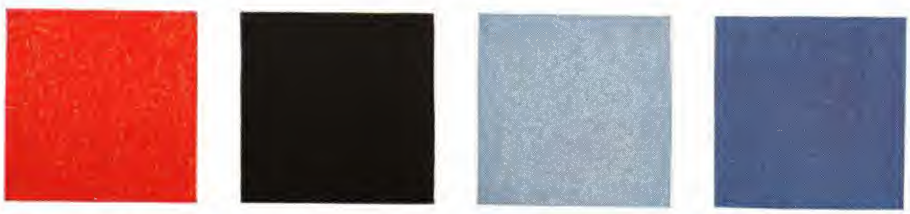
SIZES, INCHES

Wall Tiles.....	6x6	6x3	4¼x4¼	3x3	6x1	6x½
Floor Tiles.....	3x3x $\frac{7}{16}$		3-in. hex. x $\frac{7}{16}$		2-in. hex. x $\frac{7}{16}$	

ROMANY SEMI-MATT GLAZED WALL AND FLOOR TILES
(On Buff Body)



234—Orchid | 212—Green | 214—Green*



Grenadine Red** | 258—Black | 222—Blue | 224—Blue

*216 Dark Green (Slightly darker than No. 214)

**Scarlet Flambé (A rich two-color blend of dark red and black)

SIZES, INCHES

Wall Tiles.....	6x6	6x3	4¼x4¼	3x3	6x1	6x½
Floor Tiles.....	3x3x $\frac{7}{16}$		3-in. hex. x $\frac{7}{16}$		2-in. hex. x $\frac{7}{16}$	

ROMANY QUARRY OR PROMENADE TILES
(Unglazed)

Composition

Romany Quarry Tiles are made from the highest grade shales and are burned to vitrification resulting in tiles of the utmost durability. This has been proved by the large use of Romany Quarries on the floors and walls of railway depots, schools, etc., where permanence is an outstanding requisite.

Low Absorption

In baths, kitchens and other places where, for sanitary reasons, absolute cleanliness is essential, a flooring of low absorption should be installed. There moisture cannot enter, germs, bacteria and other foreign matter will remain on the surface and may be removed with ease.

Romany Tiles are impervious to moisture, stains and dirt. They have withstood the test required by the United States Government, viz., "An application of nitric acid and 15% of sodium nitrate solution".

Resist Abrasion

As an indication of the resistance to abrasion from constant use under heavy foot traffic, Romany Tiles were subjected to rigorous tests under the direction of the Navy Department in competition with other materials. The results of this test are as follows:

Percentage of Loss in Abrasion Test

Romany Tiles	6.5
Terrazzo	16.1
Portland Cement	16.8
Marble	23.3
Wood	33.8
Linoleum	72.9

The lower the abrasive loss, the greater the resistance to wear. Interpreted in every-day use, this means that these tiles retain their bright fresh appearance unmarred through years of the most exacting service.

Colors and Shapes in Which Romany Tiles Are Made

The Standard Shapes and Sizes of Romany Quarry Tiles, listed in table below, are made in unglazed colors shown below and in glazed colors shown on page 6.

Shapes	Sizes, Inches			
Square and Rectangular	1 x1 x¾ 1¾x1¾x¾ 2¾x2¾x½ 2¾x2¾x¾ 1¾x4 x¾	2¾x6x½ 2¾x6x¾ 4 x4x½ 4 x4x¾ 6 x6x¾	6 x9 x ¾ 8 x8 x ⅞ 9 x9 x ⅞ 5½x5½x1¼ 5¾x5¾x1¼	5½x12x1¼ 5¾x12x1¼ 6 x12x1¼ 12 x12x1¼
Elongated Hexagon	4x8¼x¾ See page 10			
Diagonal Halves	2¾x2¾ 4 x4	6x6 8x8	9x9 12x12	5½x5½ 5¾x5¾
Bull Nose	2¾x2¾ 2¾x6	4x4 6x6	6x9 8x8	9x9 6x12 12x12
Cove Base Wainscot Cap Angles, Stops Plinths Threshold Tiles	See pages 9 and 10 Also 9x9 Special Cove Base			
Stair Treads	6x6x1¼	6x12x1¼	12x12x1¼	
Special Stair Treads or Window Stools	See page 10			
Brickettes	2¼x8x¾			

Surface Finish

The flint-hard, abrasion resisting surface of Romany Tiles produces a dustless surface which is the acme of cleanliness. Furthermore, since no cracks or crevices can appear, these tiles are outstanding in their ease of cleaning. An occasional application of a damp cloth keeps the surface bright, clean and beautiful.

Colors

Romany Tiles are manufactured in the following colors: Rainbow, Redflash, Grey, Brown and Red. (Complete description follows.)

Romany Rainbow—Romany Rainbow colors range from light buff through tan and orange to dark brown, and there is a pleasing variation of color over the face of each tile. They may be selected, if preferred, in "Dark Range", "Light Range" or "Full Range", combining both. This is a matter of personal taste or may be dictated by the location under consideration. See page 7.

Romany Redflash—Romany Redflash Tiles are supplied in a full range of colors from deep red to brown and gunmetal on a red background. There is a distinct variation in shading over the face of the tiles. The full beauty of the blending of these colors can be seen from an ample assortment of samples. See page 8.

ROMANY QUARRY OR PROMENADE TILES
(Unglazed)



Rainbow Redflash Grey Brown Red

Romany Grey—Romany Grey Tiles are extensively used both alone and in combination with other Romany colors. There is a beautiful warmth to the appearance of these tiles which is not usually associated with this color.

Romany Brown—Romany Brown Tiles are of a soft, pleasant, almost chocolate color, which blends admirably with all the other Romany colors. Romany Browns are used alone or in combination with other Romany Tiles as the application and personal taste may dictate.

Romany Red—Romany Red Tiles are a deep rich red in color. Used alone, or in combination with other Romany Tiles, the Romany Reds make a most beautiful and tasteful floor and wainscot.

Grades

Romany Improved Tiles are supplied in three different grades. The materials and manufacturing methods are the same for all grades, but the difference between the grades is as follows:

Romany Improved Select—These tiles are sound and solid in every particular. They are approximately level, square and true and so accurately sized that they may be laid with "string joints." They are assorted to shade. *(See preceding page for shade assortments of Romany Rainbow and Romany Redflash.)*

Romany Improved Standard—Same as Select, assorted to size but not to shade.

Romany Seconds—These tiles are those rejected from other grades. The imperfections consist of slightly broken corners and chipped edges. There are no cracks running into the tiles. They are not selected with as much care as to level surface and regular lines, but will make a good roof, or a satisfactory floor where first-class tiles are not required. Selected to size and shade.

Cost

No other floor and wall surfacing material offers more practical durability, beauty and upkeep economy at anything near the low price at which Romany Quarry Tiles are offered.

Samples

Samples of Romany Tiles will be sent free of charge, prepaid, upon request.

Sold Only Through Tile Contractors

As only high grade workmanship will produce satisfactory results in the use of tiles, Romany Tiles are sold only through tile contractors.

Specification for Romany Quarry Tiles

Furnish all materials and labor necessary for the completion of the tile work.

The Basic Specification for Tilework, Second Edition, 1924 (or last edition) as issued by the Associated Tile Manufacturers, New York, N. Y., in so far as any portion is applicable to this building, is hereby made a part of this specification and of the contract.

Tile Floors—Will be required in the following rooms and areas (list rooms):

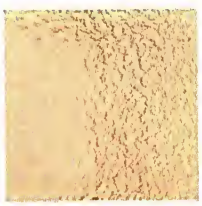
The tiles shall be laid in accordance with Field Pattern No. , to be composed of (state sizes) tiles in Romany [Rainbow], [Redflash], [Red], [Grey], [Brown] color and Border Pattern No. in Romany [Rainbow], [Redflash], [Red], [Grey], [Brown] color.

Tile for base shall be Cove Base Tile No. .. with necessary angles, stops and plinths in Romany [Rainbow], [Redflash], [Red], [Grey], [Brown] color.

All tiles to be Romany Quarry Tiles, Select Improved Grade, as manufactured by UNITED STATES QUARRY TILE CO., Parkersburg, W. Va.

Tile Wainscot—Shall be provided at all partition walls and other fixed vertical surfaces in the following rooms and areas. (List rooms in which tile wainscoting will be required.) Tile wainscoting to be approximately ft. in. high above finished floor level and to be composed of tiles laid [Broken Joint], [Straight], (or in) [Pattern No. ....] in Romany [Rainbow], [Redflash]], [Red], [Grey], [Brown] color. Finish wainscoting with Tile Cap No. .... in Romany [Rainbow], [Redflash], [Red], [Grey], [Brown] color with all necessary angles and stops. Bullnose tiles with ¾ in. radius to be used at all external corners and around all openings not cased.

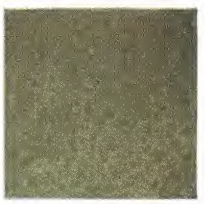
ROMANY GLAZED QUARRY TILES FOR FLOORS AND WALLS
(On Red Body)


443—Tan


447—Brown


487—Amber


414—Green


418—Green


426—Blue


428—Blue


464—Grey


458—Black


559—Bright Black

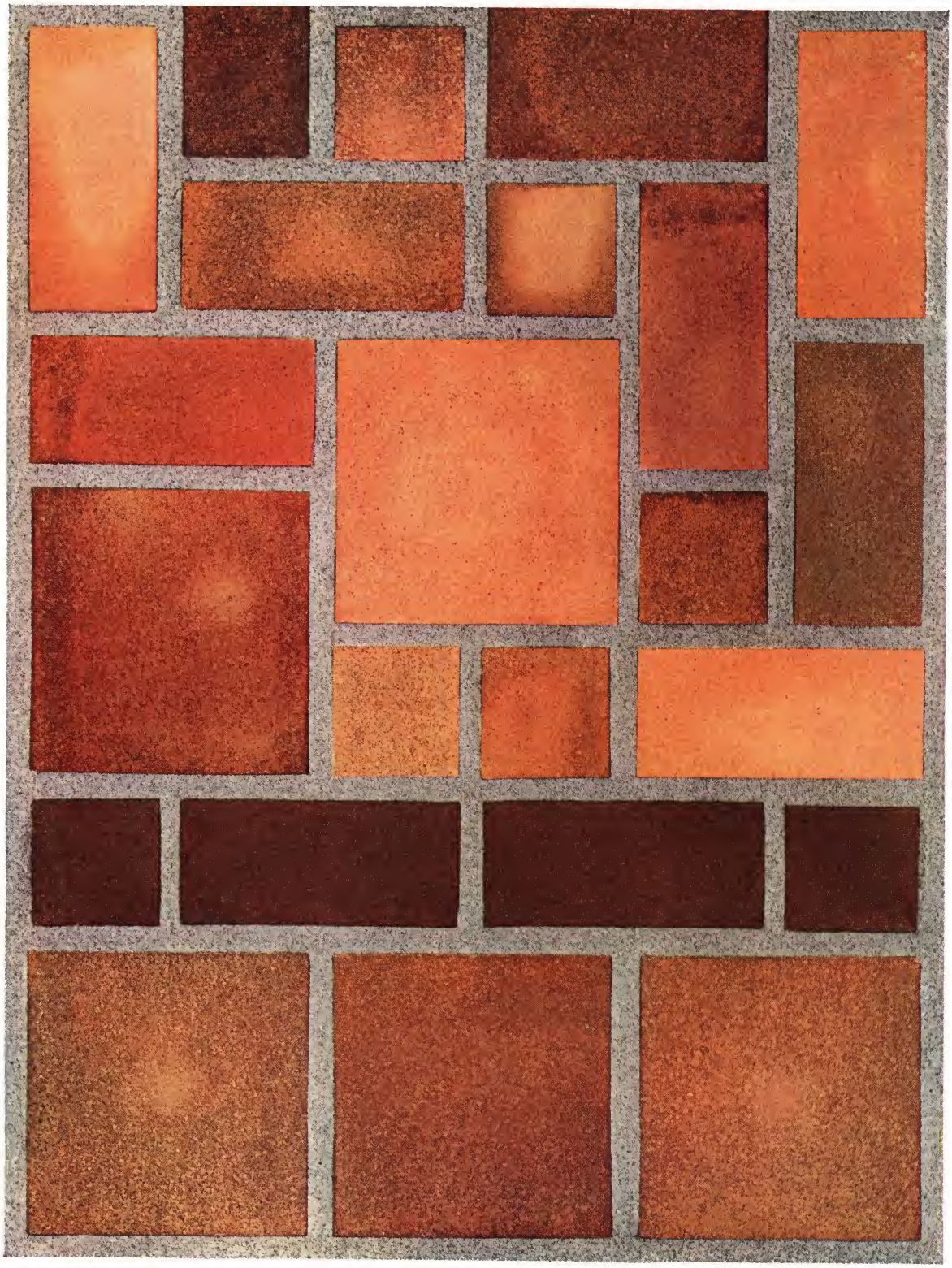
Phantom Red (Slightly darker than Grenadine Red shown on page 4)

SIZES, INCHES

9 x9 x⅞	8x8 x⅞	6 x9 x¾	6 x6x¾	4 x8¼x¾ hex.
4 x4 x¾	4x4 x½	2¾x6 x¾	2¾x6x½	2¾x2¾x¾
2¾x2¾x½	4x1¾x¾	1¾x1¾x¾	1 x1x¾	

For details of Glazed Quarry Tile Trim, see pages 9 and 10.

ROMANY RAINBOW TILES—FULL RANGE



Three-Stone Ashlar Random Pattern No. 1500
Border Pattern No. 2502

Romany Rainbow Tiles

Available in either the "light blend" consisting only of the lighter tiles shown here; in the "dark blend" which consists of the darker tiles; or in the "full range" as shown.

The beautiful colorings in either blend make a floor that is appropriate for almost every space because its scale, pattern, color and texture harmonize with every condition.

The colors and texture are unimpaired by the most severe usage and clean readily with a minimum of effort.

ROMANY REDFLASH IN DULL BROWN TONES

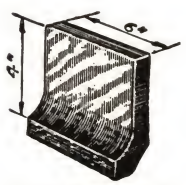


Two-Stone Ashlar Pattern No. 1504
Border Pattern No. 2513

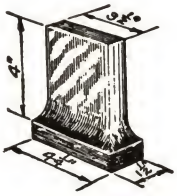
Romany Redflash Tiles

Romany Redflash Tiles find greatest favor where subdued variation of the familiar "red quarry" floor is preferred.

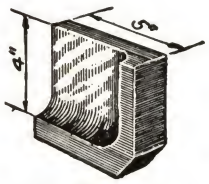
They are not as brilliant in colorings as the Romany Rainbow Tiles and do not attract the same immediate attention to the floor. In libraries, loggias, hallways and where "quietness" without "plainness" is desired, Redflash fit best. Their colors are burned through the entire piece so that their permanence, without scar or mark, is as dependable as that of all other Romany Quarry Tiles.



Cove Base No. 1-B
Also made 9 in. long
Cove Base No. 21-B
5 in. high



Cove Base Angle
External No. 2
Right
No. 22—5 in. high



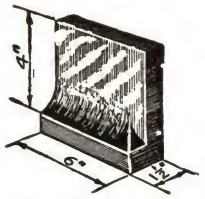
Cove Base Angle
Internal No. 3
Right
No. 23—5 in. high



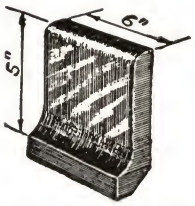
Cove Base Angle
External No. 4
2-in. radius on face
No. 24—5 in. high



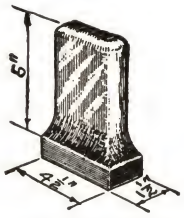
Cove Base Angle
Internal No. 5
2-in. radius on face
No. 25—5 in. high



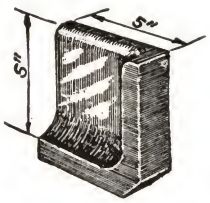
Left Door Step for
Cove Base No. 1
Also made 5 in. high
for Cove Base No. 21



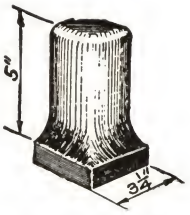
Cove Base No. 11-B
Also made 9 in. long



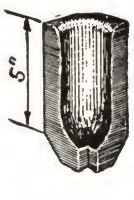
Cove Base Angle
External No. 12
Right



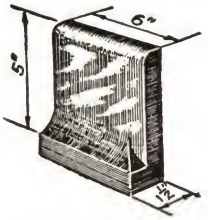
Cove Base Angle
Internal No. 13
Right



Cove Base Angle
External No. 14
2½-in. radius on face



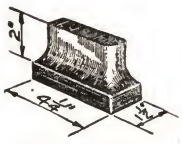
Cove Base Angle
Internal No. 15
1½-in. radius on face



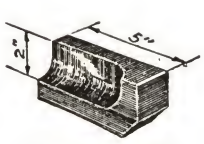
Left Door Stop for
Cove Base No. 11



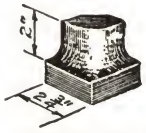
Cove Base No. 31-B
Also made 9 in. long



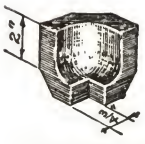
Cove Base Angle
External No. 32
Right



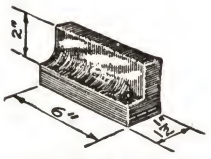
Cove Base Angle
Internal No. 33
Right



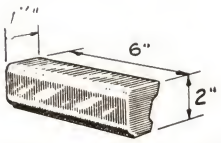
Cove Base Angle
External No. 34
2-in. radius on face



Cove Base Angle
Internal No. 35
2-in. radius on face



Left Door Stop for
Cove Base No. 31



Wainscot Cap No. 501-B
Also made 4 in. long



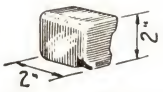
Wainscot Cap Angle
External No. 541-D.
Also made 6 in. long.
¾-in. Radius at Corner.
Right shown



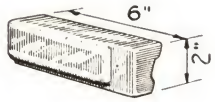
Wainscot Cap Angle
Internal No. 511-D.
Also made 6 in. long
Square Corner.
Left shown



Wainscot Cap Angle
External No. 561
2-in. Radius



Wainscot Cap
Down Angle No. 591



Wainscot Cap Stop No.
571-B. Also made 4 in.
long. Left shown



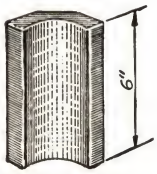
Wainscot Cap Angle
Internal No. 551
2-in. Radius



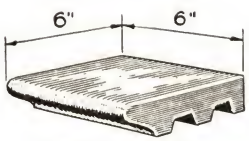
Wainscot Cap Up Angle
No. 581



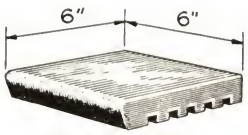
Wainscot Corner
External No. 6-B



Wainscot Corner
Internal No. 7-B



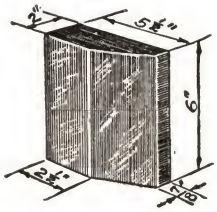
Window Stool Tile



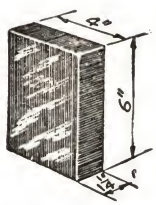
Stair Tread Tile



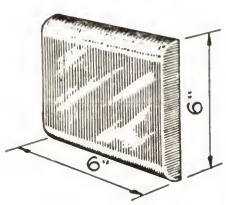
Threshold Tile



Beveled Plinth



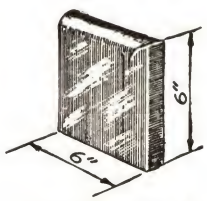
Flat Plinth



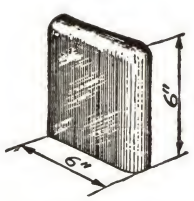
Double Bullnose Tile



Bullnose Tile
Made in various sizes



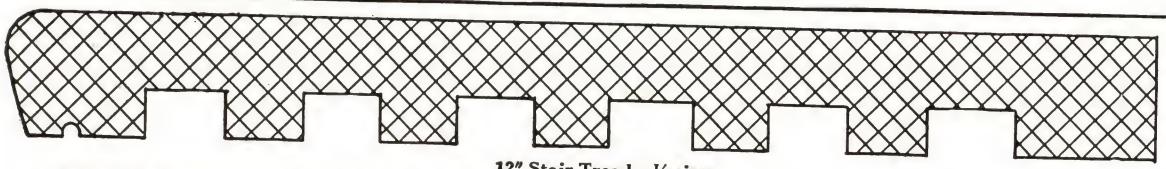
Internal Base Angles
for Bullnose Tiles



External Base Angles
for Bullnose Tiles

QUARRY TILE TRIMMERS

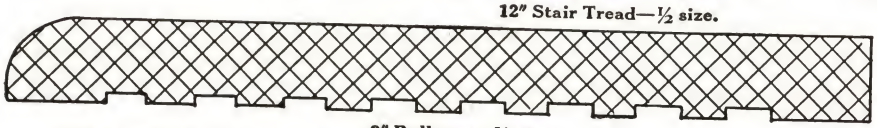
Colors: Red, Grey, Brown, Redflash and Rainbow. Can also be furnished in the Glazed Quarry Tile colors.



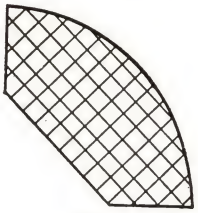
12″ Stair Tread—½ size.



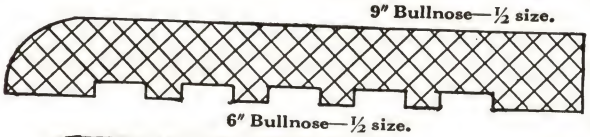
Wainscot Cap
No. 501—½ size.



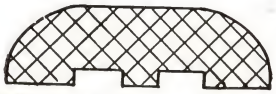
9″ Bullnose—½ size.



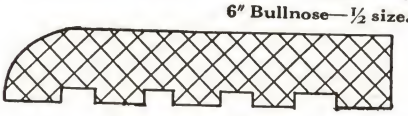
Wainscot
Corner External
No. 6—½ size.



6″ Bullnose—½ size.



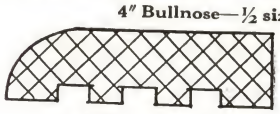
2¾″ Double Bullnose—½ size.



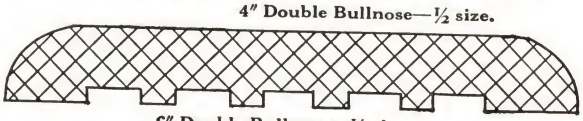
4″ Bullnose—½ size.



4″ Double Bullnose—½ size.



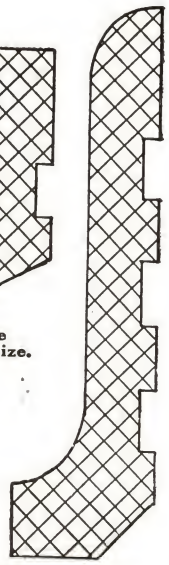
2¾″ Bullnose—½ size.



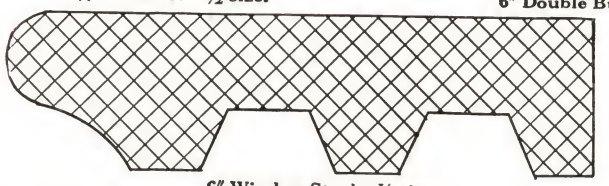
6″ Double Bullnose—½ size.



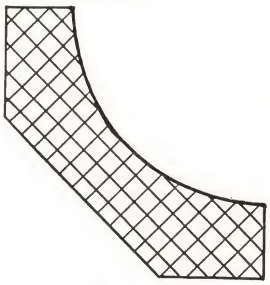
Cove Base
No. 31—½ size.



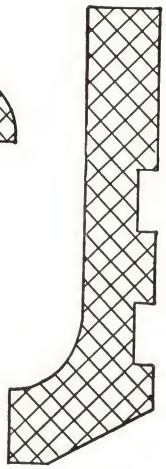
Cove Base No. 11—½ size.



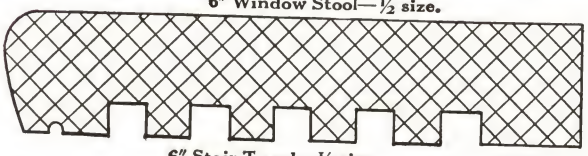
6″ Window Stool—½ size.



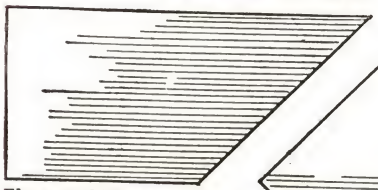
Wainscot Corner
Internal No. 7—½ size.



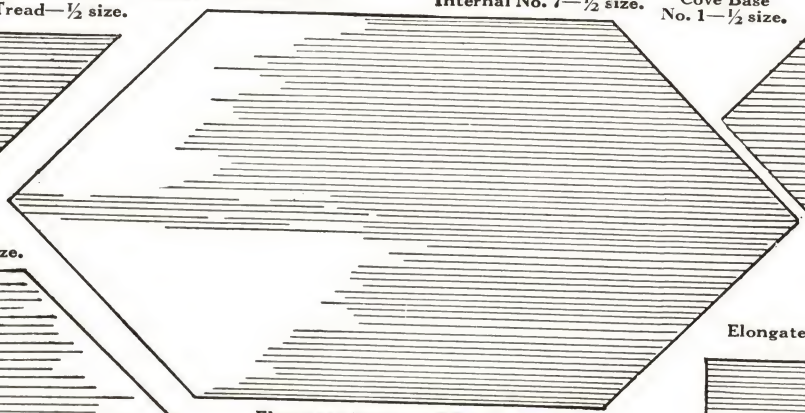
Cove Base
No. 1—½ size.



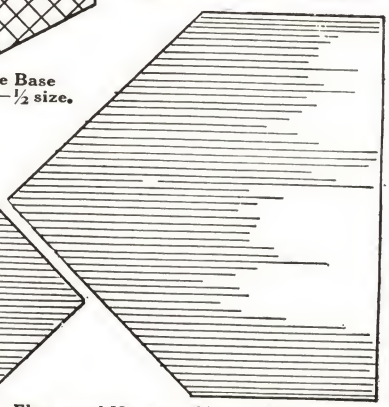
6″ Stair Tread—½ size.



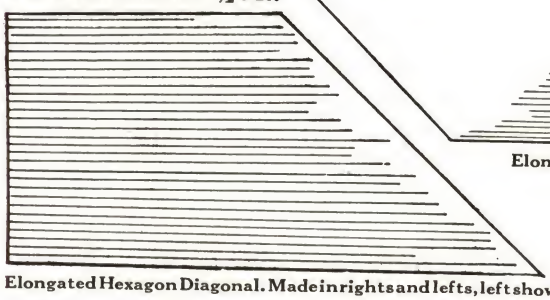
Elongated Hexagon Short
Half Split. Made in rights
and lefts, left shown—½ size.



Elongated Hexagon Tile—½ size.



Elongated Hexagon Short Half—½ size.



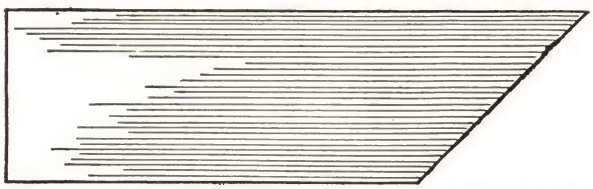
Elongated Hexagon Diagonal. Made in rights and lefts, left shown—½ size.



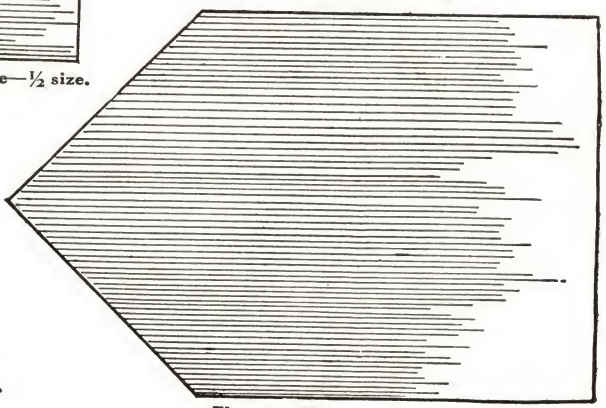
1¾″ x 1¾″ Tile—½ size.



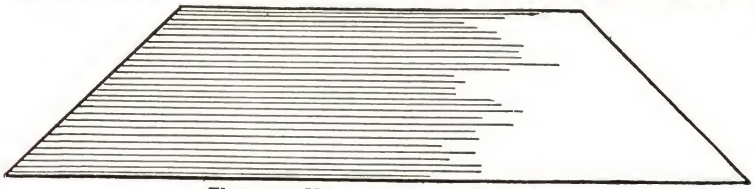
1¾″ x 4″ Tile—½ size.



Elongated Hexagon Square End Split. Made in rights and lefts, left shown—½ size.

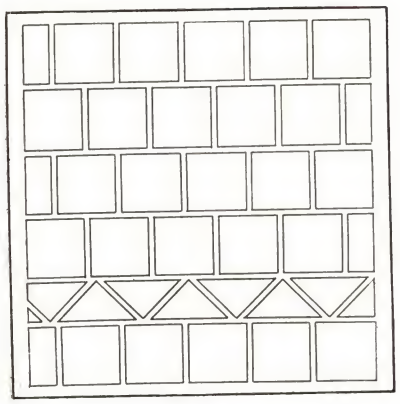


Elongated Hexagon Square End—½ size.



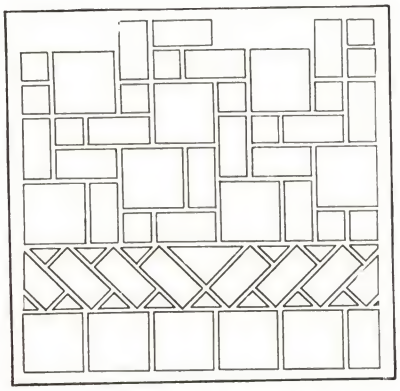
Elongated Hexagon Long Half—½ size.

APPROPRIATE ROMANY TILE PATTERNS FOR PERIOD DESIGNS



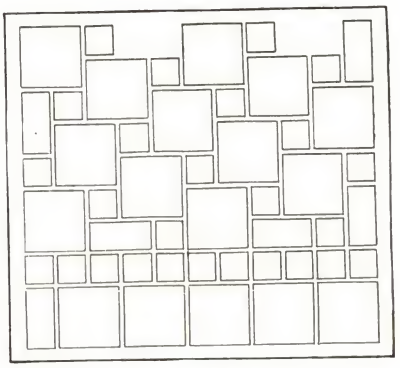
Broken Bond

Romany Field Pattern No. 1502 laid in 6x6 in. tiles.
Romany Border Pattern No. 2503 laid with 6x6 in. tiles and diagonal halves.



Three Stone Ashlar

Romany Field Pattern No. 1500 consisting of 6x6, 2¾x6 and 2¾x2¾ in. tiles.
Romany Border Pattern No. 2511 consisting of 6x6, 2¾x6, 2¾x2¾ diagonal halves and 6x6 in. diagonal halves.



Two Stone Ashlar

Romany Field Pattern No. 1504 consisting of 6x6 and 2¾x2¾ in. tiles.
Romany Border Pattern No. 2513 consisting of 6x6 and 2¾x2¾ in. tiles.

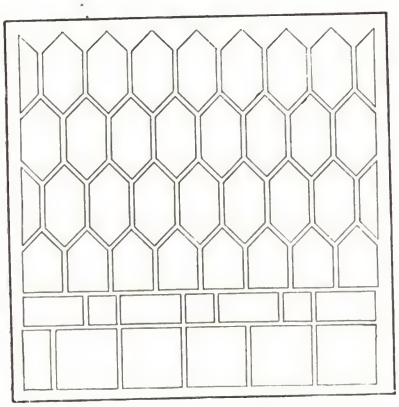
Primitive——Classical——Medieval——Modern——Modernistic

As an aid to the architect and designer in selecting a pattern for a tile floor which will be in harmony with the architectural period of the interior or exterior, the period of design has been noted under each illustration on these pages.

The classification has been determined after much research on our part. Some designs which are more or less common to us have been traced back to early Roman times through manuscript and illustration. We have found that some were taken from one country by another and adopted as its own. For this reason, actual classification is sometimes difficult, the design being more or less common to each country.

The designs illustrated range from a pattern suitable for use in decorative schemes of the primitive peasant type, to harmonious designs for motifs of a medieval character, or interiors strictly classical in their derivation.

We are frequently asked to suggest patterns embodying the proper characteristics for certain periods of design and, in providing this classification, we do so in the hope that it will be of some value in this respect.

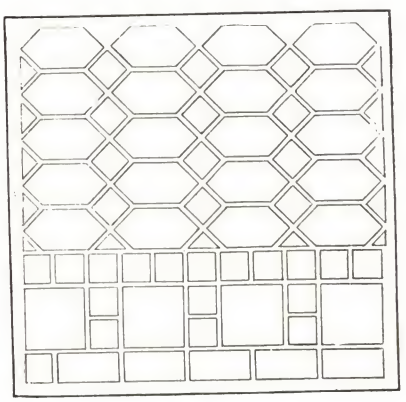


Roman Tiles

Romany Field Pattern No. 1538 consisting of elongated hexagon tiles, 4x8¼ in. with necessary short halves, square end halves or elongated halves to complete the design.
Romany Border Design No. 2535 consisting of 6x6, 2¾x6 and 2¾x2¾ in. tiles.



Romany Tiles Lend Warmth, Friendliness, and Cheer to any Banking Institution

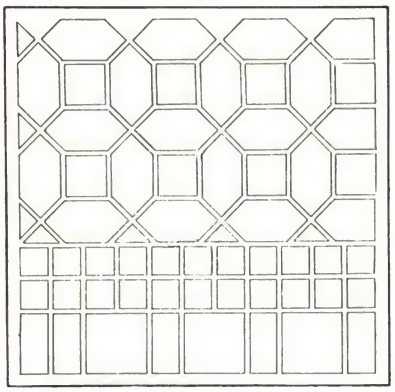


Italian Renaissance

Romany Field Pattern No. 1533 consisting of elongated hexagon 4x8¼ and 2¾x2¾ in. tiles.
Romany Border Pattern No. 2532 (modified) consisting of 6x6, 2¾x6 and 2¾x2¾ in. tiles.

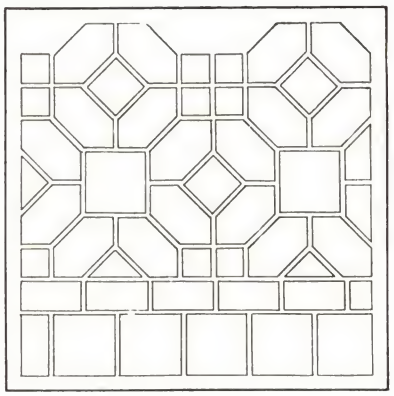
Pattern Number of Romany Field and Border designs do not indicate colors of the tiles desired. When specifying be sure to indicate the exact colors and color combinations of Romany Tiles desired for each.

BEAUTY OF DESIGN AND COLOR WITHOUT LOSS OF PRACTICAL USEFULNESS



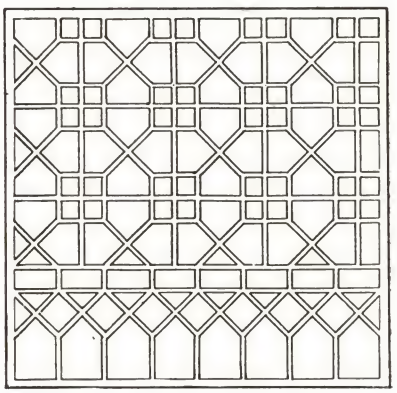
Gothic

Romany Field Pattern No. 1541 consisting of elongated hexagon tiles 4x8¼ and 4x4 in. with the necessary units for completion of the periphery.
Romany Border Pattern No. 2538 consisting of 6x6, 2¾x6 and 2¾x2¾ in. tiles.



Tudor Gothic

Romany Field Pattern No. 1531 consisting of elongated hexagon tiles 4x8¼, 6x6, 4x4 and 2¾x2¾ in., with the necessary units for the completion of the periphery.
Romany Border Pattern No. 2502 consisting of 6x6 and 2¾x6 in. tiles.



Modern Variation of Gothic

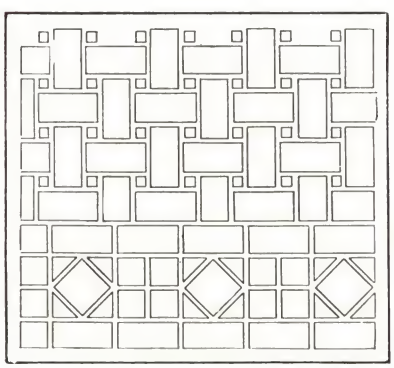
Romany Field Pattern No. 1648 consisting of elongated hexagon short halves 1¾x1¾ in. with necessary units for the completion of the periphery.
Romany Border Pattern No. 2558 consisting of elongated hexagon square end tiles 2¾x2¾, 1¾x4 and 2¾ in. diagonal halves.

Hospitals—Hotels—Schools—Residences

How easy it is to specify "6x6 in. Romany Quarry Tile Floor" but that leaves the selection of sizes, pattern and colors to the time of ordering.

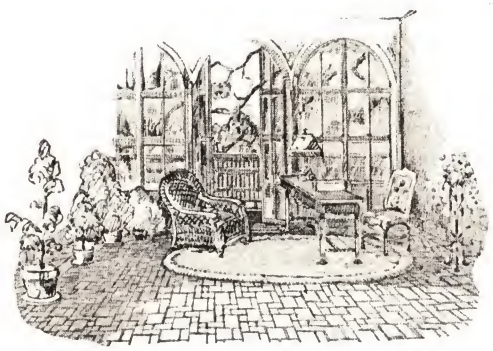
A moment's further consideration of the patterns shown on these pages and the color combinations shown on our pages 5, 6, 7 and 8 would fix the most appropriate pattern in the proper scale and color for your client's protection.

"Cleanliness" is the indisputable reason for the definite preference of Quarry Tiles in the kitchens and dining rooms of every building—*"Beauty"* for use in the lobbies, solariums, play spaces of each of the same buildings—*"Permanence"* in all spaces where economy of original cost, where length of service and where profit on the investment are most desired of all considerations.

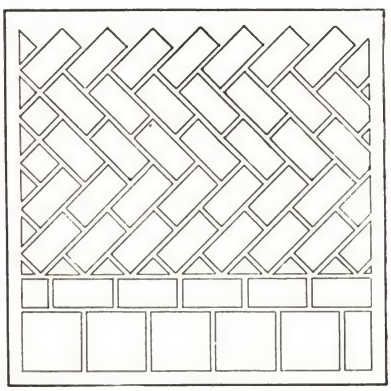


Moorish

Romany Field Pattern No. 1522 consisting of 2¾x6 in. tiles laid in Wickerweave with 1x1 in. dots.
Romany Border Pattern No. 2520 consisting of 4x4, 2¾x6, 2¾x2¾ and 2¾ in. diagonal halves.



The Bright Tones of Romany Tiles Give a Lasting Impression of Discriminating Taste

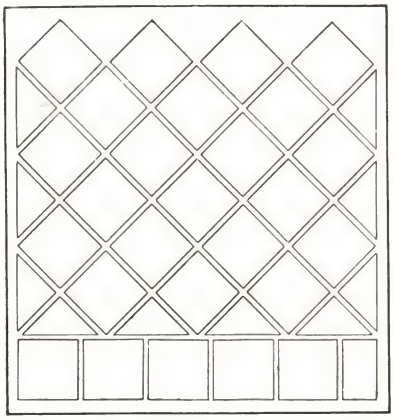


Spanish

Romany Field Pattern No. 1507 consisting of 2¾x6 in. tiles with necessary angles for the completion of the periphery.
Romany Border Pattern No. 2516 consisting of 6x6, 2¾x6 and 2¾x2¾ in. tiles.

Romany Field and Border Pattern Numbers indicate the exact size of the tiles to be used. When other sizes are desired than those shown, the Pattern and Border Numbers change. When modifications are desired, please so indicate by details.

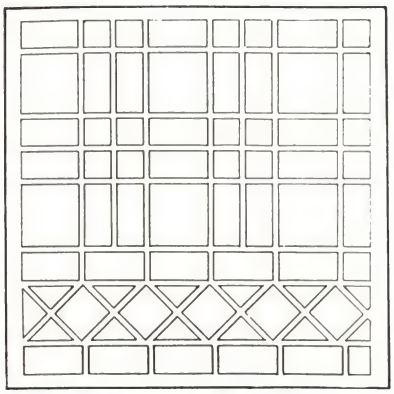
THESE ROMANY TILE PATTERNS ARE NEITHER DIFFICULT NOR EXPENSIVE TO SET



Dutch

Romany Field Pattern No. 1501 consisting of 6x6 in. tiles, laid diagonally with the necessary diagonal halves to finish the periphery.

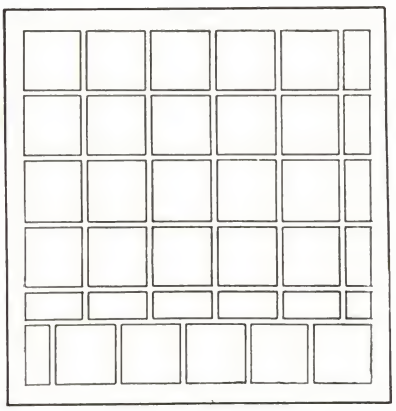
Romany Border Pattern No. 2501 consisting of one row of 6x6 in. tiles only.



Modern Plaid

Romany Field Pattern No. 1512 consisting of 6x6, 2¾x6 and 2¾x2¾ in. tiles.

Romany Border Pattern No. 2504 (modified) consisting of 4x4, 2¾x2¾ and 4x4 in. diagonal halves.



English—Early American

Romany Field Pattern No. 1503 consisting of 6x6 in. tiles laid straight joint square to the sides of the room.

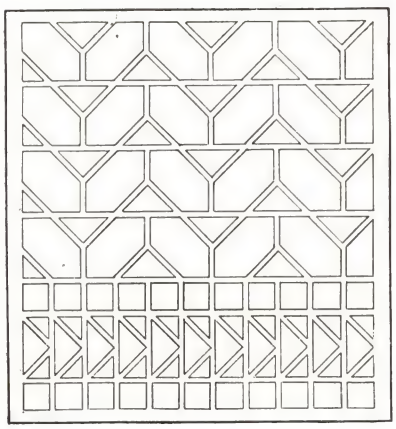
Romany Border Pattern No. 2502 consisting of 6x6 and 2¾x6 in. tiles.

Aluminum Setting Frames

To overcome the practical difficulties of installing Romany Quarry Tiles in the patterns desired, the UNITED STATES QUARRY TILE COMPANY has developed a complete set of light-weight "setting frames." These mark the impression of the pattern upon the setting bed of cement and make it possible for the tile setter to lay these patterns in the minimum of time.

They also insure the faithful reproduction of the pattern specified and eliminate all danger of confusion and error in the finished work. At the same time, equal joints on all sides, straight lines where lines are a part of the pattern, and much better appearance generally are insured.

These frames are available for shipment to the installing contractor with his order for tiles. Many contractors who solicit truly artistic tile work have setting frames for the more commonly used patterns on hand. The intricacies of the pattern should never discourage the architect or designer from having the exact pattern of the floor he prefers.



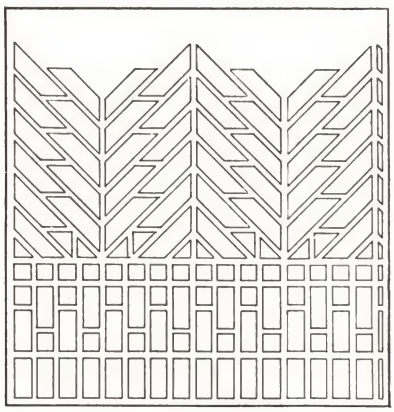
Modernistic

Romany Field Pattern No. 1622 consisting of elongated hexagon tiles, 4x8¼ and 4x4 in. diagonal halves.

Romany Border Pattern No. 2574 consisting of 2¾x2¾, 4x4 in. diagonal halves and 2¾x2¾ diagonal halves.



Romany Quarry Tiles Can Be Used Either for Exteriors or Interiors



Modernistic

Romany Field Pattern No. 1659 consisting of 1¾x7¾ in. elongated hexagon long halves.

Romany Border Pattern No. 2539 consisting of 1¾x4 and 1¾x1¾ in. Tiles.

More than a hundred Romany Field and Border Patterns have been designed. The possibilities are endless. Very special designs will be worked out upon request. Detail drawings will be executed exactly as made.

ROMANY QUARRY TILES

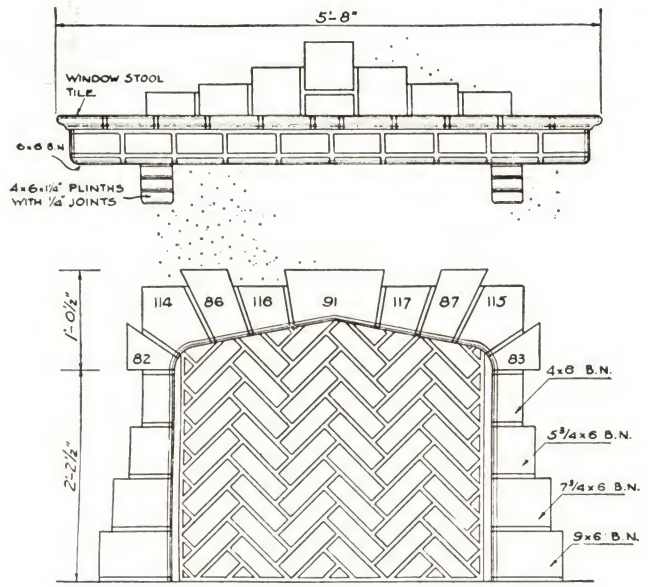
UNGLAZED
In Five Colors

GLAZED
In Eleven Colors

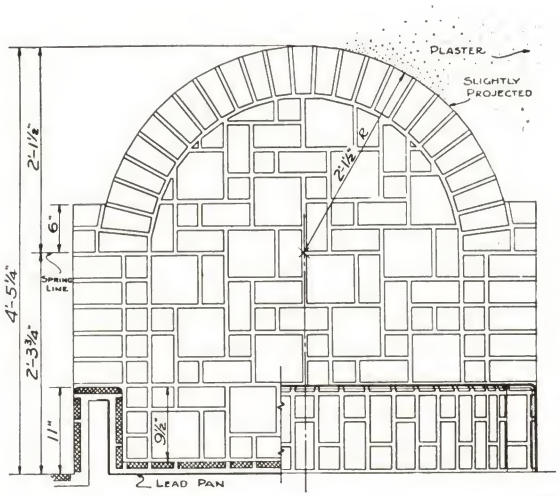
For
Such Special Places
as:

Wainscots
Windows
Counters
Bulkheads
Fountains
Pedestals
Medallions
Stairs
Fireplaces

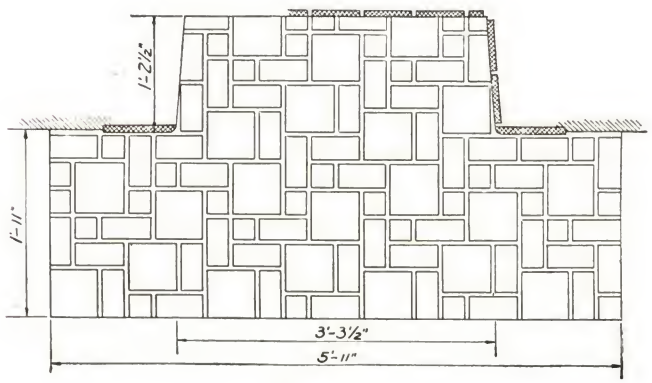
The above are shown in detail in our Pattern Book of Romany Tiles. Write for a copy



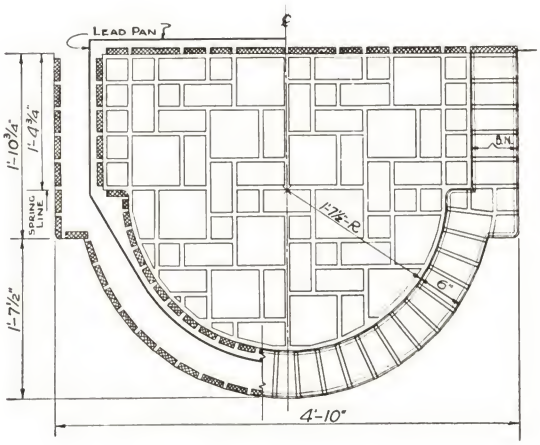
ELEVATION



SECTION – ELEVATION



PLAN



SECTION – PLAN

Romany Mantel Design No. A-9
Scale ½ in. = 1 ft. 0 in.

This mantel can be worked out in many sizes and in any of the Romany unglazed or glazed colors. In Rainbow or Redflash colors it is suggestive of Spanish Architecture.

Several popular designs have been prepared. The dimensions of these designs can be changed to meet many requirements.

Details of a Typical Quarry Tile Fountain
Scale ½ in. = 1 ft. 0 in.

Romany unglazed or glazed Quarry Tiles are equally appropriate for all Romany Field and Border Patterns. Most attractive color combinations can be arranged.

ROMANY
TILES

MADE BY

UNITED STATES QUARRY TILE COMPANY

PARKERSBURG W. VA.

PARDEE MATAWAN TILE COMPANY

PERTH AMBOY, N. J.

SHOWROOM AND OFFICES

NEW YORK, N. Y., 101 Park Avenue
PHILADELPHIA, PA., 1600 Walnut Street
CHICAGO, ILL., 217 East Illinois Street
LOS ANGELES, CALIF., 1510 Santa Fe Avenue

RESIDENT REPRESENTATIVES

ATLANTA, GA., 1159 St. Louis Place
BOSTON, MASS., 2 Sutherland Road
BUFFALO, N. Y., 2249 Delaware Avenue
DALLAS, TEX., 5546 Vanderbilt Avenue
DETROIT, MICH., 3765 Courtland Avenue

Products

Our three plants produce every type of Tile for floors and walls:

The Pardee plant specializes in GLAZED FLOOR and WALL TILES and GRUEBY FAIENCE.

The Matawan plant specializes in UNGLAZED FLOOR TILE and GLAZED and UNGLAZED CERAMICS.

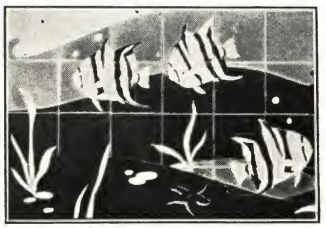
The Progressive plant specializes in DECORATVE STRIPS and ART PANELS.

Service to Architects and Builders

Our art and designing department, located in the New York Office, consists of graduate architects whose services are available without obligation for the planning and designing of tile work.



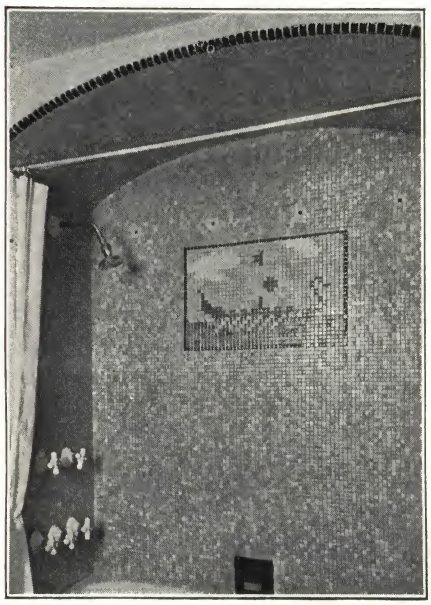
Typical Glazed Tile Art Panel Suitable for Schoolroom



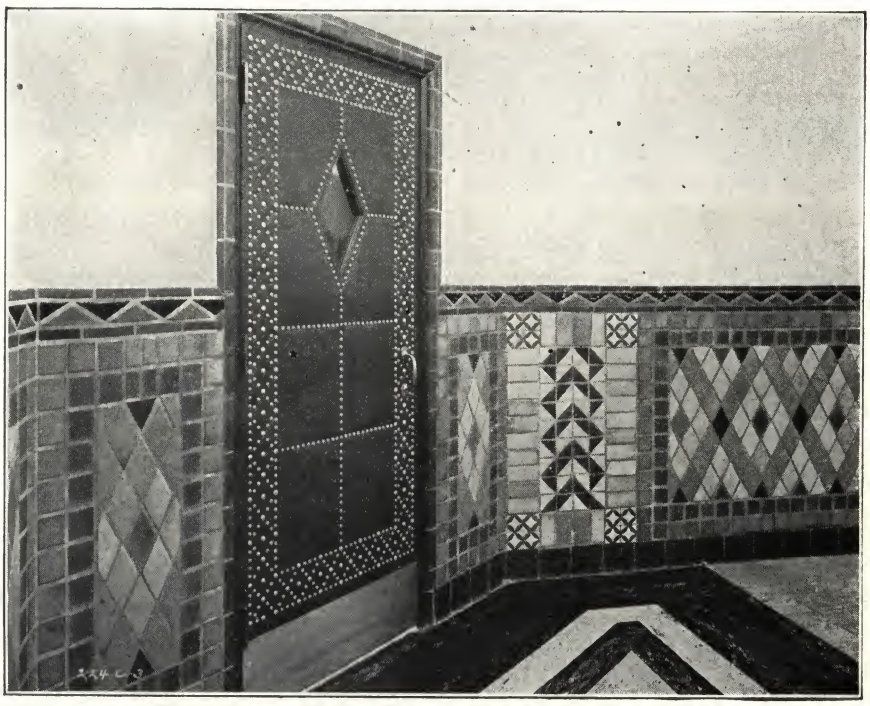
An Attractive Glazed Tile Bathroom Panel

Right:
One of Many Interesting Children's Subjects in Glazed Tile





Glazed Ceramics in a Bathroom Installation



Glazed Faience Wall in Cafeteria, Kresge Store, Detroit, Mich.
ALBERT KAHN, Architect

THE ROOKWOOD POTTERY COMPANY

TELEPHONE
Cherry 6135, 6136

CINCINNATI, OHIO

TRADE-MARK

Products

"Rookwood" Mat Glazed Architectural Faience.
Mat Glazed, Enamel Glazed and Unglazed Floor and Wall Tile.
Decorated Tile.
Garden Pottery and Ornaments.
Pottery.

Organization

It has always been the purpose of Rookwood to devote itself to the more difficult problems of ceramics. It began as far back as 1880. An experience actually extending over fifty years has established a very unusual mastery of the technique involved in the making of pottery and tile, particularly for artistic uses. It is these technical resources which Rookwood gives to the architect who wishes to do fine and unusual things in tiles for the decoration of buildings.

Rookwood is not a factory highly organized for large commercial output. It is rather a studio dominated by the interest of its artists in the working out of projects for their decorative possibilities. Architects who are using Rookwood know the resources of its extremely wide color palette, almost unlimited in scope, and at the same time the quality of tone harmony that exists in its thick glazes which possess great luminosity. And the durability of these glazes has been proven by the severest rubbing tests and, better still, by long years of hard service in floors and walls.

Quality

Rookwood furnishes tile in one quality only. It is exceptionally fine in character and necessarily uncommercial. Consequently, where this is wanted, a direct specification of Rookwood is the means of securing it.

Rookwood Glazes

The charm of Rookwood glazes lies largely in their remarkable richness of texture and the subtlety of variation. However, where comparative uniformity is desired, this is possible at Rookwood in unusual degree because of the command there of the technique of manufacture.

Facilities

Complete architectural and pottery plants that possess technical resources acquired through fifty years of actually continued experience in the making of all sorts of faience bodies and innumerable colored glazes.

The plants are thoroughly equipped to execute designs of architects and of decorators, or special designs by Rookwood decorators skilled in the ceramic arts, and because of advanced technique are able to meet specifications in color and quality and closely adhere to measurements in architects' blue prints.

Special Service

When desired, assistance is given to architects in the adaptation of our material to their designs.

Special original designs by our own artists are available.

Color studies and complete setting plans will be furnished where the installation warrants.

Photographs and half-tones of every character of tile installation and color sheets showing plain tiles in standard sizes will be furnished upon application. To regularly catalogue Rookwood with its infinite variety and specialized character would be difficult if not impossible and no such presentation is attempted.

The Rookwood Pottery Company makes no contracts for installation, but furnishes its material through responsible tile contractors.

Illustration

The following picture shows the main decorative feature of the arcade in the Carew Tower Building recently erected in Cincinnati.

Rookwood designed and executed the broad decorated band framing in the ends of the patio of the main arcade. The pattern, in order to harmonize with the general architectural design of the building, is frankly modern, with flat modeled forms in irregular shapes and is rich and brilliant in a large variety of colors and glaze textures. We reproduce here particularly this piece of work because of comments passed upon it by architects and tile men regarding it as typically "A job for Rookwood" which has the exceptional technical resources for its execution.

Rookwood Registered Trade-mark

The registered trade-mark shown above is pressed into the clay of every tile and vase made at Rookwood.



WALTER W. AHLSCHLAGER, INC., Architects **Carew Tower Building, Cincinnati, Ohio** DELANO & ALDRICH, Associate Architects

THE SPARTA CERAMIC COMPANY

Manufacturers of Spartan Ceramics

5005 Euclid Avenue, CLEVELAND, OHIO

DISTRICT SALES OFFICES

BROOKLYN, N. Y., 147 Fourth Street
CHICAGO, ILL., 1524 Southwestern Avenue
CLEVELAND, OHIO, 5005 Euclid Avenue
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JERSEY CITY, N. J., 2957 Hudson Boulevard
LOS ANGELES, CALIF., 445 So. La Brea Avenue
MOUNT VERNON, OHIO, Telephone Building
NEW ORLEANS, LA., 824 Carondelet Street
NEW YORK, N. Y., 101 Park Avenue
PHILADELPHIA, PA., 2401 Chestnut Street
ST. LOUIS, MO., 5539 Rosa Avenue
YONKERS, N. Y., 48 Belmont Avenue

Member Associated Tile Manufacturers

Products

SPARTA CERAMIC TILES.
2x2 inch INSERTS.
Also Bathroom Fixtures.

Texture

A vitreous flint mosaic tile. Made from pure shales with slight variations in outline, surface and shadings—presenting a mosaic of soft, harmonious warmth of color and the effect of a woven texture.

Colors and Sizes

Spartan Ceramic Tile are produced in Spartan Red, Spartan Brown, Spartan Gray, Spartan Black, Spartan Moki, Spartan Green, Spartan Blue, Spartan Golden Pheasant.

Sizes 4x4, 4x2, 2x2, 2x1 and 1x1 in. All tiles are $\frac{5}{16}$ in. thick.

Quality

Wearproof, fireproof, dirtproof, immune to destructive elements.

Cannot craze, spawl or fade. Does not absorb paint, grease, stains or dirty scrubbing water. Unchangeable by wear and usage.

Economy

The original cost of Spartan Ceramic Tiles is practically the last cost. Repairs, redecoration or replacements are eliminated. Spartan Ceramics will outlast the building in which they are installed.



Uses

Wainscotings
Floors
Fireplaces
Swimming pools
Shower rooms
Toilet rooms
Stairways
Belt courses
Panels
Ceilings
Kitchens
Halls
Lobbies
Vestibules

Service

Catalogues, samples and specification sheets will be furnished on request.

Special color sketches and detailed working drawings are also supplied as suggestions to prospective users.

Sold Only Through Contractors

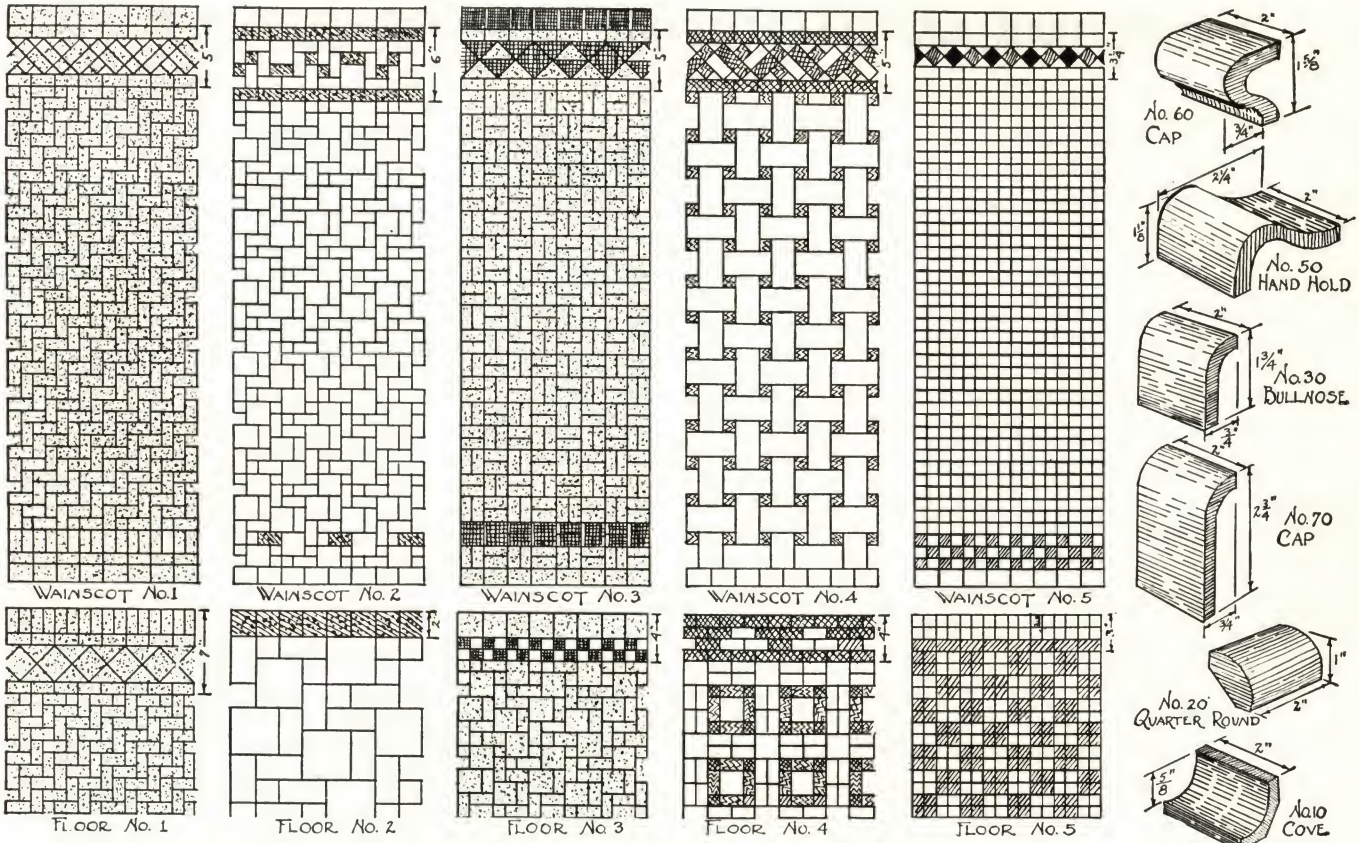
Believing that only through the services of skilled craftsmen can tile be installed properly, Spartan Ceramics are sold only by the most capable and responsible tile contractors.

Specifications

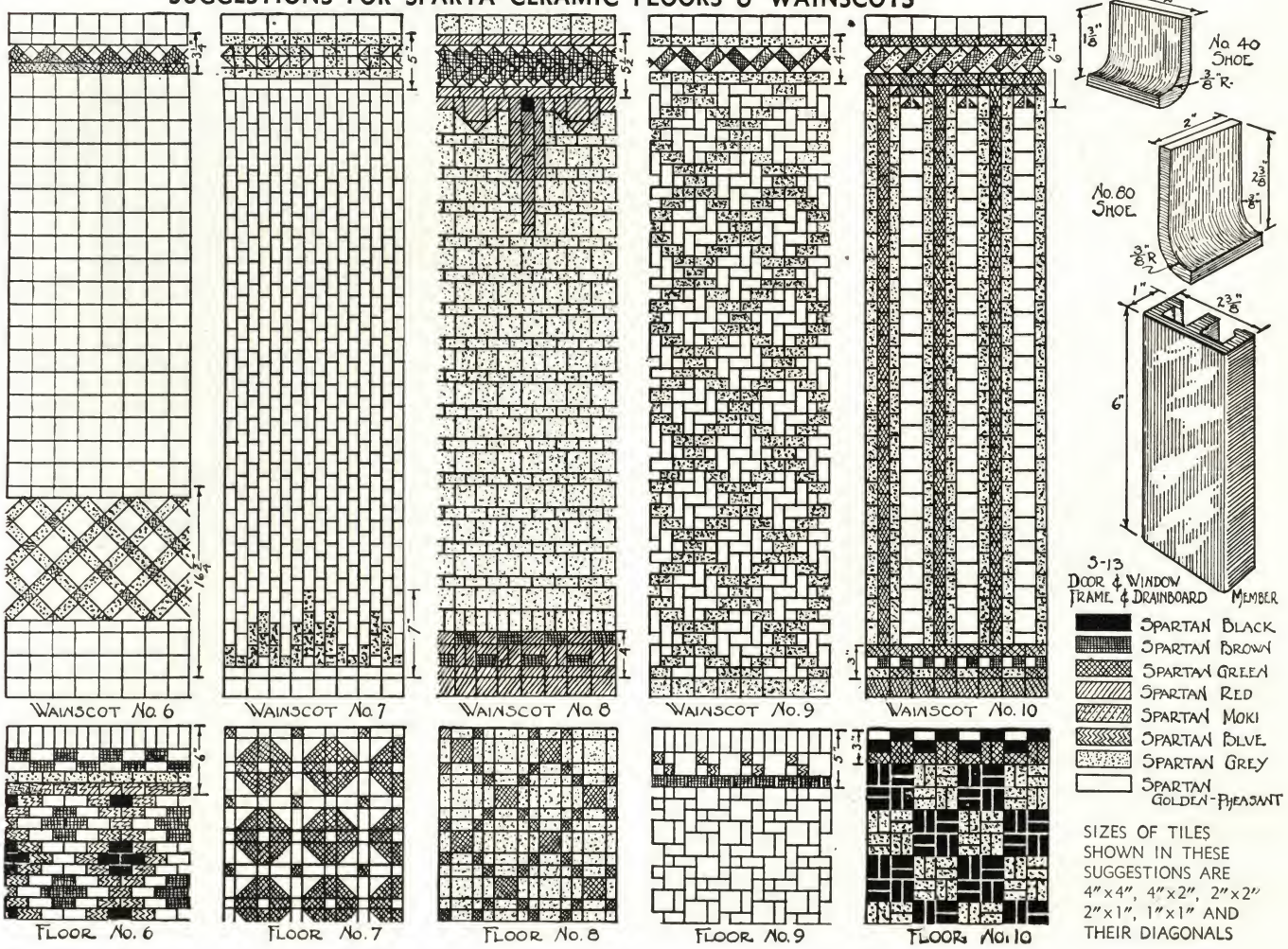
The following single paragraph should be incorporated in the architect's specification on tile work:

Furnish all materials and labor necessary for the completion of the tile work. The Basic Specification for Tile-work, Second Edition, 1924, or last edition, as issued by the Associated Tile Manufacturers, 220 Graybar Building, New York, N. Y., in-so-far as any portion is applicable to this building is hereby made a part of this specification and of the contract.

(See Associated Tile Manufacturers pages in this volume.)



SUGGESTIONS FOR SPARTA CERAMIC FLOORS & WAINSCOTS



SIZES OF TILES SHOWN IN THESE SUGGESTIONS ARE 4"×4", 4"×2", 2"×2" 2"×1", 1"×1" AND THEIR DIAGONALS

COLUMBIAN ENAMELING & STAMPING CO.

ESTABLISHED 1871

BUILDING MATERIALS DIVISION

TERRE HAUTE, IND.

NEW YORK OFFICE: 215 Fourth Avenue

Product

PORCELITE WALL TILE.

For our page on Roof Tile, see Manufacturers' Index.

Porcelite Wall Tile

A patented hollow steel tile, vitreous enameled, and applied with patented clip and base.

Uses—Porcelite Wall Tile provide sanitary, beautiful, and waterproof walls for kitchens, bathrooms, lavatories, refrigerator rooms, dinettes, gymnasiums, professional offices, and other interiors.

Colors—Orchid, Rose, Sea Green, Emerald Green, Victoria Blue, Turquoise Blue, Colonial Ivory, Gray, in three tones each, Tan in two, and Black. Single tile in solid colors.

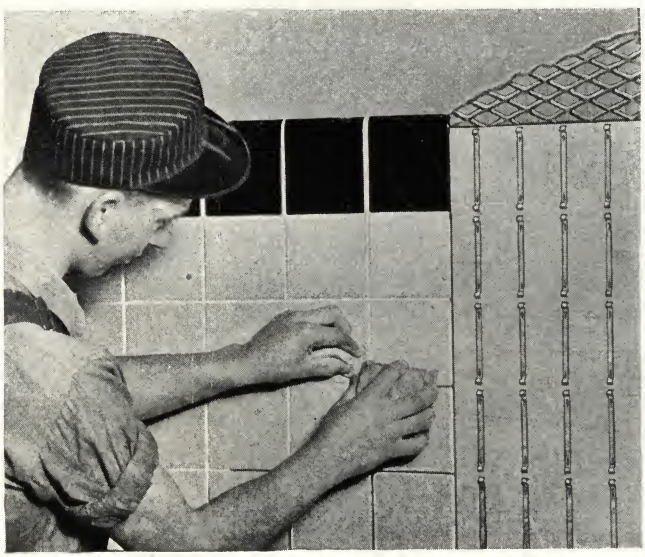
Sizes—One series—full field tile 4¼ ins. square. Cap and base tiles 5 by 4¼ ins. wide. Field, cap, and base tiles made in three-quarters, half and quarter widths. All necessary interior and exterior angles for field, cap, and base available.

Thickness—Completely assembled walls (tile and clip board) $\frac{9}{16}$ in. thick.

Application

All clip board, tile, cement, metal joint strips, and necessary extra clips furnished. Clip board is treated at factory to be waterproof and warpproof. Clips, protectively coated, are pre-set at factory in accurately aligned rows.

(a) Waterproofed base with clips attached is nailed into place on studding or over old walls. Connecting joints are all sealed with special metal joint strips.



Installing Porcelite Wall Tile in Three Simple Steps

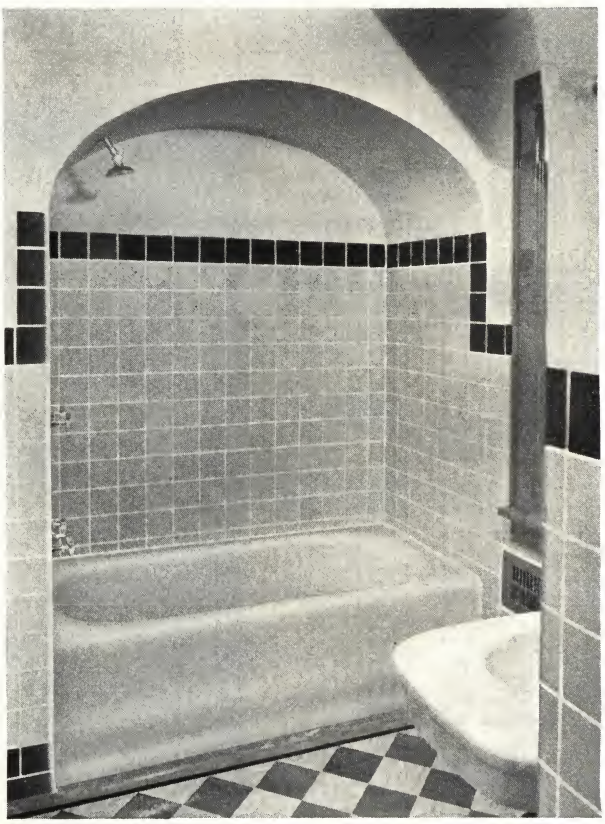
(b) Porcelite Tile are snapped into place on clips. Tremendous force is required to dislodge tile when once in position.

(c) Joints are evenly cemented with special waterproof, crackproof and rustproof cement. Tile are cleaned and wall is completed.

Being simple in application, no previous experience in tile setting is necessary.

Price

Applied to wall, Porcelite Tile costs approximately 30% less than clay tile. A saving that cannot be overlooked.



A Beautiful Up-to-date Bathroom Finished in Porcelite Wall Tile

Properties

Tile will not craze, crack, or split. Colors are nonfading. Easy to apply—means saving in labor. Tile, cement, and backing are waterproof. Beautiful, durable and economical.

Service

Our Architectural Service Department will gladly offer suggestions, give estimates, present samples, etc. Complete catalog and assembling data furnished on request.

SANIMETAL TILE CORP.

16 West 22nd Street
NEW YORK, N. Y.

Sanimetal Tiles

Sanimetal Tiles consist of individual tile blocks made of non-corrosive metal, faced with a hard, high-gloss baked enamel finish that is durable and will not crack, scale nor chip. They have all the advantages of tile and none of the disadvantages of the artificial-looking tiles in sheet and panel forms. When properly installed, they provide a charming colorful wall or ceiling surface that is not only sanitary, waterproof and fireproof, but unusually economical in cost. The tiles are easily and quickly applied over the surface to be covered, using our special oil cement. The few simple tools required and the various steps involved are illustrated and described in the plate below.

TILE SANIMETAL CORP.
REG. U. S. PAT. OFF.

A Variety of Uses

Sanimetal Tiles may be applied to any wall or ceiling surface—plaster, wood, iron, plaster boards, cement, etc. Sanimetal is especially suitable for use in bathrooms, kitchens, breakfast nooks and halls in new or old residences, as well as in restaurants, hotels, hospitals, etc. In fact, wherever attractive appearance and sanitary conditions are essential, Sanimetal Tiles may be effectively and economically used.

Beautiful Colors and Designs

Sanimetal Tiles and border strips are finished in green, orchid, white, black, pearl-gray, canary-yellow, blue and persian brown. Any combination of colors or designs may be worked out providing a wide range of colorful, decorative effects.

Conveniently Packaged

Sanimetal Tiles are packed in fibre boxes measuring 6 x 6 x 2 in. over all. Each box contains 35 sq. ft. of tile and, because of its compactness and light weight is easily handled. Shipping weight ½ lb. to less than the sq. ft.

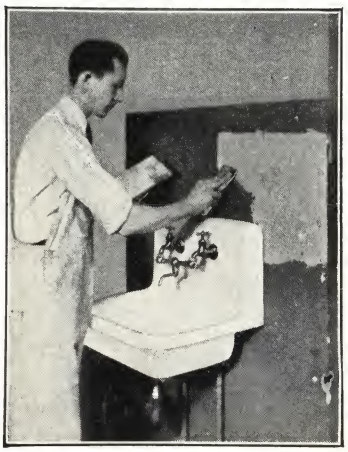
Short Specification

The areas indicated on plans shall be finished in Sanimetal Tile as manufactured by the SANIMETAL TILE CORPORATION of 16 West 22nd Street, New York, N. Y.

Surface Preparation—Walls and ceilings shall be smooth and straight, wet or greasy surfaces shall be cleaned and thoroughly dry before applying and, where surface to be tiled is not already painted, it shall be sized with a cheap grade of shellac.

Application—Apply Sanimetal as per the directions of the Sanimetal Tile Corporation, which directions become part of this specification.

MATERIALS, TOOLS AND METHOD OF APPLICATION



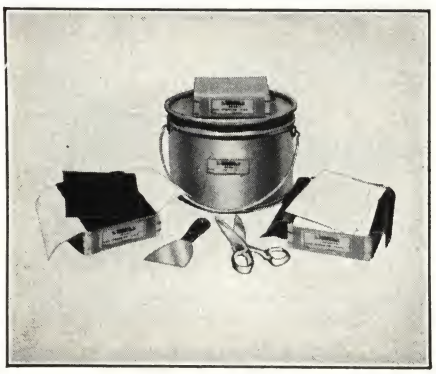
The First Step
Applying the special oil cement over surface to be tiled.



The Second Step
Pressing the individual tile blocks into position.

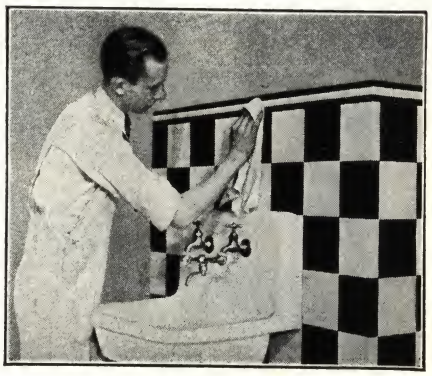


The Third Step
Cutting or bending the tiles to fit around obstacles.



Materials and Tools Required
These comprise the tiles, oil, cement, a pair of scissors and wide putty knife. This illustration shows enough tiles and cement for a 105 sq. ft. installation

The Final Step
Removing the cement from the surface of the finished wall—done by simply wiping the surface with a dry cloth.



NORTON COMPANY

"Norton Floors"–Alundum (Non-slip) Floor and Stair Tiles and Treads

WORCESTER, MASS.

NEW YORK CHICAGO DETROIT PHILADELPHIA CLEVELAND PITTSBURGH HARTFORD LONDON, ENGLAND

NORTON COMPANY OF CANADA, LTD., HAMILTON, ONTARIO

Products

TILE (Semi-vitreous):

ALUNDUM FLOOR and STAIR TILE.

ALUNDUM CERAMIC MOSAIC TILE.

AGGREGATES:

ALUNDUM AGGREGATES for art marble, terrazzo, cement, asphalt and composition flooring.

Features

The basic material in all Norton Floors is Alundum abrasive, the extremely hard and extremely tough Norton electric furnace product. To this abrasive and the method of bonding is due the permanently non-slip surface of Norton Floors, a surface whose non-slip feature is not lessened by water or other liquids nor by wear, a surface without grooves or corrugations to cause tripping.

The hardness and toughness of Alundum abrasive gives all Norton Floors extreme resistance to wear. They will stand up indefinitely under the most severe traffic conditions. In fact the first installation of Alundum Tile has already been in service over fifteen years on the stairs of a New York subway station.

Specifications

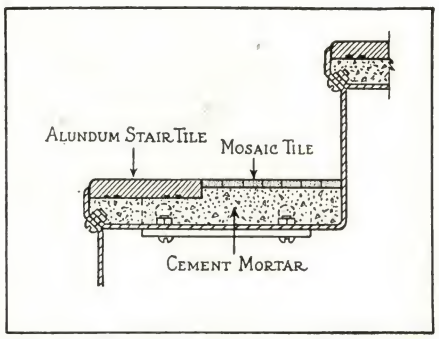
(1) Furnish and install where shown on plans Semi-vitreous Alundum Stair Tile (state size, thickness, shape and color) as manufactured by NORTON COMPANY, Worcester, Mass.

(2) Furnish and install where shown on plans Semi-vitreous Alundum Floor Tile (state size, thickness, shape and color) as manufactured by NORTON COMPANY, Worcester, Mass.

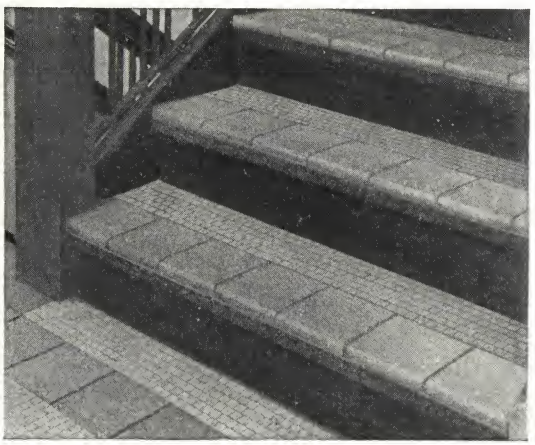
SIZES AND COLORS FLOOR AND STAIR TILE

Floor Tile		Stair Tile	
Sizes, in.		Sizes, in.	
3x1 ½ x ½	3x3x ½	6x4x ½	6x 4x ¾
6x3 x ½	6x6x ½	7x7x ¾	6x 6x ¾
6x3 x ¾	6x6x ¾	9x4x ¾	9x 6x ¾
9x4 x ¾	9x6x ¾		12x12x1 ¼
Special sizes: 7x3 ½, 7x7, 12x12 and 2 in. hexagonal.			

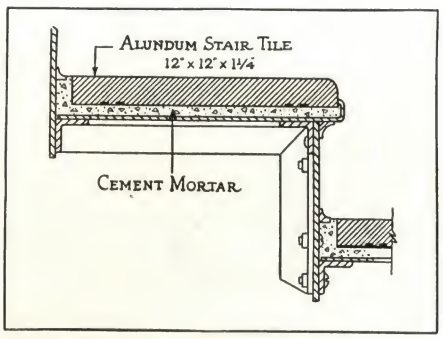
Colors: brown, buff, gray, blue-gray, white granite, green, tan and red. Details concerning special sizes will be furnished on request.



This type of stair construction offers an excellent opportunity for simple and effective treatment and is widely used in schools and office buildings. As a filler back of the Alundum Stair Tile, vitreous ceramic mosaic tile may be used with attractive and decorative effects. Terrazzo, with or without Alundum Aggregate, may also be used as a fill and in practically unlimited color combinations







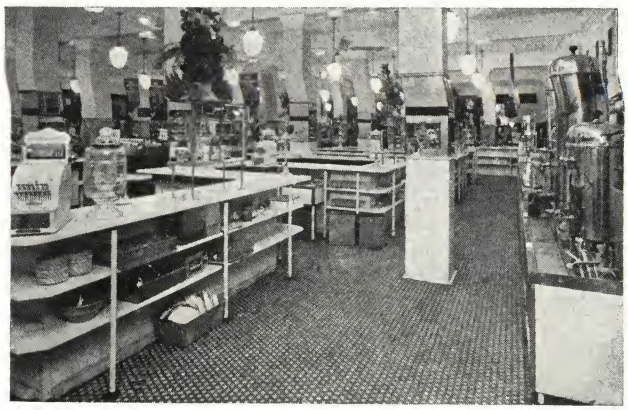
The large units of Alundum Tile supply a stair tread that is particularly effective in providing both safety and durability. This type of construction is one that has been widely used by a prominent chain store organization.

"Norton Floors"—Alundum Ceramic Mosaic Tile (Non-slip); Alundum Aggregate for Non-slip Art Marble and Terrazzo



Alundum Floor Tile

Ramps are becoming increasingly popular for auditoriums, stadiums and other places where crowds are large—where traffic is heavy. Alundum Floor Tile assures a safe, firm footing even on steeply pitched ramps



Alundum Ceramic Mosaic Tile

Alundum Ceramic Mosaic Tile in combination with vitreous mosaics is used around lunch and soda counters where water or other liquids cause a slipping hazard and where a non-slipping decorative mosaic floor is desired. Also used around swimming pools, in shower rooms, lavatories and similar places

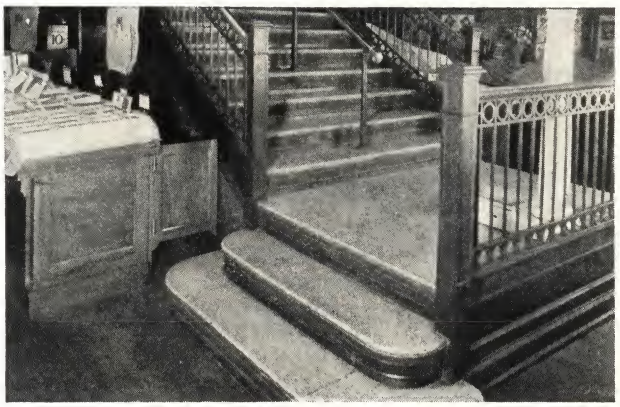
SIZES OF ALUNDUM CERAMIC MOSAIC TILE

Sizes	Colors
¾ in. square 1 1/16 in. square 1 in. hexagonal 1 ¼ in. hexagonal 1 1/16 x 2 ¼ in. oblong	Brown, buff, gray, blue-gray, white-granite, green, tan and red



Alundum Terrazzo Floor

Decorative terrazzo floors in colorful designs made non-slip with Alundum Aggregate. In all stair treads and on main floor of this telephone exchange Alundum Aggregate was employed to assure walking safety



Precast Alundum Aggregate Treads and Platforms

Precast Alundum Aggregate Treads and Platforms provide permanently safe, sure footing for shoppers in all kinds of stores. Names of licensed manufacturers furnished upon request

SIZES OF ALUNDUM AGGREGATE

No.	Sizes	Colors
1C	1/16 to 11/64	Brown, gray, buff, cream, green, red, black
00	1/64 to 1/16	

Specification data on Alundum Aggregate for terrazzo furnished to all responsible terrazzo contractors.



Precast "Non-slip" Art Marble

Precast Non-slip Art Marble, treads and riser cast integral, manufactured by the Chicago Art Marble Company, 2883 Hillock Avenue, Chicago, Ill. Data furnished by Chicago Art Marble Company upon request

Architects' Specifications

Alundum semi-vitreous tile should be placed under the tile specifications.

Non-slip terrazzo (Alundum Aggregate) installed monolithically should be placed under terrazzo specifications.

Precast Alundum Aggregate products should be placed under the marble work.

Literature and Samples

Literature and samples will be sent on request.

RAVENNA MOSAICS, INC.

Glass and Enamel Mosaics—Marble and Slate Mosaic Floors

Architects Building, 101 Park Avenue
NEW YORK, N. Y.

RAVENNA MOSAICS

Studios here and abroad and connections with the best known mural painters and designers in America and Europe, enable this company to design and execute any mosaic work required by the architects.

Extensive study of the technique of the mosaics of the early Christian period, a staff of artisans—many of whom have been with this concern over thirty years; the execution of mosaics in different countries and styles and after designs of many artists are the basis on which Ravenna Mosaics has been developed.

Ravenna Mosaics, Inc. manufactures all its own enamels. This material has been successfully used in the restoration of many of the Early Italian mosaics.



Reception Room, Irving Trust Company Building, New York, N. Y.

Specifications for Glass and Enamel Mosaics

Materials—The mosaic tesserae used shall be the so-called Venetian Mosaic Glass (Ravenna Mosaic Glass) known as smalti or enamel mosaics, of solid color, waterproof and acidproof, and broken by hand with hammer and chisel, the fractured surface of the tesserae to form the surface of the finished mosaic unless otherwise provided for. The gold and silver mosaic material shall have the metal leaf fused in between two layers of glass.

Craftsmanship—All work shall be executed in strict accordance with the approved designs and samples.

The technique of the mosaics shall be of the same quality as that used in the early Ravenna and Roman Mosaics (examples at the Metropolitan Museum of Art).

Ample space shall be left between the single tesserae to allow the cement mortar to hold the mosaic cubes in place and all tesserae, especially the gold and silver, shall be tilted at different angles to give the surface an uneven and interesting texture and sparkle.

Delivery and Installation—The mosaics shall be delivered at the building set on paper and shall be mounted on a scratch and float coat provided by the plasterer under the direction of this contractor, no gypsum to be used in mortar. The structural base for the mosaics may be either metal lath, concrete or brick work, as provided for in another section of the general specifications. Such sub-construction shall be brought to within ½ in. of the finished surface and finished to proper lines for a uniform bed to receive the mosaics. The mosaic contractor shall only furnish the final coat of cement mortar in which the mosaics are embedded.

Sufficient scaffolding for the erection of the mosaics, water, heat and light, shall be provided to the mosaic contractor.

Estimates

Estimates and suggestions submitted on request.

A Few of Our Recent Installations

New York, N. Y.—Waldorf-Astoria Hotel, Schultze & Weaver, Architects; Irving Trust Company Building, One Wall Street, Voorhees, Gmelin & Walker, Architects; St. Bartholomew's Church, Mayers, Murray & Phillip, Architects; Temple Emanu-El, Kohn, Butler & Stein, Architects; Williamsburgh Savings Bank (Brooklyn), Halsey, McCormack & Helmer, Inc., Architects; International Telephone & Telegraph Building, Louis S. Weeks, Architect; Film Center Building, Ely Jacques Kahn, Architect; Rumpelmayer Cafe, Winold Reiss, Architect.

Columbus, Ohio—Ohio State Office Building, Hake & Kuck, Architects.

St. Louis, Mo.—St. Louis Cathedral, George Barnett, Architect.

Detroit, Mich.—St. Aloysius Church, Donaldson & Meier, Architects; Maccabees Building, Albert Kahn, Inc., Architects; Fisher Building, Albert Kahn, Inc., Architects; Union Trust Building, Smith, Hinchman & Grylls, Architects; Holy Redeemer Chapel, Donaldson & Meier, Architects.

Ottawa, Canada—Metropolitan Life Insurance Co. Building, D. Everett Waid, Architect.

Rochester, N. Y.—Rochester Savings Bank, McKim, Mead & White, Architects.

Washington, D. C.—National Shrine (Catholic University) and Trinity Chapel, Maginnis & Walsh, Architects.

Seattle, Wash.—St. Joseph's Church, A. H. Albertson & Associates, Architects.

Los Angeles, Calif.—Subway Terminal Building, Schultze & Weaver, Architects; St. Vincent's Church.

Waterbury, Conn.—Immaculate Conception Church, Maginnis & Walsh, Architects.

Chicago, Ill.—St. Clements Church; Oriental Theater, Rapp & Rapp, Architects; Chicago Lying-In Hospital, Schmidt, Garden & Erikson, Architects.

Suresnes, France—War Memorial, Charles A. Platt, Architect.

Thiaucourt, France—War Memorial, T. H. Ellett, Architect.

Stockholm, Sweden—Golden Hall, City Hall, Ragnar Oestberg, Architect.

Jerusalem, Palestine—Church of the Ascension on Mt. Olive; Church of the Redemption.

Aix-La-Chapelle, Germany—Cathedral.

Berlin, Germany—Hotel Excelsior, Baths.

Frankfort-on-Main, Germany—Frauen Friedenskirche.

Belgrade, Jugoslavia—Memorial Cathedral at Topola.

Steamships—The rich mosaic decorations on the new steamers—S.S. Bremen and S.S. Europa—were also executed in our studios.

AMERICAN KERAMENT CORPORATION

101 Park Avenue

NEW YORK, N. Y.

KERAMENT

Cold Glazed Tile, Block and Other Building Units

Kerament is a concrete building unit with a glazed facing of any color, from the most brilliant hues to those of pastel delicacy. This facing resembles in appearance the fired glazes of terra cotta and clay tile, and is permanent both as to color, lustre and strength.

Kerament glazes are cementitious in nature, and possess the characteristics of true cement in that they are not subject to deterioration through the action of water, weathering and exposures to extremes of temperature. These glazes are produced naturally, without casting, polishing or the use of magnesite, and are a homogeneous part of the concrete base.

Kerament units are made in a wide variety of shapes and sizes from 4¼″x4¼″x¼″, up to massive slabs and structural pieces. Standard sizes include tiles up to 18″x36″x1¼″,



A Typical Wall Treatment in Entrance Halls

blocks, coping, pilasters, molding, spandrels, mantels and other units suitable for architectural decoration.

This process for surfacing concrete units was developed over ten years ago in Germany, and has since been used extensively in most of the principal European countries, as well as in other parts of the world.

It is the only method of glazing and coloring concrete units that has ever been demonstrated to be permanent and practical by years of actual use.

In addition to standard units, Kerament is economically produced in special shapes or sizes and in molded designs from architect's specifications. Such special pieces are made with accurate dimensions and even in the largest pieces are free from the warping or distortion characteristic of fired products.

METHOD OF MANUFACTURE

The Kerament process is a patented method of producing, by a cold process, glazed and colored surfaces on concrete and similar materials. Concrete, the usual base material, gives to Kerament products the typical strength and durability of that material. Manufactured under the strictest supervision, of rich cement content, Kerament is always uniform.

The glazing mass applied to a fresh concrete base, is itself cementitious and makes a homogeneous unit. This feature of Kerament manufacture definitely insures against spalling, cracking, peeling or flaking of the glazing surface under any conditions of exposure or wear.

Kerament Tiles are formed in accurately machined steel frames, thus preventing inaccuracies of dimensions and surfaces that are inevitable in fired tiles. These tiles are made on corrugated steel plates producing a grooved back pattern which combines with the rough concrete surface to provide an extraordinary adhesion with the setting mortar.

The Kerament colors, not being fired, are produced in extreme accuracy of shade and the pigments selected are mineral oxides whose permanency under exposure and climatic extremes has been proven over many years.

Every step in the manufacture of Kerament is minutely controlled and the most careful inspections insure uniformity of product.

These products are manufactured in America, under American Patents, by skilled American engineers and workmen highly experienced in the art.

CHARACTERISTICS OF KERAMENT

Permanence

Over ten years of use in all types of building construction have demonstrated the complete permanence of Kerament Tile, both as to color, lustre and strength. Kerament has been used for over 10 years in European countries in subways, hotels, schools, hospitals, municipal and government buildings, theatres, stores, restaurants and in every type of private construction. Both for interior and for exterior walls it has given completely satisfactory performance as attested by the steady growth in its use over a period of years.

In addition to these practical tests, it has successfully passed all tests for building materials in government and private testing laboratories both in this country and abroad.

Weather and Wear Resistance

Kerament is a true Portland cement product. It is completely immune to damage through extremes of temperature, rain, frost or sunlight. It is not affected by alkaline cleaning solutions nor by the dilute acids from air-borne soot and dust.

It is readily and quickly cleaned with soap and water, and is not harmed by strong caustics.

Kerament glazes being formed integrally during the initial curing are not in any way due to polishing or casting, nor do they include the use of magnesite. Hence, the lustre is not lost by weathering as in the case of polished or cast artificial or natural stones, or through disintegration as in the case of painted, lacquered or magnesite surfaces.

Freedom from Staining

Kerament is not stained by paints, dirt, soot, grease or mud. Owing to the natural alkaline reaction of cement, it is to a considerable extent actively self-cleansing.

KERAMENT IN TILE FORM

Kerament Tiles, by their new and attractive color effects, the novel and interesting opportunities their larger sizes offer to the designer and marked economies to builders and contractors their price affords, have received a wide approval wherever they have been presented. Not only do they replace other kinds of tile for customary uses, but their wide range of size and surface effects makes possible decorative schemes in buildings where ordinary tile would not be suitable and other materials too expensive.

Kerament Tile Sizes

Kerament Tiles are made in the following standard sizes: 4¼ x 4¼ x ¼ in., 6 x 3 x ⅜ in., 6 x 6 x ½ in., 6 x 12 x ⅝ in., 12 x 12 x ¾ in., 8 x 16 x ⅞ in., 12 x 24 x 1 in., and 18 x 36 x 1¼ in.

Setting

Setting of Kerament Tile is the same as clay tile. No change in mortar is necessary nor are special tools or equipment required. Kerament is cut readily in the same manner as clay tile. Owing to the exact sizing and freedom from warping, tile-setters consistently average higher production with Kerament, as compared with other tile.

Costs

The cost of Kerament Tiles represent an appreciable saving over ordinary fired tiles. Additional economies are effected in labor costs due to greatly increased rapidity in setting.

Adhesion

Owing to the nature of the Kerament base, which is practically identical with that of the setting mortar, the difference in coefficients of expansion between the tile and the mortar bed is eliminated. The bonding of Kerament tile is positive and permanent, and hence, in Kerament installations, the maintenance costs for replacing loosened tile are eliminated.

KERAMENT BLOCK AND STRUCTURAL UNITS

Kerament Glazed Block and structural units are true loadbearing units, uniformly testing from two to three times building code requirements. They are similar in appearance to terra-cotta and are used for comparable purposes.

Sizes

Kerament Blocks are made in the following sizes:

	App. Weights
8 x 16 x 2 in.	16 lbs.
8 x 16 x 4 in.	22 lbs.
8 x 8 x 2 in.	9 lbs.
8 x 8 x 4 in.	12 lbs.

These sizes are made with cored backs assuring positive bonding with backup masonry. Bullnose and other trim pieces necessary for any type of construction are also available.

Glazed units with cored centers and brick proportioned dimensions are also made with 3⅝ x 12 in. face by 4, 6 or 8 in. thick, together with trim units and fractional sizes.

Costs

Kerament Blocks effect savings of from 30% to 40% in material costs over similar units of the terra cotta type. Their cost is only slightly higher than the material cost of face brick, a difference which is more than compensated by reduced installation costs.

Color

The same wide range of colors available in Kerament Tiles applies to Kermanent Blocks. Permanent colored glazes are thus put within the range of possibility for even the least expensive types of construction.

Deliveries

Owing to the extensive variety of Kerament colors, we do not stock Kerament blocks in quantities. Orders therefore are accepted for delivery in four to six weeks depending on quantities.

Kerament for Exteriors

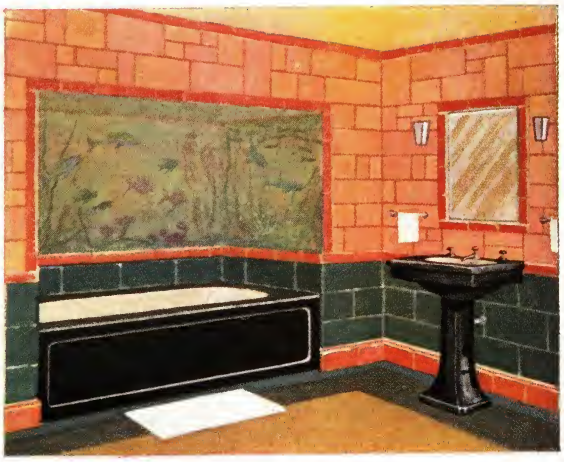
Kerament is made in standard shapes and sizes especially adapted for store fronts and similar exterior work. Examples of stock copings, mouldings, and pilaster pieces are shown on the fifth page following.

These standard units offer the designer a new opportunity to work out original color treatments and designs in a permanently glazed material at a cost representing an appreciable saving over comparable materials.

We maintain a drafting department for the convenience of architects and are ready at all times to submit sketches and estimates based on the architect's plans, without obligation on his part.



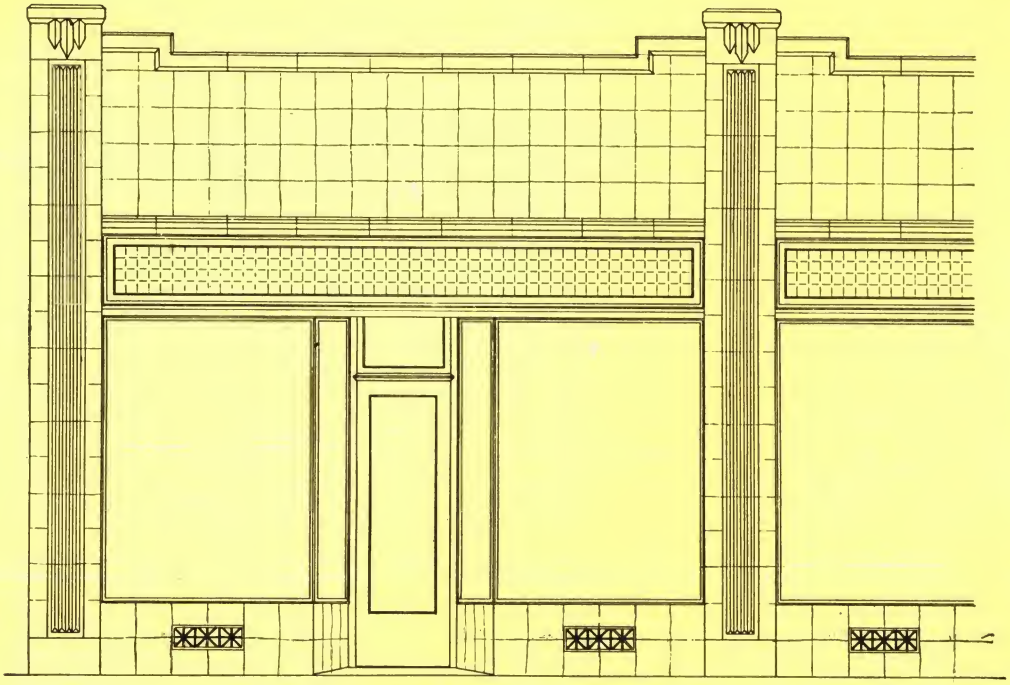
The color sketches shown on this page are merely suggestive of potentialities Kerament offers architectural designers of the modern style.





With Kerament, permanent color effects for interior or exterior walls can be endlessly varied, and, at the same time, with surprising economy.

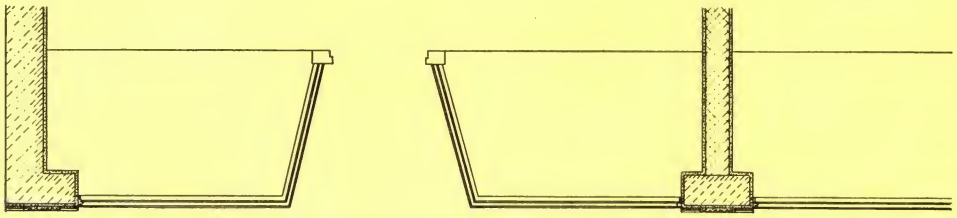




ELEVATION

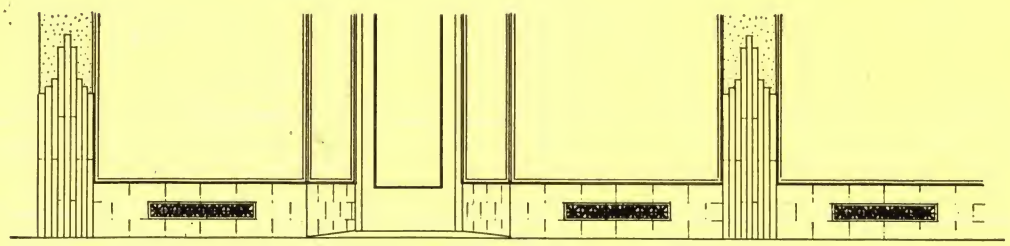


SECTION

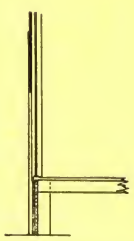


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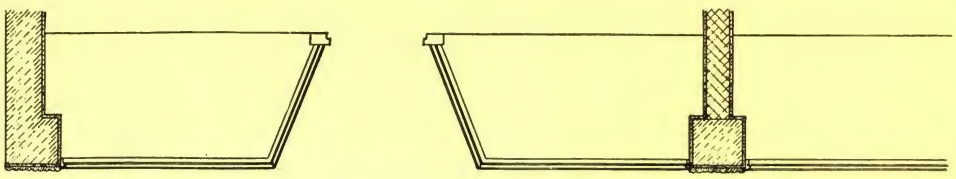
DESCRIPTION
A typical and inexpensive design suggestive of the possibilities of KERAMENT for store front work.



ELEVATION



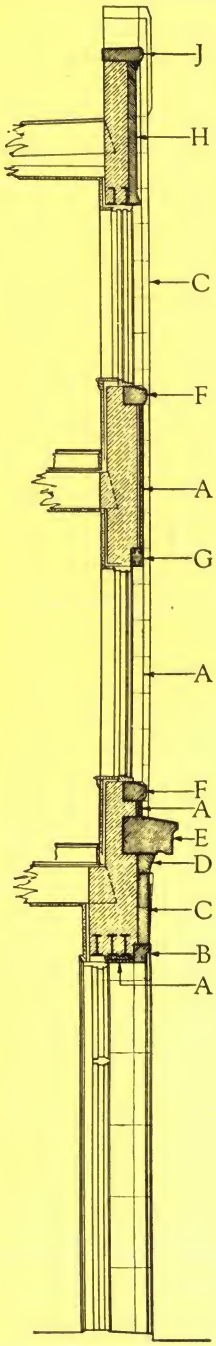
SECTION



PLAN

DESCRIPTION
Bulkhead treatments using standard sizes of KERAMENT are inexpensive and permanent.

KERAMENT FOR TAXPAYER CONSTRUCTION



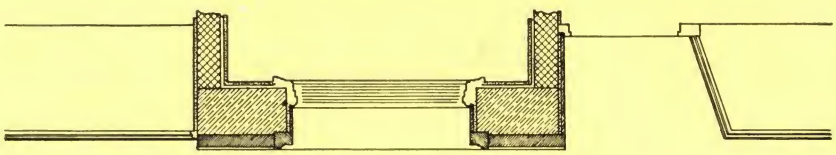
SECTION



ELEVATION

DESCRIPTION

A - Tile ashlar-1"-Thick
B - Architrave - 4" - "
C - Ashlar - 4" - "
D - Bed mould-4" - "
E - Cornice - 1'-6" "
F - Sill - 6" - "
G - Reinf. lintel-4" - "
H - Panel - 4" - "
J - Coping - 4" - "



PLAN

KERAMENT FOR EXTERIOR WALLS

STANDARD COLORS AND TEXTURES

The range in variety of colors which are available in Kerament are shown to a very limited extent on the color chart below. The material is actually unlimited as to color range as substantially any shade of color can be produced from the most vivid hues to those of pastel delicacy. Colors can be matched from samples in other materials or from colored renderings with great accuracy.

An unlimited variety of color combinations and blendings are possible in Kerament. Glazes of varying shades can be laid on base colors of any other shade and can then be patterned or finished in any desired effect.

Textures available are also almost unlimited in variety. They can be smooth or extremely or only moderately waved, rippled or stippled, at no added expense.

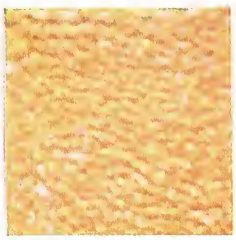
The Kerament Company will be glad to work with architects toward the accomplishment of unusual color effects; special samples will be made up from sketches or specifications where desired.

Special colors and textures can usually be produced at the same cost as the standard colors and textures.

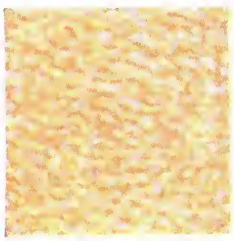

724

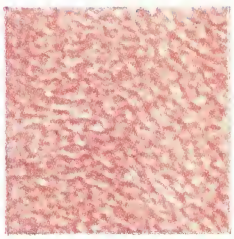

524

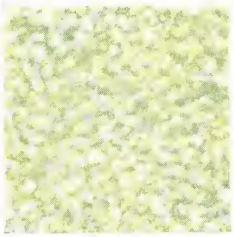

324


224


424

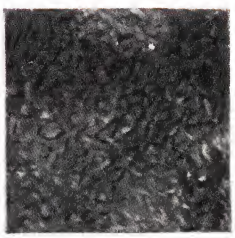

723


822


323


215


265


625


536


436


735


535


462


532


612


403


671

STANDARD SHAPES AND SIZES

Kerament caps, bases and trim are made in standard shapes and sizes, for 6 in. x 3 in., 4¼ in. x 4¼ in. and 6 in. x 6 in. tile, some of which are shown on the opposite page. For larger sizes up to 18 in. x 36 in. standard finished edge pieces reduce trim costs and provide convenient shapes for finished corners and angles. Kerament Stock Copings, Pilasters and Mouldings are made in an unlimited range of colors. Pilasters and mouldings are produced as structural units 4 in. thick, as well as in veneer thicknesses.

STANDARD TILE TRIM



4 1/4"x5 3/4"- D.-B.-NOSE.
ALSO-INT.-COR.



K-441-4 1/4"x5"- B.-NOSE.
K-331-3"x3 3/4"

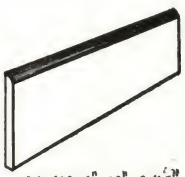


6"x2"- CAP.
INT.- &- EXT.- COR'S.



6"x6"- COVE
INT.- &- EXT.- COR'S.

FINISHED EDGE TILE



M-612-6"x12"x9/16"
M-816-8"x16"x7/8"
M-1224-12"x12"x1"



L-66-6"x6"x9/16"
L-88-8"x8"x7/8"
L-12-12"x12"x1"



M-Z-612-6"x12"x9/16"
M-Z-816-8"x16"x7/8"
M-Z-1224-12"x24"x1"



12"x12"x1"
12"x24"x1"



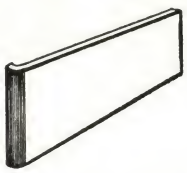
M-Z-A-612-6"x12"x9/16"
M-Z-A-816 8"x16"x7/8"



J-612-6"x12"x9/16"
J-816-8"x16"x7/8"
J-1224-12"x24"x1"



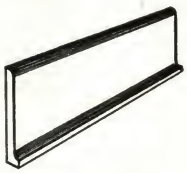
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L-Z-88-8"x8"x7/8"
L-Z-12-12"x12"x1"



K-612-6"x12"x9/16"
K-816-8"x16"x7/8"



L-A-6-6"
L-A-8-8"

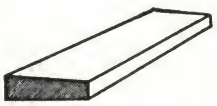


M-6122-6"x12"
M-8162-8"x16"

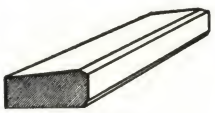
STOCK COPING



S-C-G-1
10" & 14"x24"

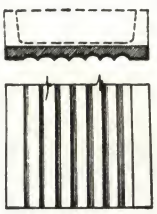


S-C-G-2
10" & 14"x24"

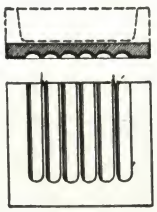


S-C-G-3
10" & 14"x24"

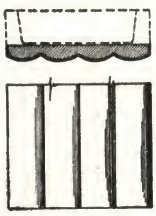
STOCK PILASTERS



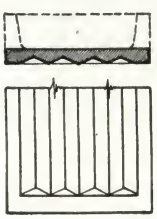
S-P-1
12"x24"



S-P-2
12"x24"



S-P-8
12"x24"



S-P-5
12"x24"



S-P-9
6 3/8"x24"

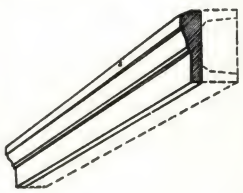


S-P-10
9"x24"

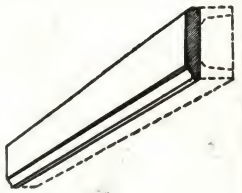


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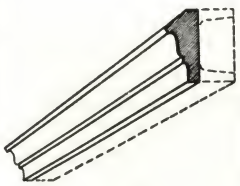
STOCK MOULDINGS



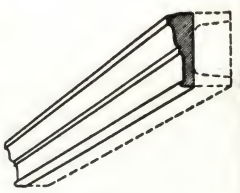
S-C-1
6"x24"



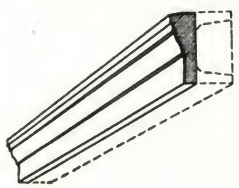
S-C-4
6"x24"



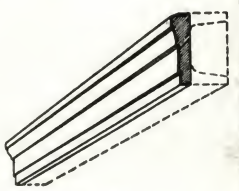
S-C-6
6"x24"



S-C-3
6"x24"



S-C-5
6"x24"



S-C-2
6"x24"

AMERICAN USES OF KERAMENT

The introduction of Kerament products to American architects and builders, more particularly in the New York district, has convincingly demonstrated the attractiveness and adaptability of the material to the artistic requirements of the modern spirit as well as to the practical requirements of American construction.

Within a year and a half from its introduction to the American market, Kerament has been specified and installed in hundreds of buildings of all types for both interior and exterior purposes. Included in this list may be mentioned schools, clubs, churches, office buildings, public buildings, theatres, restaurants, apartment houses, and private dwellings. It is being more and more widely adopted for exterior work both as complete facades and for decorative color features of building fronts such as spandrels in combination with other materials.

Interior Uses

Bathrooms and Kitchens—Kerament in tile form has been installed in hundreds of residences in the New York district for bathrooms and kitchen walls and wainscoting, where its soft blendings of attractive color have won an immediate public acceptance. The larger sizes of Kerament tiles have been employed in designing bathrooms of distinctly modern feeling. Special pilaster and ornamental pieces in Kerament are being widely used to produce unusual decorative effects.

At right
Bathroom treatment in large random sizes with pilasters

Below
Two shades of green worked out in attractive pattern





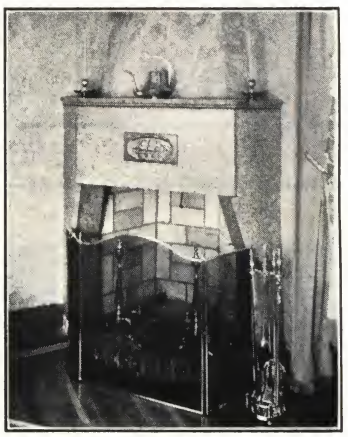
Entrance Halls—Wainscoting in larger Kerament sizes for entrance halls, lobbies and corridors have proven extremely adaptable and capable of producing beautiful and interesting effects as worked out by architectural designs. Particularly where economy of construction is an important factor, architects have found it possible to design distinctive effects in permanent color at a surprisingly low cost.

Public Rooms—As wall treatments in schools, gymnasiums, church assembly rooms, and public space in various types of commercial and public buildings, Kerament has been demonstrated to be a material equally adaptable to the production of durable interiors of colorful simplicity as well as of more elaborate decorative schemes.



Attractive wainscot in a church assembly room which is also used for gymnasium purposes

Mantels—Kerament mantels either in tiles or semi-monolithic design are made in an unlimited range of colorings. We maintain a stock of regular models which can be glazed to order in colors as selected by the architect or owner. The cost of these mantels is amazingly low. A pamphlet showing these stock designs will be sent on request.



Mantels to meet special requirements

Exterior Uses

Store Fronts—Architects specializing in store construction have welcomed Kerament as a material ideally adapted to store designing, its low cost allowing a free hand in the use of striking color effects.



Used either as a complete facade or in combination with other materials it adds an effective color note of harmony or contrast.

Kerament in flat or molded shapes greatly simplifies the creation of original store designs. As window bulkhead facings it is far more economical and at the same time more permanent than materials hitherto in common use, as it is not subject to cracking or deterioration of lustre or color, through weathering and wear.

Building Facades—Kerament as tile or in structural units is being used increasingly as complete facings or as decorative features. Used either in the larger tile shapes or as loadbearing units, Kerament has proven itself the most economical material for securing permanently colored building surfaces that has been presented to the American building industry.



Kerament bulkhead and pier treatment

Cast Spandrels—Spandrels, cast in one or more pieces, according to the architect's design, are produced with great economy and attractive appearance. These are manufactured in either structural or veneer form.

JOHNS-MANVILLE

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292 Madison Avenue, NEW YORK

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Products

ASBESTOS WAINSCOTING.

Also packings for all purposes; Refractory Cements; Waterproofings and Dampproofings; Asbestos Ebony; Asbestos and Rag-felt Roll Roofings; Special Rotproof Roofs.

JOHNS-MANVILLE JM PRODUCTS

For the following, see manufacturer's index: Insulating Board; Asphalt Tile Flooring; Acoustical Treatment; Transite Corrugated Asbestos; Transite Flat; Asbestos Wall Board; Home Insulation; Built-up Roofing; Asbestos Shingles; Asphalt Shingles; Pipe Covering and Insulation.

JOHNS-MANVILLE ASBESTOS WAINSCOTING

The Material

J-M Asbestos Wainscoting is a strong, rigid sheet of asbestos fibre and Portland cement, grooved in 4 inch squares to give the effect of individual units, the entire surface including grooves being finished with high-grade lacquer enamel applied in a number of coats in black, white, ivory, light green and light blue colors. Prior to lacquering, the sheets are impregnated with a waterproofing agent and sanded to provide a perfect finish for the lacquer enamel. This material is also procurable, without the tile joint marking.

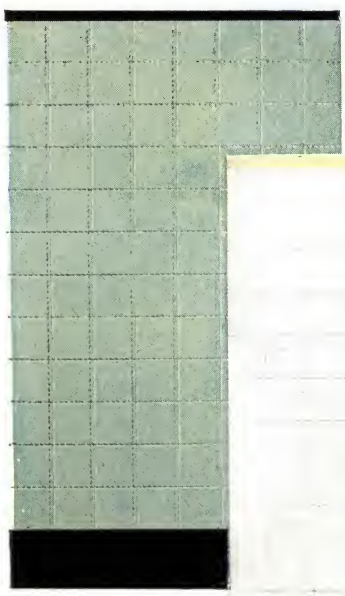
Asbestos Wainscoting is colorful, durable, sanitary and waterproof. It can be kept clean with a minimum of effort. Dirt remains on the surface where it can be easily washed off. Due to the large size sheets it can be quickly and economically installed either in new construction or in redecorating existing construction. With Asbestos Wainscoting the carpenter or anyone familiar with the use of a saw and hammer can do the entire job from start to finish. It is readily cut with a saw or drilled.

This material is not considered as a substitute for glazed ceramic tile. For example, with J-M Asbestos Wainscoting there is complete freedom from the maintenance costs involved in replacements when small units are used. This material will not crack or craze.

Accessories

J-M Asbestos Wainscoting is held in place at the bottom by J-M Asbestos Base, made of the same material as the tile, measuring ½ x 6 in., rabbeted to receive the tile sheets. It is held at the top by J-M Asbestos Cap, also made of the same material, measuring ½ x 1⅛ in., which is also rabbeted to receive the tile sheets.

Brass strips and clips are furnished, the former for covering joints and inside and outside angles, the latter for securing the sheets and the strips to the wall.



Green with Black Base and Cap



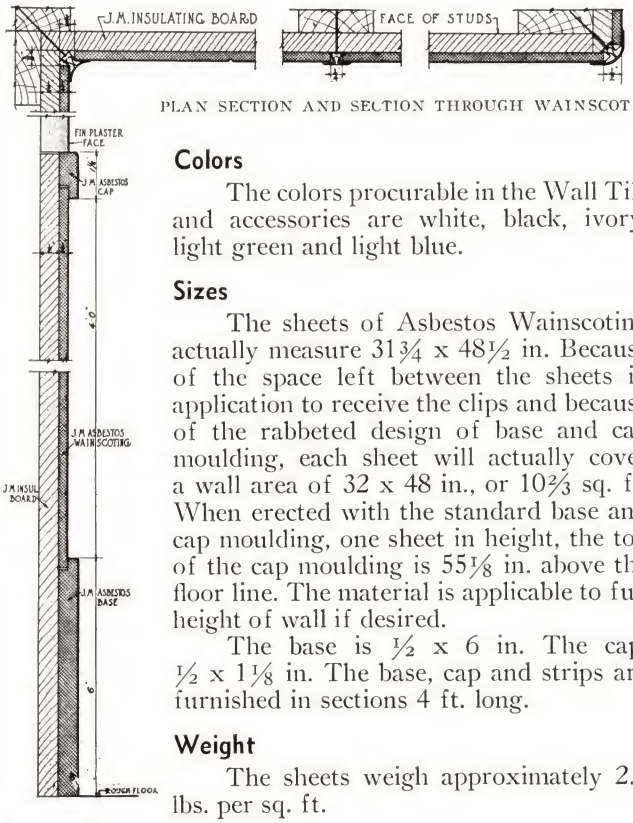
White with Ivory Base and Cap



Light Blue with Base and Cap in Same Color



Ivory with Black Base and Cap



PLAN SECTION AND SECTION THROUGH WAINSCOT

Colors

The colors procurable in the Wall Tile and accessories are white, black, ivory, light green and light blue.

Sizes

The sheets of Asbestos Wainscoting actually measure 31¾ x 48½ in. Because of the space left between the sheets in application to receive the clips and because of the rabbeted design of base and cap moulding, each sheet will actually cover a wall area of 32 x 48 in., or 10⅔ sq. ft. When erected with the standard base and cap moulding, one sheet in height, the top of the cap moulding is 55⅛ in. above the floor line. The material is applicable to full height of wall if desired.

The base is ½ x 6 in. The cap, ½ x 1⅛ in. The base, cap and strips are furnished in sections 4 ft. long.

Weight

The sheets weigh approximately 2.5 lbs. per sq. ft.

Application

Special preparation such as metal lath and plaster is unnecessary. As a base for the wainscoting in new construction, it is recommended, that J-M Insulating Board be nailed directly to the studding. The sheets are held at the top and bottom by the rabbeted base and cap, these being secured by finishing or casing nails driven through the face, countersunk, puttied and touched up with lacquer provided for that purpose. Brass or chromium plated screws may also be used.

The sheets are spaced with vertical joints open. The clips are inserted into these spaces on 6 in. centers, and secured to the studding with nails. These clips hold the tile and provide a channel into which the joint strips are sprung and held in place. The joints at inside and outside corners are similarly formed.

Horizontal joints between sheets, where the treatment is more than ordinary wainscot height, may be formed in the same manner as described for vertical joints or the joint may be formed without using the clips and strips, leaving a $\frac{1}{16}$ in. space between the sheets to be filled with putty and touched up with the lacquer. In this case each sheet is held in place by a finishing nail driven through a tile joint marking at the center of the sheet adjoining the joint, countersunk, puttied and touched up with lacquer.

In fireproof construction and in redecorating existing surfaces, the same method of application is employed, suitable wood grounds being installed where required.

Service

The Architectural Service Department of Johns-Manville will be glad to assist with information and advice in regard to contemplated applications and the furnishing of desired samples, estimates of cost, etc.

We will send on request special catalogue matter giving full instructions for erecting the material.



Nailing the base is the first step of application



The snap-in covering strip is here shown being snapped firmly into place to cover joints

SHORT FORM SPECIFICATION FOR FURNISHING AND APPLYING JOHNS-MANVILLE ASBESTOS WAINSCOTING

(As the furnishing and applying of this material is generally made a part of the carpentery specifications, the following has been prepared to be so included.)

Note: The following information relates to work allied with the application of the Wainscoting and should be provided for in the specifications for the work involved:

Studs shall be spaced at 16" centers and so located as to allow the erection of the sheets of Wainscoting with the least amount of cutting and to the most symmetrical arrangement. Studs or grounds shall be provided at all points where the nailing of the clips or other nailing is to be done. Grounds shall be provided, to which bath room accessory fittings, etc., are to be secured.

In fireproof construction grounds shall be set to receive all nailing.

The Contractor shall furnish and install Johns-Manville Asbestos Wainscoting to .....
(State in detail surfaces to be covered)

Johns-Manville Asbestos Base and Cap, joint covering strips, and other standard accessories required in erecting the tile shall be included.

Height—The Wainscoting shall be erected to a height of .....
.....
(State height or preferably "as shown on drawings")

Color—The Wainscoting shall be ....., the joint
(State color)
strips....., the base and cap.....
(State color) (State color)

Insulating Board Backing—(omit if not to be used) Johns-Manville Insulating Board shall be installed as a backing over which the Wainscoting shall be erected.

Installation—The Wainscoting and accessories shall be installed in strict conformity with the printed instructions of the manufacturer.

Note—If this Contractor is to include the erection of the bath room accessory fittings such as towel bars, etc., so state, including a list of such fittings.

KEASBEY & MATTISON COMPANY

AMBLER, PA.

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Products

FIREPROOF Ambler ASBESTOS PRODUCTS

AMBLER ASBESTOS WALTILE; AMBLER MARBLEITE; AMBLER ASBESTOS LUMBER; AMBLER LINABESTOS (Asbestos) Board.

For our pages on Ambler Asbestos Shingles; Asbestos Corrugated Roofing and Siding; Asbestos and Magnesia Pipe Covering and insulation materials, see Manufacturers' index.

Ambler Asbestos Waltile

A decorative fireproof sheet material furnished in a choice of seven colors and ready for immediate application to new or old walls. Sheets are 32″ x 48″, $\frac{3}{16}$″ thick, with a permanent glossy surface, scored 4″ x 4″ for tile effect.

The colors include: Pink, Cream, White, Smoke, Black, Apple Green and Nankin Blue. Waltile is recommended for wainscoting of bathrooms, kitchens, dinettes, laundries, halls, lavatories, pantries, professional offices, restaurants, stores, meat markets, etc. It is fireproof, vermin-proof and easy to clean.

Cap, intermediate band and base mouldings are furnished in the same colors as the sheets.

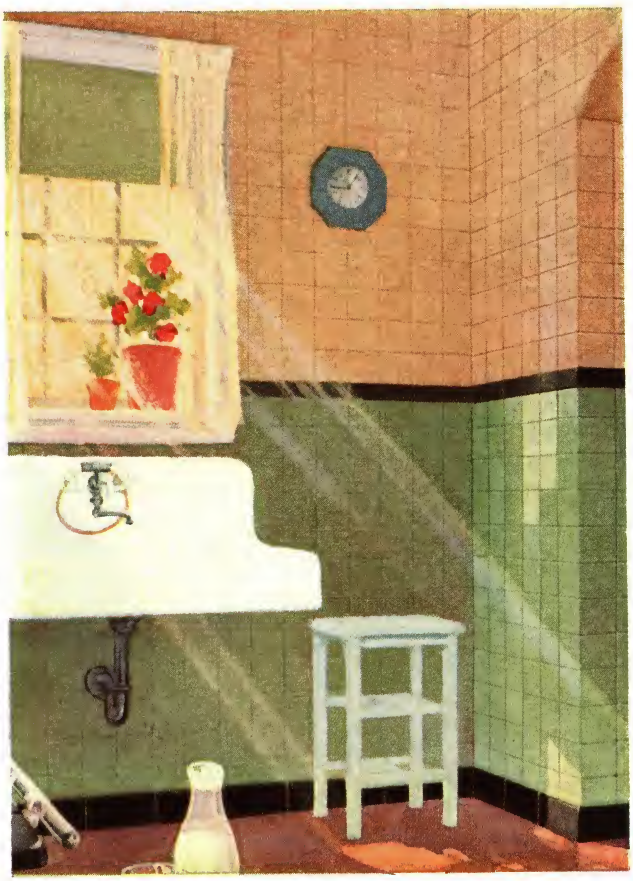
Waltile can be applied by any good mechanic. It may be nailed directly to new studding by drilling through the score marks and using brads furnished with each shipment. Touch-up paste and joint cement are also furnished. On masonry walls the sheets may be affixed with a plastic compound supplied by the manufacturer.



A MODERN BATHROOM MADE BEAUTIFUL AND SANITARY WITH AMBLER WALTILE

Fireproof Bathhouses

Ambler Asbestos Lumber, a sheet material of pleasing gray color, is particularly adapted for construction of fireproof bathhouses. Standard size sheets are 36″ x 48″, 42″ x 48″ and 42″ x 96″, supplied in thicknesses from $\frac{1}{8}$″ to 4″. Bathhouses made of this material are sanitary, fireproof and impervious to moisture or salt air.



CREAM AND APPLE-GREEN WALTILE IN A KITCHEN

Ambler Linabestos

Ambler Linabestos Wallboard is made of Portland cement and Asbestos Fibre, compressed into rigid sheets 48″ x 96″ or 48″ x 48″ in size, with thicknesses of $\frac{3}{16}$″, $\frac{1}{4}$″ and $\frac{3}{8}$″. This material is recommended for interior or exterior siding or wainscoting, fireproof partitions and all places where a flame-proof, rigid, dense wallboard is required. Its natural color is a pleasing buff; it may be sized and painted to conform to any decorative scheme desired.

Ambler Marbleite

Ambler Marbleite sheets reproduce in exact detail the beauty of the finest specimens of selected marbles, at but a fraction of the cost. The base of these sheets is a fireproof asbestos board approximately ¼-inch thick. The surface is tough, glistening and enduring. This finish is fadeproof and has an instant appeal to the architect or builder.

Sheets are 32 x 48 inches. Cap and base to match are furnished in any desired width.

Four styles of Ambler Marbleite are now available:

Jaune Fleuri (Spanish type)
Black-and-Gold (African type)
Verd Antique (Italian type)
Solid Black



A STORE FRONT OF BLACK AND JAUNE FLEURI MARBLEITE



A THEATRE LOBBY FINISHED IN BLACK-AND-GOLD AND JAUNE FLEURI MARBLEITE

Ambler Marbleite is an ideal material for theatre lobbies, store fronts, window bulks, paneling around fireplaces, wainscoting of halls in office buildings and public buildings, restaurants and similar uses.

To produce the delicate shadings and to assure permanency, only mineral pigments have been used. These pigments are baked on the sheets under pressure and heat.

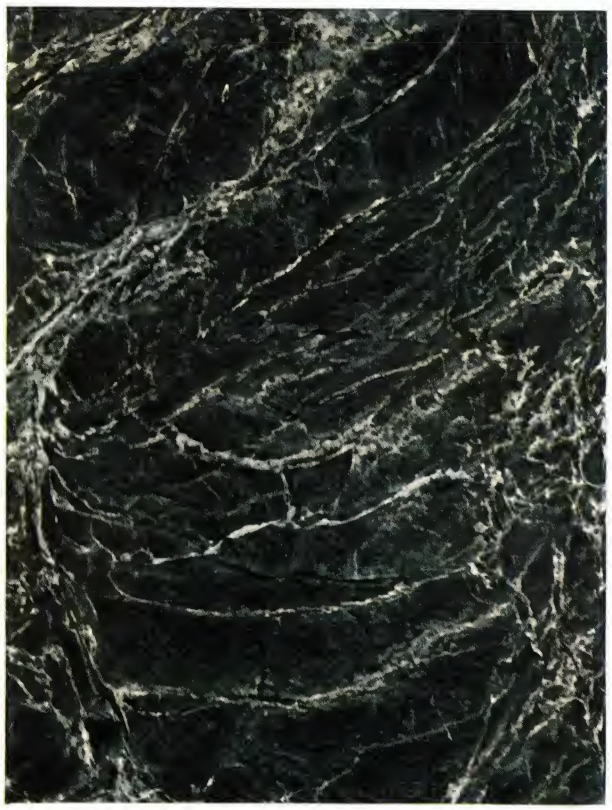
Ambler Marbleite sheets may be applied by nailing with brads through small holes drilled through the sheets, then countersinking the brads and touching up the surface with a "Touch-up Paste" furnished by the manufacturer. Nickel-headed screws may be used instead of brads if desired. When applied to old plaster walls a plastic compound also furnished by Ambler may be used to hold the sheets.



A BOARDWALK RESTAURANT IN ATLANTIC CITY PANELED WITH AMBLER MARBLEITE



CLOSE-UP OF JAUNE FLEURI MARBLEITE

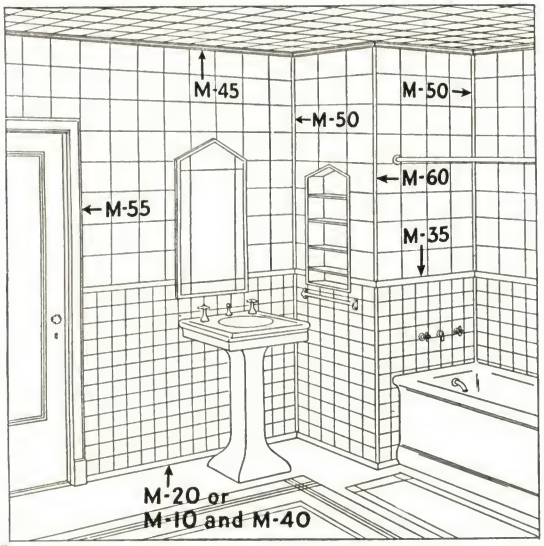


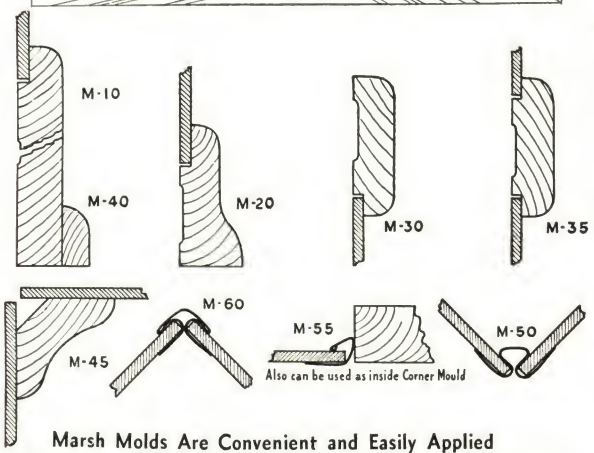
CLOSE-UP OF VERD ANTIQUE MARBLEITE

MARSH WALL TILE COMPANY

DOVER, OHIO

BEAUTIFUL—MARSH WALL TILE—MODERN





Marsh Molds Are Convenient and Easily Applied

All wood molds are moistureproof treated and grooved every 5⅛ in. Available in any standard color

Numbers and Description of Molds

M-10 Wood Base—Size $\frac{9}{16}$x4½ in. Rabbeted for tile.

M-40 Wood Base Shoe Mold—Size ½x¾ in. Use with No. M-10.

M-20 Wood Base—Size $\frac{13}{16}$x1¾ in. Rabbeted for tile.

M-30 Wood Cap—Single rabbet. Size $\frac{9}{16}$x 1¾ in.

M-30 Wood Division—Double rabbet. Size $\frac{9}{16}$x1¾ in.

M-35 Wood Division—Double rabbet. Size $\frac{9}{16}$x1¾ in.

M-45 Ceiling Angle Cove Mold—Wood cove for ceiling angle. Can also be used for base when wider mold than M-40 or M-20 is required. Size $\frac{13}{16}$x1¾ in.

M-50 Double Inside Corner Mold—Rustproof metal; permanent finish; 5 and 8-ft. lengths.

M-55 Single Inside Corner Mold—Rustproof metal; permanent finish; 5 and 8-ft. lengths.

M-60 Outside Corner Mold—Rustproof metal; permanent finish; 5 and 8-ft. lengths.

A Low Cost Sanitary Tile Finish Wall Material for Residential or Commercial Installations

MARSH Wall Tile is specially processed and treated warp-proofed Masonite Presdwood to which a hard but flexible synthetic glazed surface is permanently integrated.

This tilelike glaze surface is beautifully finished by a burnishing treatment which completely seals the pores so that moisture and dirt cannot penetrate.

Acids, alkalis and non-abrasive cleaning compounds are repelled, insuring a stainproof, easy-to-clean surface which retains its beautiful appearance for years.

The toughness of this glaze surface, its flexibility combined with hardness, prevents crazing and chipping, and makes marring difficult, even by hammering.

Marsh Wall Tile is applied in sheets by cementing to leveled walls of any type. The necessary molds and trim can be supplied to cover any normal requirement.

The cost of finished installations is approximately one-half of ceramic tile cost, yet fully comparable to the latter in beauty and serviceability.

For both residential and commercial installations, Marsh Wall Tile is ideal wherever a sanitary wall finish is desired at low cost.

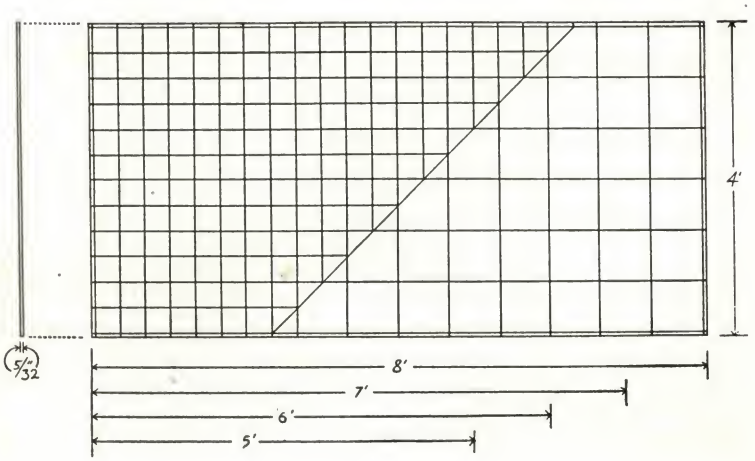
Available in Seven Beautiful Colors

Natural White with gray joints, No. C-1-5.
Lark Ivory with gray joints, No. C-2-5.
Robins Egg Blue with ivory joints, No. C-4-2.
Orchid with ivory joints, No. C-6-2.
Pheasant Green with ivory joints, No. C-3-2.
Dove Gray with ivory joints, No. C-5-2.
Black with ivory joints, No. C-7-2.

Note: Any selection of the above colors for joints is available. Color samples and complete installation specification sheets furnished on request.

Standard Sheet Sizes

Standard sheets are 4x5 ft., 4x6 ft., 4x7 ft., and 4x8 ft.
Standard blocks are 4, 8, 12 and 16 ins. square.



ASBESTOS LIMITED INC.

Manufacturers of "Newtile"—Asbestos Tiling in Sheet Form

8 West 40th Street, NEW YORK, N. Y.

WORKS: MILLINGTON, N. J., U. S. A.; LACHINE, CANADA; GENOA, ITALY

Product

"NEWTILE"—Asbestos Tiling in sheet form.

For "Newmarble" Asbestos panels simulating marble, see Manufacturers' Index.

"Newtile"

"Newtile" lends itself to the embellishment of whatever surfaces would ordinarily be considered suitable for tiling. Its gleaming beauty and its long wearing, water and fire resisting qualities make it an eminently satisfactory product, particularly where economy is desirable. Wherever walls can be tiled—in every home or business building—architects and builders are specifying the use of "Newtile" for smart ceramic effects.

The "Newtile" base is a strong, rigid sheet of asbestos. This is finished with a hard, highly polished surface closely resembling ceramic tile. Scoring at 4-in. intervals perfectly reproduces the effect of 4-in. square tiles even to the appearance of natural mortar joints.

The surface of "Newtile" is non-absorbent and repels dirt so completely that an occasional wiping with a damp cloth or washing with soap and water will restore its original brilliant lustre at once.

Colors

"Newtile" is furnished in four pastel shades—white, green, blue and cream; also black and red. These colors were selected for their ability to blend with practically any color scheme. "Newtile" base and cap are also made in the same colors.



A Typical "Newtile" Bathroom

How Furnished

"Newtile" is furnished in sheets, base and cap, in the following sizes:

Sheets: 32x48 ins., $\frac{3}{16}$ in. thick.
Base: 4 ins. wide, 48 ins. long, $\frac{3}{8}$ in. thick.
Cap: 2 ins. wide, 48 ins. long, $\frac{3}{8}$ in. thick.

Installation

Cutting—"Newtile" sheets are best cut with a $\frac{1}{8}$-in. carborundum wheel or a hack saw. However, they can be scored deeply front and back with a sharp instrument and broken cleanly and evenly. The cut edge must be worked with a flat file for close fitting. Any cutting or mitering of the base and cap can be done with a hack saw, filing the cut smooth for tight fitting.

Installing—*New Brick, Plaster or Masonry Surfaces*—Walls should be furred at 16-in. intervals before attempting to apply "Newtile." It is essential that masonry or plaster upon which furring is attached or embedded be dry and set before attaching "Newtile." Unless this precaution is observed any warping in the furring or studs will result in like distortion of the "Newtile" sheets.

Old Plastered Walls—It is advisable, where plaster is applied directly to the masonry, to furr so that the furring strips will be flush with the plaster. In order to do this the plaster should be removed at proper intervals to receive the necessary strips.

Note: Where it is not possible to use furring strips the use of "Newtile" *Plastic Compound* is recommended.

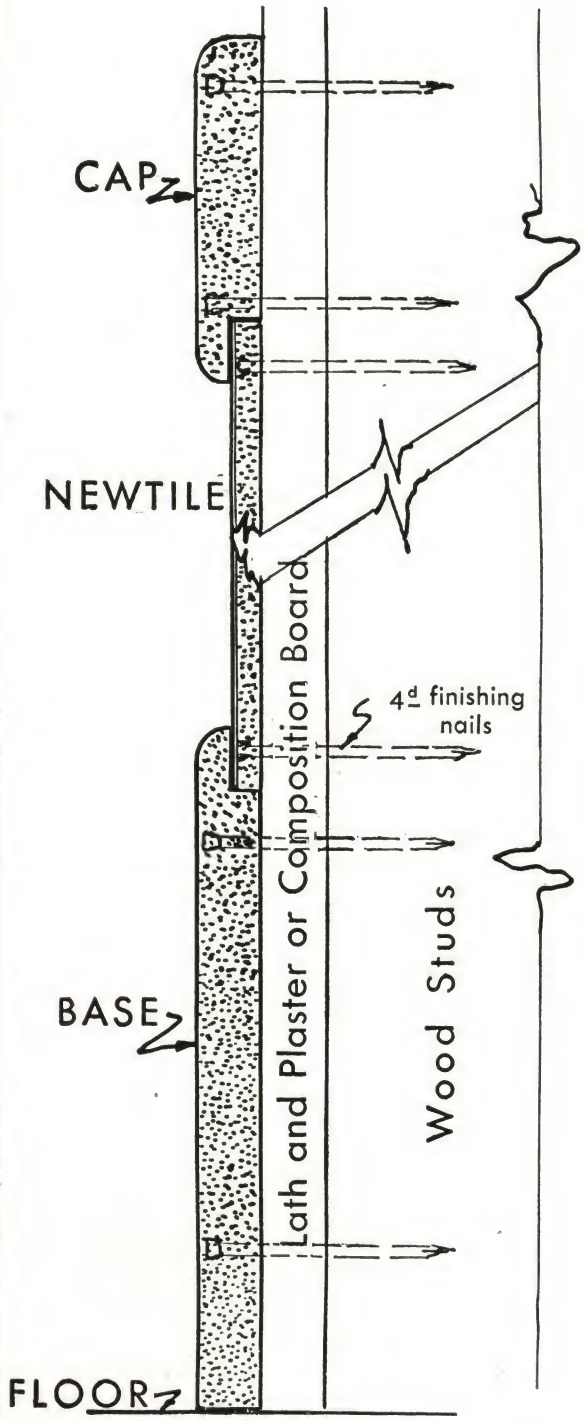
The first step after final inspection to insure a smooth, square and plumb-free wall, is to set the base in place. The scoring (on 8-in. centers) should be in line with the scoring on the "Newtile" sheets. Base should be set level and plumb shimming the floor where needed. If the plaster does not reach the floor it is advisable to fasten a 3 or 4-in. wood nailer strip flush with the base of the plaster surface, nailing it to the stud at the floor line. A hole is then drilled through the "Newtile" base with a No. 49 twist drill and the base attached to the studding with 4d finishing nails, which should be driven about $\frac{1}{8}$ in. of being tight, allowing space for slipping the "Newtile" sheets into the slot of the base.

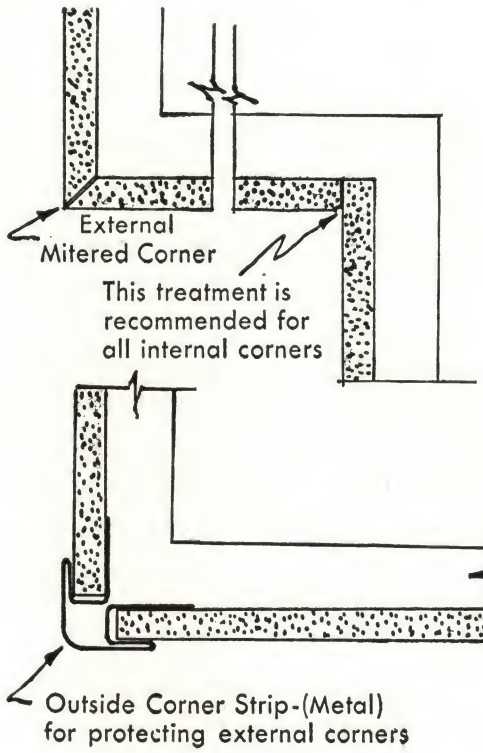
The "Newtile" sheets are now fitted to the entire surface, finishing one wall at a time. The top edge of the sheet with 4-in. base will be 51¾ ins. from the finished floor. The "Newtile" sheets are then nailed, through the scoring, at occasional intervals, to the studding or furring strips. Sheets should be tightly pressed together to avoid any gaps that might reveal the joints. "Newtile" *Joint Filler* will waterproof the joints if applied along the slots of the base and cap moulding and between the sheets.

Twist drill, finishing nails and "Newtile" Filler are included in each case of "Newtile."



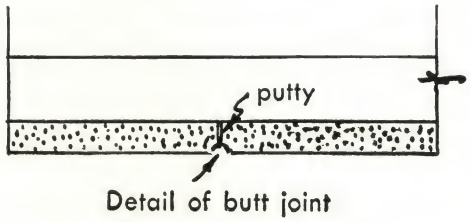
A Kitchen Finished with "Newtile"



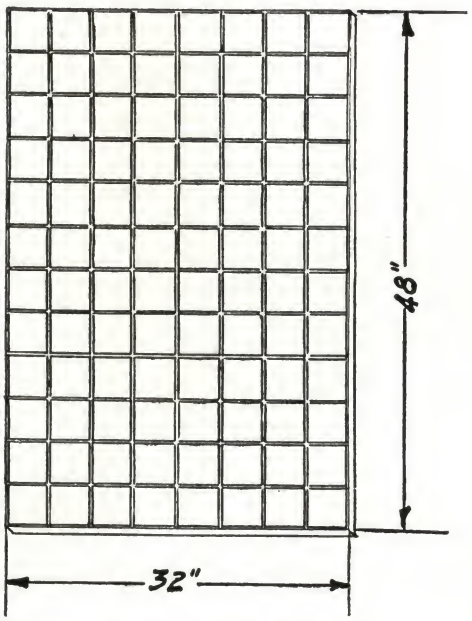


DETAIL No. 1

DETAIL No. 2



DETAIL No. 3



Sheet of NEWTILE

Detail No. 1 shows how Newtile sheets may be mitered for outside corners—or, if preferred, corner bars as shown in *Detail No. 2* of metal finished to match the sheets may be procured from the manufacturer.

The inside corner joint shown in *Detail No. 1* provides a satisfactory inside corner, and this treatment is our recommendation for all inside corner work.

Detail No. 3 shows how vertical and horizontal butt joints are made.

"NEWTILE" INSTALLATION DETAILS

UNITED STATES GYPSUM COMPANY

GENERAL OFFICES
300 West Adams Street, CHICAGO, ILL.

For Sales Offices, see Sweet's Manufacturers' Index for U.S.G. Catalogue on Gypsum Lathing and Plaster Products

CHROMITE—Non-corrosive Metal Tile-like Decoration

Description

Chromite is made of non-corrosive metal sheets, on one surface of which is applied a lustrous enamel tile finish, and into which is impressed the tile design. Because of the character of the surface, and the manner in which it is applied, Chromite does not chip or scale. A sample bent between the hands demonstrates that the finish does not crack until the tough metal itself is broken. The lightness and strength of the sheets make the application extremely simple. Any competent painter or paper hanger can make an excellent Chromite installation. The sheets are applied to walls and ceilings with Chromite Adhesive, a waterproof, putty-like mixture.

Chromite can be applied over plaster, gypsum wallboard, painted surfaces, etc. So flexible are the sheets, despite their strength, that they can be bent or moulded to conform to the contours of practically any surface.

Where uneven size pieces of Chromite are needed at corners, fixtures, etc., or to form a special pattern, the Chromite sheets can be accurately cut to size with a pair of stout shears.

Chromite is inexpensive. The first cost, compared to the cost of other decorative tile materials, is surprisingly low.

Colors

Chromite is made in five (5) standard colors: orchid, green, blue, canary yellow and orange—each two-toned. Chromite may also be obtained in snow white, ivory white (ivory white shipped unless otherwise specified), and black. Flat strips, Chair Rails and Diamond Borders are made in all standard colors.

Use

Chromite is admirably adapted in residences to bathrooms, breakfast nooks, pantries, etc. In hotel and apartment corridors, lobbies, stores and similar places where a high degree of beauty, durability and sanitation are desirable Chromite finds favor.

In existing buildings unsightly cracked and soiled walls, whether of Keene's cement or plaster, painted or calcimined, may be covered with Chromite, assuring warm color, charming design, and a sanitary, wearproof surface.

Sizes

Chromite Sheets—Approximately 16x24 in. (24, 4x4-in. tiles).

Chromite Accessories—

Flat strips ½ in. wide x 24 in. long. Diamond Border, 2⅜ in. wide x 24 in. long. Chair Rail (channel), 1 in. wide x ¼ in. deep x 24 in. long and 2½ in. wide x ⅜ in. deep x 24 in. long.

Packages

Chromite Sheets—Packed in tight wooden cases, 81 sheets totaling 216 sq. ft. and 42 sheets totaling 112 sq. ft. to the full and half case, respectively. Two colors can be shipped to a case. Cases will not be broken.

Chromite Accessories—Packed approximately 52 and 26 lineal ft. to the full and half case, respectively. Colors of accessories may be assorted. Cases will not be broken.

Chromite Adhesive—Packed in one (1) quart cans, 24 cans to the case; one (1) gallon cans, six (6) cans to the case; also in three (3) gallon and five (5) gallon cans with lug tops. One (1) gallon of cement is sufficient for approximately 85 sq. ft. of Chromite.

Chromite Baseboard

Baseboard is made of hard, black composition $\frac{3}{32}$ in. thick, 4 in. high in 3½ ft. lengths. It is cut with a hacksaw and drilled with a steel bit.

Chromite Bathroom Accessories

Chromite bathroom accessories (towel bars, paper holders, etc.) are made of fine gray iron castings finished with three coats of vitreous porcelain enamel in all Chromite colors.

CHROMITE—MASTER SPECIFICATIONS

Note: *Notes are explanatory or advisory only and should not be included in the specifications.*

Note: *Since the specifications are comprehensive, select those clauses which apply to the particular work.*

(1) Work Included

(1a) The following areas shall be finished in Chromite in accordance with the drawings indicating areas, design and color.

Note: *Here list and locate.*

(2) Preparation of Surfaces

(2a) General—Walls *(and ceilings)* shall be smooth and straight. Level off any high spots by the use of a coarse file, a portable grinder or rough sand paper. Repair all cracks and fill all hollows with U.S.G. Red Top Patching Plaster and allow to dry thoroughly.

All walls *(and ceilings) (except those that are painted)* must be thoroughly primed, or sealed, to stop suction.

Walls *(and ceilings)* must be thoroughly dry before the application of Chromite.

Note: *Chromite may be applied to any smooth, flat non-shrinking, non-warping surface, such as sound plaster or Sheetrock. It must not be applied to fiber or pulp wallboard. Chromite follows the surface contours; therefore, these must be smooth and true.*

(2b) Calcimine, Water-color or Whitewash—Wash surfaces thoroughly, removing the coating. When dry, seal.

(2c) Wallpaper, Prepared Wall Fabrics—Remove, including paste. When dry, seal.

(2d) Paint—Wash thoroughly. When dry, seal all patches.

(2e) Enamel Paint—Thoroughly moss with coarse sandpaper or fine steel wool to provide a bond for the adhesive.

(2f) Rough or Sand Float Finishes—Sand (or brick) down smooth and prime.

(3) Materials and Mixing

(3a) General—All materials shall be as made by the United States Gypsum Company.

(3b) Tile—Chromite Sheets and Flat Strips.

(3c) Chair Rails—Chromite Chair Rail Sections.

(3d) Adhesive—Chromite Special Waterproof Adhesive. Stir thoroughly to assure a uniform consistency throughout the can. Mix nothing with the adhesive. The adhesive at times will appear too stiff in the can, but if emptied on a non-absorbing surface and kneeded for a few minutes, a perfect working material will result. Always work adhesive at room temperature of 70° F. just stiff enough to stick without running.

(4) Application

(4a) General—Store Chromite on edge in the mill cases in a dry, warm place. Bend or cut Chromite only at temperature of at least 70° F. If required, slowly heat to approximately 125° F. and work while warm.

(4b) Cutting the Sheets—Use shears with drop handle and long (preferably 8-in.) blades. Cut through the exact center of the tile joint. Great care must be exercised not to bend the sheet. Incline the shears to prevent curling of the edge.

(4c) Fitting the First Sheet—It is imperative that great care be exercised in fitting and setting the first sheet—tile joints must be absolutely vertical and horizontal. Begin at the bottom of the wall, at a re-entrant angle, and build upward.

Before fitting the first tile, adjust horizontal joints, if necessary, to accommodate piping, etc. (See 4o2).

Allow at least ¼ in. for scribing at the bottom of the first sheet to take up any irregularities in the floor and base.

Allow at least ¼ in. on the angle side of sheet for any irregularity of the angle. If angle is so much out of plumb that this allowance is insufficient, true up with patching plaster.

Carefully plumb the sheet and scribe and trim the angle edge to the angle and the bottom to fit the top of the base.

(4d) Gouging Plaster at Re-entrant Angles—With a putty knife or other sharp tool, cut away the plaster to straighten the angle. Then cut a narrow slit or groove ¼ in. to ⅜ in. deep in the wall adjoining that to be first covered, to take the angle edge of the Chromite sheets.

Note: *If the wall be of Sheetrock (Gypsum Wallboard), grooving is unnecessary. The Chromite sheets are butted at the angle allowing ¼ in. to ⅜ in. for scribing and trimming to take up irregularities of the angle.*

(4e) Laying Out the Wall—Hold the first sheet firmly in accurate position with tile joints plumb and level. Draw accurately the top and exposed vertical edge on the wall and project the horizontal line with a spirit level across the wall and the vertical line with a plumb line and straight edge to the tiled height. These lines form the guides for the fitting of subsequent sheets.

(4f) Applying Chromite Sheets—Lay the Chromite sheet face down on a smooth spreading board (a 2x3-ft. well sealed wallboard will serve). With a broadknife (a 4-in. scraper knife or wide putty knife), spread the adhesive uniformly over the sheet to a thickness of about 1/16 in. Uniformity of adhesive thickness is most desirable—the edges particularly.

Note: *Some decorators prefer to apply the adhesive in a uniformly thick coat to the wall, leveled off with the broadknife over an area about 1½ in. wider in both directions than the size of the sheet. This method assures absolutely even thickness of adhesive at the edges of the sheet which is essential. This method should not be used on ceilings.*

Lift the sheet by placing both hands underneath. Set it in place, shoving the angle edge *(into the plaster groove) (against the wallboard).* Adjust the sheet to a plumb, level position.

Work out the air pockets from behind the sheet by gently rubbing the surface with a pad of cheesecloth, from the center outward toward the edges. Test by striking with the knuckles.

(4g) Stagger Sheets—Avoid four corners joining. Halve every other sheet in bottom row, thus staggering joints.

(4h) Joints—The edges of the sheets shall butt accurately, maintaining all joints in exact alignment.

When surrounding pipes conducting heat, where there is constant expansion and contraction, cut the sheets into fourths to produce more compensating joints.

When setting the sheet, wipe the joints to remove surplus adhesive from the surface.

(4i) Re-entrant Angles—The sheets first applied at a re-entrant angle shall be *(shoved into the groove in the plaster—see (4c)) (butted against the adjoining Gypsum Wallboard).* The edges of the sheets applied to the adjoining wall shall be scribed and trimmed to butt singly against the face of the Chromite applied to the wall first covered. No part of a joint mark shall show in the angle.

(4j) Corners—The sheets shall be bent accurately around corners. Before applying the adhesive to the sheet, hold it firmly between two smooth, straight boards and bend it over the edge of one, using care to avoid kinks.

(4k) Ceiling Angles—When Chromite is applied to ceilings, a 1-in. wide Chromite Chair Rail shall be applied to the wall at the ceiling line to hide irregularities.

Note: *Where this is not done, the tile will usually be uneven and therefore unsightly. When a ceiling is decidedly out of square, the tile joints should run diagonally.*

(41) Chair Rail Grounds—Chromite Chair Rails shall be backed by wood *(Sheetrock)* grounds *(2½ in. wide x 7/16 in. thick) (1 in. wide x ¼ in. thick)* accurately nailed to the walls and thoroughly primed.

(4m) Chair Rails at Corners—Cut an accurate 45-degree V in top and bottom flanges and carefully bend the channel to fit the corner. Trim the flanges if necessary to butt snugly.

(4n) Chair Rails at Re-entrant Angles—After miters have been accurately cut in top and bottom flanges, butt the channels at re-entrant angles.

(4o) Fitting Around Piping, Fixtures, etc.—

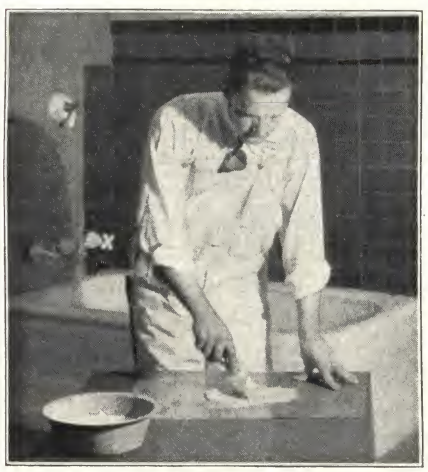
(4o1) Where plumbing fixtures, etc., are not in place. Locate the exact center of the supplies, etc. on sheet. With sharp-pointed dividers describe a circle of required diameter on front and back of sheet, exerting sufficient pressure to cut the Chromite. Then tear out inside area.

(4o2) Where plumbing fixtures, etc., are in place loosen escutcheon and arrange the jointing of the sheets to center if possible on the pipes. Split the sheet on the tile joint and trim out a semicircular opening at the edges to fit around pipes.

(4o3) Wherever possible Chromite sheets shall extend behind the edges of plumbing fixtures, tanks, electric switch plates, wood trim, etc. Loosen erected plumbing fixtures, etc., sufficiently to accomplish this, and after adhesive has thoroughly set, draw the fixtures firmly against the face of the Chromite.

(5) Cleaning

Surplus adhesive shall be immediately removed from the face of Chromite with clean cheesecloth moistened with benzine. Do not attempt to scrape off hardened adhesive with a hard instrument. Carefully clean all work the day that it is applied, since the adhesive will harden overnight.



Applying Adhesive to Chromite



Applying the First Chromite Sheet



Fitting Chromite Around Fixtures

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U. F. DURNER, Secretary-Treasurer

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United States Tile & Marble Co.
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146 Nassau St., N. W., Atlanta, Ga.
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U. S. Mosaic Tile Co., Chas. Mion
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American Mosaic & Terr. Co., A. G. Ferrarini
1730-40 Carroll Ave., Chicago, Ill.
John Caretti & Co., Mel & Jim D'Ambrosio
66 W. Ohio Street, Chicago, Ill.
Davia Brothers Marble Co., Ralph Davia
2410 S. LaSalle Street, Chicago, Ill.
Illinois Terr. & Tile Co., John D'Ambrosio
1229 Belmont Avenue, Chicago, Ill.
National Terr. & Mos. Co., Jos. Mattelig
2512 S. Oakley Avenue, Chicago, Ill.
Rennen Terr. & Mos. Co., A. J. Rennen
11 S. LaSalle Street, Chicago, Ill.
Western Mos. & Terr. Co., Oliver Stello
4216 W. Ogden Avenue, Chicago, Ill.
Peoria Terrazzo Co., D. W. Covey
Cornhill Street, Peoria, Ill.
Cassini Mosaic & Tile Co., Gus Cassini
2321 Third Avenue, Rock Island, Ill.

INDIANA

Art Mosaic & Tile Co.
218 W. Berry Street, Fort Wayne, Ind.
American Art Mosaic Tile Co., A. C. Francescon
1042 E. Wash. St., Indianapolis, Ind.
Santarossa Mos. & Tile Co., D. M. Santarossa
2707 Roosevelt Ave., Indianapolis, Ind.
South Bend Terr. & Tile Co.
215 Odd Fellows Bldg., South Bend, Ind.

IOWA

Sioux City Mosaic Co., Mr. Smit & A. Tramontina
W. 1st & Rebecca Street, Sioux City, Iowa

KENTUCKY

American Mosaic & Tile Co., Romano Rosa
323 E. Broadway, Louisville, Ky.
Keno Rosa Co., Keno Rosa
524 S. Brook Street, Louisville, Ky.

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126 Magazine Street, Boston, Mass.
Galassi Mosaic & Tile Co., Elias Galassi
Bennet & Ash Streets, Boston, Mass.

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State Terrazzo & Tile Co.
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2920 Orleans Street, Detroit, Mich.
Venetian Marble Mos. Art Co., Ernest Botton
655 Monroe Avenue, Detroit, Mich.
Flint Mosaic & Terr. Tile Co., E. Pomei
5508 S. Saginaw Street, Flint, Mich.
Grand Rapids Art Terr. & Mos. Corp., John B. Rossi
563 Grandville Ave., Grand Rapids, Mich.
Maddalena Brothers
613 Union Street, Jackson, Mich.
A. D. Crosby, Inc., A. D. Crosby
623 S. Hosmer Street, Lansing, Mich.

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214 S. 21st Avenue, W., Duluth, Minn.
Grazzini Bros. & Co., Frank Grazzini
620 16th Avenue, So., Minneapolis, Minn.
Northwestern Marble Corp.
Minneapolis, Minn.
Venice Art Marble Co., Peter Brescancini
3158 Snelling Avenue, Minneapolis, Minn.
Artcraft Mosaic Co., M. R. Franceschina
556 Prior Avenue, St. Paul, Minn.

MISSOURI

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International Terr. & Mos. Fl. Co., C. W. Berry
519 Southwest Blvd., Kansas City, Mo.
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Giudicy Marble, Terr. & Tile Co., Wm. H. Anfield
3801 Eiler Avenue, St. Louis, Mo.
Pellarin & Co., John Pellarin
Chemical Bldg., St. Louis, Mo.
Terrazzo Co.
1232 Arcade Bldg., St. Louis, Mo.

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Universal Terr. & Mosaic Co.
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NEW JERSEY

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Italian Mos. & Marble Co., Inc., A. DeSpirt
1085 E. Delavan Avenue, Buffalo, N. Y.
De Paoli Co., Inc.
527 W. 45th St., New York, N. Y.
V. Foscato, Inc.
40th Ave. and 22nd St., Long Island City, N. Y.
L. Limanti & Son, Leone & Alf. R. Limanti
1051 Grand Cent. Term., New York, N. Y.
Tileflo Mfg. Co.
642 E. 13th St., New York, N. Y.
Traitel Marble Co., R. S. Knight
Webster Ave. & E. River, Long Island City, N. Y.
U. S. Mosaic & Terrazzo Corp.
390 Butler St., Brooklyn, N. Y.
Saratoga Marble & Tile Co.
163 Saratoga Ave., Rochester, N. Y.
Schenectady Tile Co., F. H. Alessandrini, Pres.
785½ State Street, Schenectady, N. Y.

NORTH CAROLINA

Atlanta Marble & Tile Co.
J. R. Marcus, Charlotte, N. C.

OHIO

Cassini Mosaic & Tile Co., R. Cassini
1027 Broadway, Cincinnati, Ohio
Cincinnati Mosaic & Tile Co., Gus Cassini
1630 Vine Street, Cincinnati, Ohio
Martina Brothers Co., John Martina
561 Reading Road, Cincinnati, Ohio
Roy Cliff Marble Co., Harry A. Kinson
4500 Euclid Avenue, Cleveland, Ohio
Ardit Mosaic Tile & Marble Co., A. T. Ardit
665 W. Mound Street, Columbus, Ohio
Serena Brothers, M. Serena
1225 Ray St., Dayton, Ohio
Art Terrazzo & Tile Co.
161 E. Water St., Sandusky, Ohio
Venetian Marble Mos. Co.
46 Hudson St., Tiffin, Ohio
Art Mosaic & Tile Co., M. Fioritti
216 Sycamore Street, Toledo, Ohio

OKLAHOMA

Tulsa Terr. & Mos. Co., B. Cozzi
9th and Midland Valley Tracks, Tulsa, Okla.
United Tile & Terrazzo Co., Inc.
1112 S. Lewis Ave., Tulsa, Okla.

PENNSYLVANIA

Erie Mantel & Tile Co.
1115 Peach St., Erie, Pa.
Belfi Brothers & Co., C. Belfi
1923 Market Street, Philadelphia, Pa.
Central Brick & Tile Co.
1635 W. Broad St., Philadelphia, Pa.
John Di Sopra
801 Land Title Bldg., Philadelphia, Pa.
Italian Marble Mos. Co., A. E. Dinon
433 Spruce Street, Philadelphia, Pa.
Pennsylvania Tile & Mosaic Co.,
1637 Wood St., Philadelphia, Pa.
Philadelphia Marble & Tile Co.
Kensington & Sedgeley Aves., Philadelphia, Pa.
Roman Mos. & Tile Co., A. Trevisan
435 Green Street, Philadelphia, Pa.
Fort Pitt Tile & Mantel Co., R. Patrizio
2120 Fifth Avenue, Pittsburgh, Pa.
Patrizio Art Mosaic Co., G. Patrizio
2022 Fifth Avenue, Pittsburgh, Pa.
United Marble & Tile Co., Wm. T. Mullen, Pres.
Ann St., Pittston, Pa.

TENNESSEE

Standard Tile Co., P. Marus, Mgr.
747 E. 11th St., Chattanooga, Tenn.
Indestructible Mos. & Tile Co., John Beretta
217 Walnut Street, Knoxville, Tenn.

TEXAS

Edwin Dezendorf Co.
205 Congress Ave., Austin, Tex.

VIRGINIA

R. N. Vanderberry
Roanoke, Va.

WASHINGTON

Rodgers Tile Co.
117 Yale Ave., North Seattle, Wash.

WEST VIRGINIA

Jos. Pasquali
211 Eighth Avenue, Huntington, W. Va.

WISCONSIN

Art Mosaic Tile Co., J. Chiuminatto
129 North Broadway, Green Bay, Wis.
John Widi
226 S. Broadway, Green Bay, Wis.
Lumina Terr. & Tile Co., Inc., L. Lumina
1208 Regent Street, Madison, Wis.
American Marble Mosaic Co., V. Foscato
1440 North Water St., Milwaukee, Wis.
Cafmeyer Brothers, Harry Cafmeyer
322 W. Juneau Ave., Milwaukee, Wis.
U. F. Durner Co., Inc., U. F. Durner
815 W. St. Paul Ave., Milwaukee, Wis.
International Terr. & Tile Co., G. DeCandido
2225 N. Humboldt Ave., Milwaukee, Wis.
Milwaukee Terrazzo Co., Harry Butler
724 N. Milwaukee St., Milwaukee, Wis.
H. Neidner & Co., H. C. Neidner
909 N. Water St., Milwaukee, Wis.
Stark Mantel and Tile Co., Walter Stark
2516 W. North Ave., Milwaukee, Wis.
Wisconsin Mos. & Tile Co., Pete Basso
2233 N. Fourth St., Milwaukee, Wis.

CANADA

Flesher Marble & Tile Co., N. J. Flesher
130 13th Ave., West, Calgary, Alta., Canada
Empire Marble & Tile Co., E. R. Schwarz
Edmonton, Alberta, Can.

CUBA

Luis Mion
Havana, Cuba

THE ASSOCIATION

Organized to Render a New and Practical Service to an Ancient Industry and to Architects; and to Develop the Art and Scope of Terrazzo and Mosaic

A Nation Wide Membership

The Association is nation wide in scope and is therefore enabled by its widely distributed membership to further the aims of the Association as stated hereafter.

Members of the Association are located in most of the large cities of the United States as well as in Canada. The names and addresses of the contracting members have been listed alphabetically under states and cities so that the members in each city can be more readily located by architects and contractors throughout the country.

What the Membership Means to the Architectural Profession

On joining the Association, each member is required to pledge himself to do all work in the best manner and in strict accordance with the terms of the specifications of his contracts.



A Beautiful Terrazzo Floor in a Classic Design

In doing business with members of the Association, architects and general contractors are assured of good workmanship and materials by contractors who are qualified and competent in this trade. They are also assured of the employment of competent mechanics and the best methods for the proper execution of their work.

The Integrity of the Members

Before a contractor is admitted to membership in the Association, he is thoroughly investigated as to qualities, competence and financial standing. The architect is assured that the members are men of honesty and integrity as it is a privilege for a contractor to be a member.

The Association Demands Fair Treatment of the Architects by Its Members

All members of the Association have pledged to treat honestly, fairly and sincerely all architects in the execution of their work and have pledged themselves to do only the highest type of work as required by the profession.

Investigation by the Association of Complaints of Architects against Its Members

The Association will welcome complaints from architects against its members for violation of the above pledge in working with architects. It will thoroughly investigate all such complaints bearing all expenses for such investigation.

National Specification of First Class Terrazzo Work

In order to establish a standard of practice and quality of workmanship for first class terrazzo work, this Association has prepared a National Standard Specification which is intended to fully cover the requirements for a first class terrazzo job.

The adoption of this specification by all architects will be security for obtaining the type of work which the members of this Association have pledged themselves to perform.

Special Services and Samples for Architects

Members of this Association are ready at all times to prepare samples and submit suggestions regarding terrazzo and mosaic work. They will also gladly advise regarding approximate costs of different types of design in terrazzo or combinations of terrazzo and mosaic or various types of mosaic.

The Employment of Members of the Association

It is suggested, in so far as possible, that members of this Association be employed for the execution of terrazzo and mosaic work. In this way the architect is assured of results in keeping with the high standards of quality to which members of this Association have pledged themselves.

TERRAZZO

An Artistic and Lasting Material with Almost Unlimited Possibilities for Decorative and Enduring Results in the Hands of the Architect

Terrazzo Is Not a Substitute For Any Other Material

The art of terrazzo is one which dates back to pre-Christian era and Egyptian times. It is therefore not a new product although its use has been revived to enormous extent since the introduction of fire-proof construction in modern buildings.

Within the last decade, terrazzo has come into its own. Its really fine qualities, both from a practical as well as artistic standpoint, have become better known.

Its Decorative and Wearing Qualities Peculiar to Itself

The entire architectural profession has turned to the use of terrazzo, recognizing its wearing qualities, its susceptibility to design and wide range of colors obtainable and its low cost of cleaning. Made from the natural marble or stone in combination with cement, it is the nearest approach to marble in its general qualities, but costing considerably less.

With the use of metal strips, practically any design can be executed at short notice beforehand, or right at the job. The use of colored marble chips and colored cements makes possible results consistent with any decorative scheme.

It is also a known fact that terrazzo improves in looks with use; the constant polishing of foot traffic develops a mellowness in its colors and a patina which blends in with the decoration instead of deteriorating.



Terrazzo Floor in Bullock's Inc., Wilshire Store, Los Angeles, Cal.

Terrazzo and Its Base Are of One Unit and Do Not Become Loose

When properly laid, in accordance with this Association's Standard Specifications, the terrazzo layer becomes one unit with its base without the danger and trouble of coming loose. This is also a fact worth considering in the cost of upkeep of a building.

The Use and Advantages of Terrazzo for Floors

The increasing demand for high grade terrazzo and its use on an increasingly large scale for buildings of every type is ample proof of the advantages of this type of floor. This is due to its artistic as well as utilitarian qualities, the standpoint of economy in the original investment, maintenance, sanitary and wearing qualities. For these reasons terrazzo is being used to an increasing extent in hospitals, Government and institutional buildings, office buildings, stores, churches, schools, etc.

Floors May be Polished or Made Non-Slip

Terrazzo can be finished with the surface desired. It may be given the standard or honed finish or, in special cases, a polished finish. Where it is necessary or advisable, it may have a non-slip surface by adding non-slip aggregate. This is desirable on stairs, ramps, etc.

Use for Wainscots, Stairs, Strings, Walls, Ceilings

While finishing as a monolith, its application in plastic form allows terrazzo to be applied at the job for wainscots, wall and ceiling finishes, stair treads, risers, strings, etc., whether the requirements are either for flat work or curved to conform to structural conditions.

Its various uses are shown in the accompanying illustrations.

Almost an Unlimited Number of Color Possibilities as well as Combination with either Marble or Mosaic

There are hundreds of color combinations possible in terrazzo by the use of various proportion of colored marble chips as well as colored cement. This allows the architect the use of almost any color scheme he desires.

Terrazzo may be used to give color in fields of floors when they are divided by marble bands, or again, as decorative colored bands in marble floors. Mosaics may also be used with terrazzo either as bands or inserts.

These combinations can greatly enhance the looks of pavements in such places as banks, main entrances and lobbies of public buildings or other public rooms or spaces where beauty of finish and decoration is desired.

Care of Terrazzo Floors

Terrazzo floors, to be kept in proper condition, should be cleaned with pure soap chips or soft soap. Powders with strong alkali content should never be used. They kill the cement binder, cause disintegration and subsequent pitting of the floors.

Two pails of water and two mops should be used in the cleaning process, one for the soap water and one for the rinsing. Water should be changed frequently, so as to avoid smearing the floors with the accumulated dirt in the water.

Where floors receive heavy service and are exposed to dirty condition, they must be scrubbed with a brush by hand, or, where the areas are large, with a machine. In this case ordinary mopping is not sufficient.

If this method of cleaning is observed, the floors will not need coating with oil or wax. They will, from wear, get a natural patina which will bring out the colors of the marble and prevent accidents due to floors made slippery by the use of oil or wax.

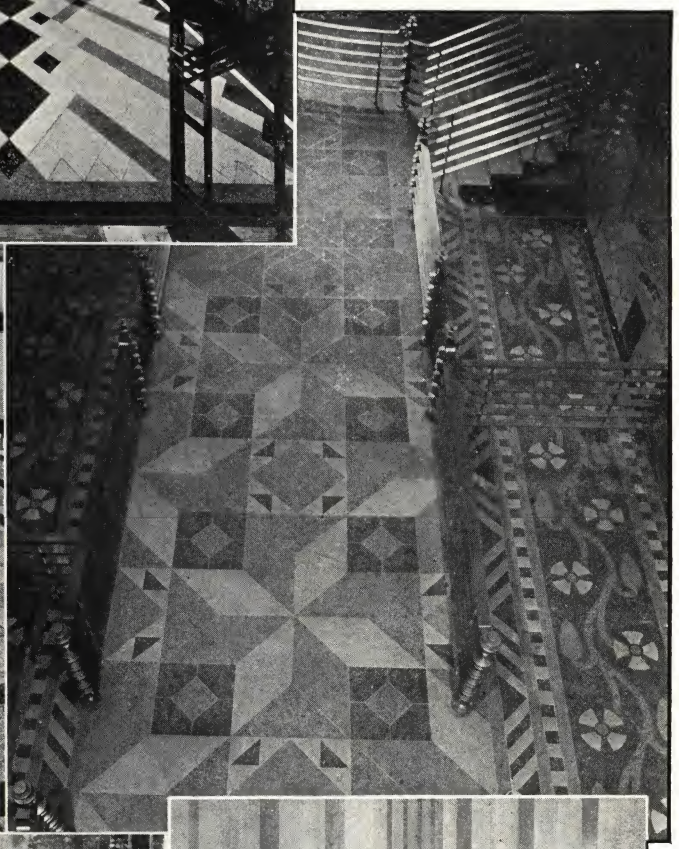
SOME SUGGESTIONS OF THE POSSIBILITIES OF TERRAZZO FOR FLOORS

The two large illustrations are those of terrazzo floors in banks. In both cases, interest of design in a permanent material was desired at low cost. The treatments show how designs of a formal nature may be developed in large floors.



Top center: Floor in office building corridor of terrazzo in modernistic design.

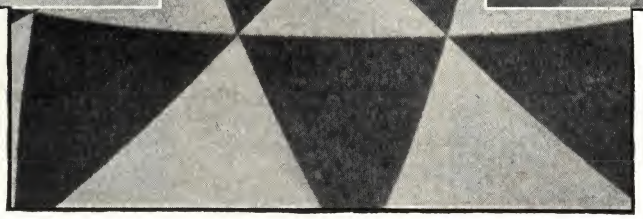












Lower left: Terrazzo floor in shop where originality and decorative design of sales value were desired.

Lower center: An intricate design in the foyer of a large newspaper building.

Lower right: An unusual terrazzo floor of decidedly modern character; in an office reception room.

SOME SUGGESTIONS IN REGARD TO DESIGNING AND USE OF TERRAZZO

Main Dividing Strips Should Follow the Lines of the Structural Steel or Concrete to Avoid Possibility of Cracks from Settlement

The Proper Use of Brass Dividing Strips in Terrazzo

One of the important structural improvements and causes for the development in the use of terrazzo has been made possible through the use of metal dividing strips of various kinds.

Metal strips were originally used with terrazzo with the idea of placing them so that they would be directly above and follow the lines of the structural steel or concrete. After these main divisions were taken care of, then the balance of the areas could be divided into smaller areas or designs. This was done with the object of preventing, so far as possible, and localizing the cracking resulting from the settlement of, or general shrinkage of the structure. If cracks developed due to these causes it was a simple matter to replace at small cost such sections that developed cracks.

Incorrect Use of Brass Strips

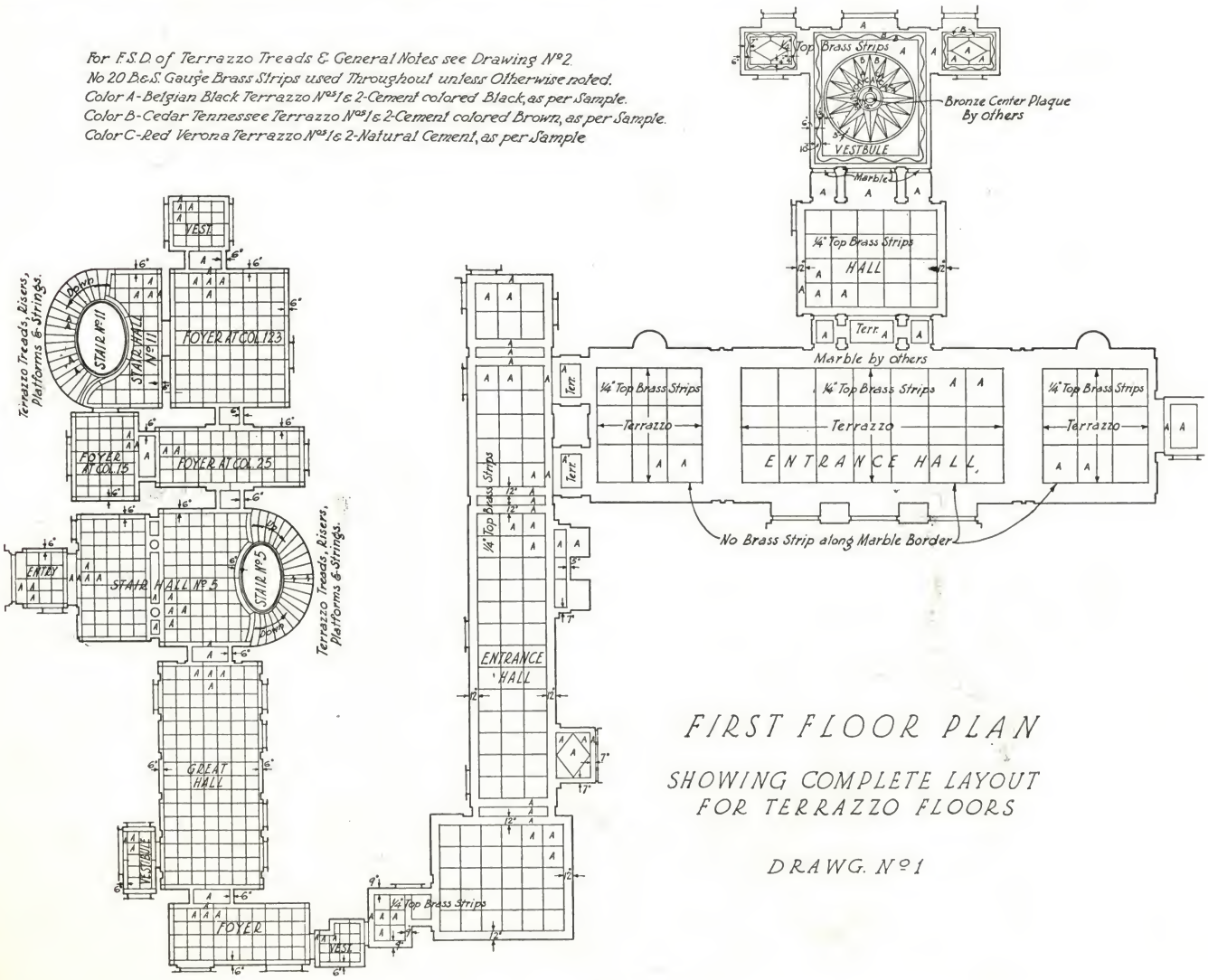
In many cases this basic idea has been lost sight of by designers in trying to develop a certain design or pattern in the floor. It is suggested that it is not necessary to sacrifice design or effect in attempting to so locate metal strips to avoid cracks, and this should be kept in mind when laying out a design.

If these suggestions are carried out, settlement cracks over structural members will be reduced to a minimum. Cracks are not due to any weakness of material but are due to shrinkage or settlement in the structure of the building.

The use of the metal strips also allows a wide range in the separate use of different colors and combinations of color in designs, which would be prohibitive in cost without them.

Submission of Shop Drawings

Illustration, below, of a general plan indicates proper manner in which terrazzo work should be detailed for the architect's approval in order to eliminate possible errors in the execution of the work. By showing the metal strip design in all spaces, the metal to be used and various colors throughout, an opportunity is afforded to discover and correct any difference in the requirements before any of the work is laid.



FIRST FLOOR PLAN

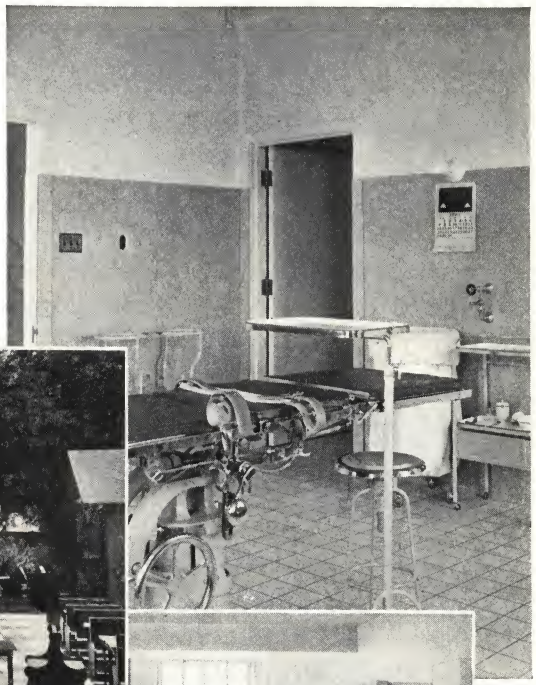
SHOWING COMPLETE LAYOUT FOR TERRAZZO FLOORS

DRAWG. N°1

OTHER PRACTICAL AND DECORATIVE USES FOR TERRAZZO



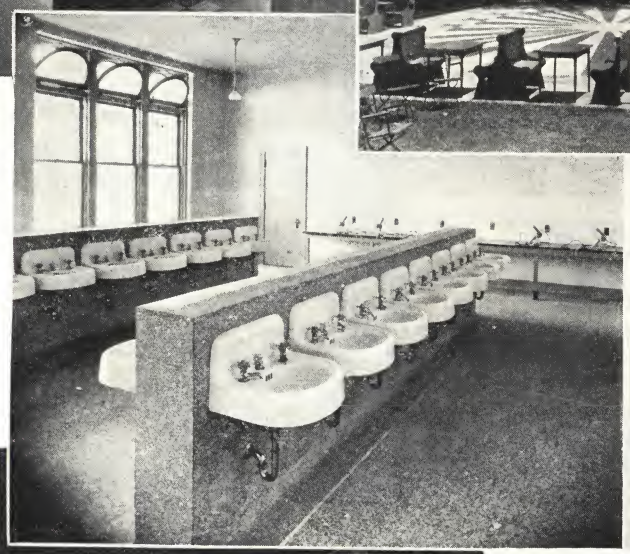
Left: Kitchen with walls, arch, window reveals and sills of terrazzo; decorative bands in marble mosaic.

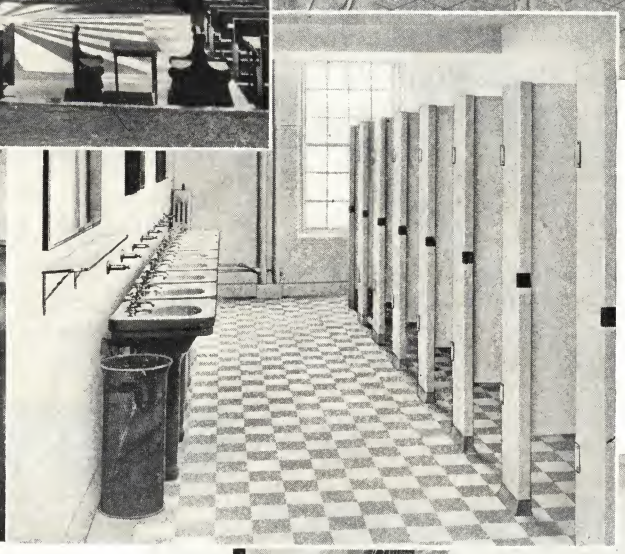


Right: Terrazzo wainscot and floor in operating room.



Center: Terrazzo outdoor dance floor.







Left above: Floor, base and partition of terrazzo.

Right above: Floor, wainscot and toilet partitions of terrazzo.

Lower left: Terrazzo wainscot, stair, railing, baluster, newel and seat.

Lower right: Non-slip terrazzo riser, treads and platforms of stair.



MOSAICS

THE MODERN USE OF AN ANCIENT DECORATIVE TREATMENT FOR FLOORS AND WALLS

There has been a decided increase in this country within the last ten years of an appreciation of the great decorative possibilities of the art of mosaic. Mosaic is one of the oldest forms of embellishment and decorative application to floors and walls. Coming down from earliest times through Greece, the Roman Empire, the early Christian era to the thirteenth century in Italy, it has had a wonderful development as a means of decorative expression.

At the time when Rome was at the height of its power, there was hardly a building of any size or importance, either public or private, which was not decorated with mosaic in some form, on floors and walls.

That the art of mosaics is gaining attention in this country is readily seen when such examples as in the Nebraska State Capitol, the Rochester Savings Bank, the Bowery Bank in New York and new Irving Trust Co. building at Wall Street—to mention only a few of the many important buildings—are now decorated with mosaic either on floors or on both floors and walls.

FOUR MAIN TYPES OF MOSAICS

There are four main divisions of modern mosaics which are known to the trade. These are classified as Roman, Cosmati, Venetian and Byzantine. In a general way these are merely trade designations to indicate four general types of mosaic rather than the historical classifications. The difference between the classifications are as follows:

Roman Mosaic—This refers to mosaic made up generally of small cubes of marble, from ¼ to ¾ in. on a side, which may be formed in either geometric or pictorial designs.

Cosmati Mosaic—A type of marble mosaic consisting of larger pieces of marble in the form of squares, triangles, hexagons, etc., with a wealth of color and forming most intricate designs. Used principally for floors.

Venetian Mosaic—This refers in general to what is known either as glass or enamel mosaic and is used for wall and ceiling decoration.

Byzantine—Glass or enamel mosaic in pictorial subjects, religious in character executed after that used in the Byzantine churches of the early Christian era.

ROMAN MOSAICS

This classification, as it is now known to the trade, generally covers marble mosaics, except the Cosmati type. There are, however, several types of mosaics or classifications under this heading as they were known in ancient times. According to Mr. Mathew Digby Wyatt, R. I. B. A. dec., an architect who made a long study of mosaics, Roman mosaics were classified into four groups as follows:

Opus Tesselatum—Of marble, applied to floors.

Opus Sectile—Of marble, applied to floors.

Opus Vermiculatum—Of marble and smalti, applied to floors and walls.

Opus Figlinum—So called glass mosaic (smalti) applied to walls.

Opus Tesselatum—Is a marble mosaic of Roman origin in which the "tesserae" were ¼ to ¾-in. cubes set in geometric pattern generally of Greek fret character and originally executed only in black and white. Many of the floor mosaics in Pompeii were of this character. The use of other colors was a later introduction.

Opus Sectile—This is also a marble mosaic but with larger geometric slabs of marble, arranged in geometric patterns and depending on the shape of the unit, veining of the marble, as well as the design, for its interest. Opus Sectile was never used for pictorial effects, as far as is known. It dates from about 50 B. C. The pieces ordinarily vary from 2 to 4 in. in size vary from squares, triangles, hexagons. They were generally set in marble borders. Probably one of the finest specimens in larger size units now extant is the pavement of the Pantheon at Rome. The type depended for much of its beauty on the use of rare and fine marbles.

Opus Vermiculatum—The most elaborate of the four types and limited to the direct or naturalistic portrayal of figures, designs and pictorial subjects. The work was done mostly in full color by means of arrangement of small cubes of different colored marbles as well as pieces of Opus Figlinum when required to give brilliant color. It was in this material that the great masters of marble mosaic art worked and these specimens are the most numerous of any extant.



A Modern Reproduction of a Floor in Pompeii in Opus Tesselatum

Opus Vermiculatum has been classified into three different variations as follows:

The Major—Applying to vaults and pavements.

The Medium — Generally to walls.

The Minor—Generally to pictures and portable ornaments.

EXAMPLES OF MOSAIC FOR FLOORS





Above:

An example of Roman marble mosaic in a modern type of Opus Vermiculatum-Major.

Left:

Combination of Roman marble mosaic, Opus Vermiculatum, for figure panel and Cosmati for border.

Right:

An example of Roman mosaic, Opus Tesselatum, used to decorate marble and travertine floor.

Below:

Exceptionally fine example of Cosmati in over-all treatment.





The "Major"—Applied in representing mythological figures in pavements, etc. The work was coarse in character and the squares were used to represent curves in a manner similar to that used in tapestry. As it was all on a large scale, this was not so apparent when viewed from a distance. The work was executed mostly in black and white marbles. This is similar to that shown at the top of page 8, a part of the floor in the Nebraska State Capitol.

The "Medium"—More delicate and finer in size and shading, used mostly for fruit, flowers, cupids, etc. It was used in the very best parts of the houses in Pompeii in floors, but was also a wall or mural decoration.

The "Minor"—The very finest and most elaborate of the three types of Roman work. It consisted of minute pieces of marble and smalti, some pieces being less than one-twentieth of an inch across and formed the most delicate and elaborate pictures. These were used as decorations but have also been found in floors in Pompeii.

Opus Figlinum or Fictile—Refers to the glass-like mosaics or smalti used in the decoration of walls, vaults and ceilings as well as for accents in floors. It could be made in any variety of color including gold. Smalti was made from a composition of silica and alumina, making a glasslike, opaque, brittle substance which could be colored to any degree of strength or delicacy by use of metallic oxides. It was first used in the Baths of Agrippa, as well as in Pompeii. The discovery of smalti gave great advantages to the artist in that it made possible the obtaining of colors which were impossible to obtain in marble, therefore giving him wider scope for his talent. The process of making gold mosaic was also developed and specimens are found in this material in Pompeii. When used as murals, the mosaic was later developed entirely in what is now designated as glass or enamel.

COSMATI MOSAIC

This mosaic is so called after the Cosmati, a famous Roman family of mosaic artists running through several generations during the 13th century. The work was of the highest character and followed that of Opus Sectile of very fine detail, more like that of the Alexandrinum mosaics. That illustrated of the floors at the bottom and left on page 8 and lower right on page 10, are good examples of this character of work.

VENETIAN MOSAIC

This refers to what is now called glass or enamel mosaic made from a substance called "smalti." The work may be either geometric in design or pictorial. It really comes under the old classical designation of Opus Figlinum, the geometric type, and Opus Vermiculatum, the realistic pictorial type. This type of glass mosaic was developed in Rome, mainly by Greek artists. Then it was brought probably to its height of development in Venice. Venetian mosaic can, but does not necessarily, include the use of the famous gold glass mosaics. The choice of colors is unlimited for this type of work.

BYZANTINE MOSAIC

What is now known as Byzantine mosaic to the trade is that form of glass or enamel mosaic which was developed in the early Christian churches. It was used only to represent and reproduce the forms of objects such as figures, architectural forms, conventional foliage with slight indications of shading, all on a gold ground. The subjects were religious in character and represented Christ and the Apostles, saints, religious symbolism, etc. Probably the highest development being the beautiful mosaics of St. Mark's Venice.

This was divided into three general types:

Glass Mosaic—Opus Musivum which was imitative and used for walls and ceilings.

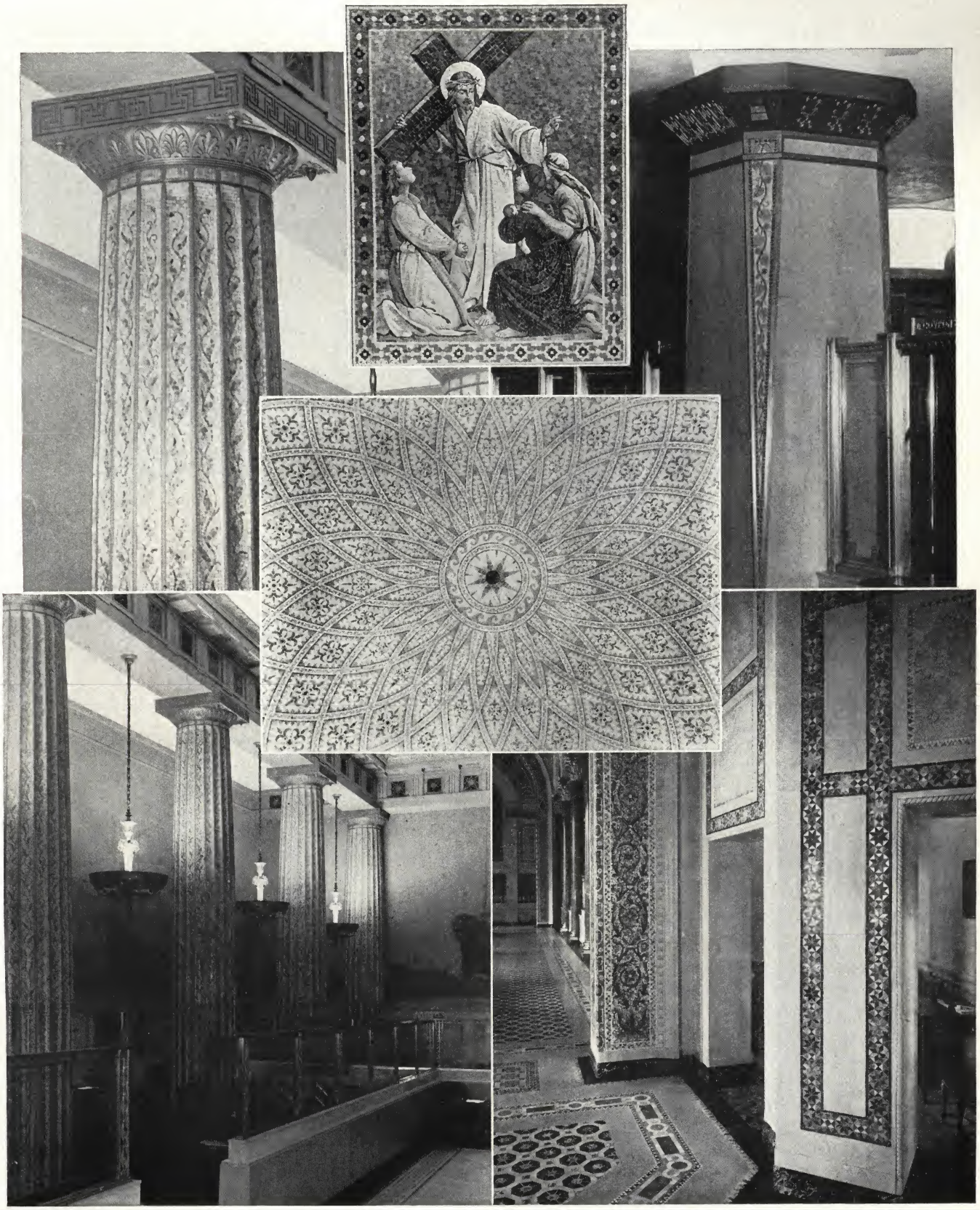
Glass Tesselation—Generally referred to the insertion in grooves, cut to the depth of about a half inch in marble, of small cubes of various colored and gold glass or smalti similar to the Opus Figlinum. This was used to decorate not only walls but, chancel screens, pulpits, thrones, etc. It was purely geometric in design. It dated from about 580 A. D. and survived for many centuries all over Italy.



Byzantine Enamel Mosaic Medallion
Fountain Street Baptist Church, Grand Rapids, Mich.

Marble Tesselation—Opus Alexandrinum is somewhat similar in design to the Glass Tesselation except that it consisted of small cubes usually of porphyry or serpentine marbles. These marbles of reddish purple and green were used in geometric pattern in grooves cut in the white marble pavements. This form existed from the time of Constantine down to the thirteenth century in most of the Italian churches.

TYPES OF MOSAIC TREATMENT FOR WALLS, ETC.



Top center: Venetian mosaic, pictorial type.

Upper and lower left: Roman mosaic inlaid in flutes of round columns.

Center: Roman mosaic domed ceiling in a conventional type of decoration.

Upper Right: Roman mosaic inlaid on edges of square column.

Lower right: Venetian mosaic on walls showing decorative types, with Opus Sectile and Cosmati marble mosaic on floor.

STANDARD TERRAZZO AND MOSAIC SPECIFICATIONS

AS ADOPTED BY

NATIONAL TERRAZZO AND MOSAIC ASSOCIATION

General Conditions

(1) The standard form of the "General Conditions of the Contract" (Fourth Edition, Copyrighted 1925) issued by the American Institute of Architects are a part of this specification. The owner and this contractor agree that the general conditions are as fully a part of the contract documents as though they were attached or appended hereto.

Supplementary Conditions

(2) The following Supplementary Conditions of the contract are to clarify and define the terms of the general conditions as they apply to this section of the work.

Definitions—

(3) The term, this contractor, shall in all cases refer to the contractor for the terrazzo and mosaic work. Where this contractor assumes the contract from a general contractor then this contractor becomes a subcontractor under the terms of the general conditions of the contract and his rights are as there defined for a subcontractor

(4) Where this contractor enters into direct contractural relationship with the owner, then his rights are those as defined for a general contractor.

Operating Facilities—

(5) The following facilities are to be provided free of charge to this contractor. By the general contractor if this contractor is operating under a subcontract, or by the owner if the contract is direct.

(6) Ample, dry, clean storage space shall be provided for the storage of all materials, tools, and equipment of this contractor, convenient to the work in progress.

(7) The portions of the building in which terrazzo or mosaic is to be installed, shall be fully enclosed Heat shall be continuously maintained above freezing during the entire time that this contractor's work is under way.

(8) Use of elevator or other hoisting apparatus and gangways shall be provided as needed to facilitate the progress of the work.

(9) Water connections shall be provided on every floor of a building where terrazzo or mosaic is being installed.

(10) Electric power at 110 and 220 volts and the necessary light shall be furnished and maintained continuously for the operation of this contractors' equipment.

(11) The electric current at the building construction is ( ) phase, ( ) cycle, ( ) volts. (Alternating) (Direct) current (state which).

(12) Power is to be brought in to each floor and made available with suitable plug-in outlets in a manner to conform to local ordinances or union requirements.

(13) Where necessary, sufficient electric light shall be installed and supplied.

(14) A permit for motor operation shall be obtained from local authorities, by the general contractor or owner, for this contractor's work.

Shop Drawings—

(15) Supplementary to article 5 (shop drawings) of the general conditions, this contractor shall submit for approval, shop drawings or diagrams illustrating the jointing and other details of the terrazzo.

(16) Where large scale or full size cartoons are necessary to illustrate the mosaic work in detail, they shall be furnished by the architect and shall show size, arrangement and color of mosaic.

(17) Drawings or cartoons shall be based on the contract drawings and may be modified by measurements taken at the building.

(18) Additional copies of shop drawings shall be furnished as outlined in article 5 of the general conditions.

Samples—

(19) Before any part of the work is executed, this contractor will submit to the architect for approval, duplicate samples of each size or color of terrazzo or mosaic. Terrazzo samples shall illustrate the size and color of the aggregate; mosaic samples, the size and color of the tessera.

(20) When approved, one sample will be returned to this contractor for his guidance in executing the work; the other will be retained by the architect for comparison with the finished work.

Preparatory Work for Terrazzo Floors

(21) The following preparatory work will be furnished and installed by others and brought to the levels required for this contractor's work.
(Two methods are used in laying terrazzo floors over concrete construction. Method A is to bond terrazzo to the concrete and method B is to separate it from the structural slab, the latter method being employed when cracking is anticipated, from settlement, or expansion and contraction, or vibration, etc.).

Method A—

(22) The concrete fill is to be provided for by the general contractor and should be left 2 in. below the finished floor. (This concrete fill can be made of cement, sand and hard coal cinders in proportion of 1 : 1 : 6. Soft coal cinders must not be used. Slag, broken stone or gravel are also good aggregates for concrete fill under terrazzo floors.) Before the terrazzo contractor installs his under-bed, the contractor is to see that this concrete fill is thoroughly cleaned and swept of plaster droppings, wood chips and other debris. *(See paragraph 39 for corresponding workmanship.)*

Method B—

(23) The structural floor slab will be 3 in. below finished floor. Before the terrazzo contractor installs his under-bed, the general contractor is to see that the concrete structural slab is thoroughly cleaned of plaster droppings, wood chips and other debris. *(See paragraph 40 for corresponding workmanship.)*

Terrazzo on Vertical Surfaces—

(24) All vertical surfaces, whether of masonry or metal lath, shall be prepared to receive terrazzo by having a Portland cement foundation applied which shall be brought to within three-fourths (¾″) inch of the finished surfaces and finished to even, straight lines to give a uniform bed to receive terrazzo.

Marble Mosaic Floors—

(25) The concrete sub-fill shall be constructed as specified under paragraphs 22 and 23, finishing one and one-half (1½″) to two (2″) inches below finished floor, according to the size and thickness of tessera selected.

Mosaic on Vertical Surfaces—

(26) A Portland cement foundation, as specified under paragraph 24, shall be brought to within three-fourths (¾″) to one and one-half (1½″) inches of the finished surface, according to the size and thickness of tessera selected. This surface must be straight, even, and have a substantial uniform bed to receive marble or glass mosaic.

(27) The preparatory work specified in paragraphs 21 to 26 inclusive, shall be inspected by the architect or his authorized representatives and this contractor will not install any of his work until the architect has certified to the satisfactory condition of all preparatory work.

(28) This contractor shall not be required to assume responsibility for preparatory work installed by others.

Materials

(29) All materials used for the installation of work specified under this classification shall conform to the following requirements.

Water—

(30) All water used in the preparation of concrete, terrazzo, mosaic, or mortar shall be free from organic materials, acids, or strong alkalies. In territories where alkali is present in the water in excess of 20 grains of hardness, the water shall be softened and the alkali or hardness removed by Zeolite or chemical salts.

Sand—

(31) Sand shall be sharp, washed sand, graded from fine to coarse.

Cement—

(32) Cement shall be of a standard brand Portland. All cement shall conform to the standard specifications of the American Society for Testing Materials.

Dividing Strips—

(33) Dividing strips shall be one and one-quarter (1¼″) inches wide, not less than No. ( ) B. and S. gauge, and provided with a secure method of anchoring. Strips of brass or white metal may be used. (Specify which.)

Non-Slip Aggregate—

(34) When required to be used, non-slip aggregate shall be of an approved mixture which must be free from oxidizing or corrosive metals.

Terrazzo—

(35) Terrazzo shall be composed of marble chips and cement. The kind, color and size of marble shall be specified and as selected from approved samples. Cement shall be Portland, gray or white, as specified.

Marble Mosaic—

(36) Tessera shall be approximately five-eighths (⅝″) inch thick, of color, size and shape as specified. Marble mosaic shall be prepared, mounted on paper in mosaic shops. Patterns and ornamental designs shall be according to approved full size details.

Glass Mosaic—

(37) Gold and silver glass mosaic shall consist of Venetian glass of shape, size and color specified or indicated on contract drawings or approved full size details.

Enamel Mosaic—

(38) Enamel mosaic tessera shall consist of Venetian Smalti of approved thickness and shall be prepared on paper in mosaic shops from approved full size details or cartoons.

Workmanship of Terrazzo Floor

Method A—

(39) When the general contractor releases the floors to this contractor they shall be clean of all plaster droppings, wood chips and other debris. The entire surface shall be thoroughly wetted by this contractor to secure cohesion between the under-fill and the screed-bed. Then lay a screed-bed consisting of gray Portland cement one part, and clean sharp sand, four parts. This shall be uniformly spread and brought to a level approximately five-eighths (⅝″) inch below the finished floor.

Method B—

(40) When the general contractor releases the floor to this contractor they shall be clean of all plaster droppings, wood chips and other debris. This, contractor is to lay a one-quarter (¼") inch bed of dry sand over which he is to lay a sheet of tar paper overlapping at least two (2") inches at all edges. Over the paper lay a screed bed consisting of gray Portland cement one part, clean sharp sand four parts. This shall be uniformly spread and brought to a level approximately five-eighths (⅝") inch below the finish floor.

Dividing Strips—

(41) Into the screed-bed, while it is still in a semi-plastic state, install dividing strips or pre-assembled decorative units with the top edges forming a level, even and uniform surface. These strips to have proper bonding features and be of No. ( ) B. and S. gauge ( ) metal. (Indicate the gauge and state whether brass or white metal strips are desired.)

(42) Unless otherwise indicated on plans or detail drawings the floor shall be divided into panels approximately ( ) feet square and with a border consistent with panel spacing.

Terrazzo—

(43) The terrazzo topping to be approximately five-eighths (⅝") inch in thickness and shall be of granulated marble of colors to match approved samples. The topping shall be uniform in composition and the same marble granule that appears on the surface shall extend through the entire thickness.

(44) The granule to be composed of such proportions of Nos. 1-2 and 3 sizes as the architect shall specify.

(45) Where plans and specifications fail to indicate the color of the field and border combinations, the color shall be (solid) (alternating). (State which).

Mix—

(46) Composition for terrazzo mixture shall be in proportion of one (1) part Portland cement to two (2) parts marble granules, mixed dry. Lime proof, non-fading color pigments may be added to secure desired shades of color combinations. Sufficient water is to be added to make the mix plastic but not too wet.

Installation—

(47) The mix shall be placed in the spaces formed by the dividing strips and rolled into a compact mass by means of heavy stone or metal rollers until all of the superfluous cement and water is extracted; after which it must be thoroughly hand troweled until the granule is worked into a close, uniform texture and to an even surface.

(48) Where climatic conditions of extreme dryness make it necessary, the terrazzo is to be kept moist during all of the various operations.

Surfacing—

(49) When, in the judgment of this contractor, the floors have set sufficiently hard, they shall be machine rubbed, using coarse carborundum grit stones for the initial rubbing, after which a light grouting of pure Portland cement, of color to match that used in the terrazzo mix, shall be applied to the surface filling all voids; this shall be allowed to remain until the time of final cleaning.

Cleaning—

(50) Floors shall have the grouting coat removed by machine, using a No. 80 or fine carborundum grit. This cleaning or fine-stoning shall not take place sooner than seventy-two (72) hours after the floor has been grouted, after which it must be washed thoroughly with a non-alkali soap and water and left in this condition ready for approval.

Caution—

(51) Where it is not desired to continually clean floors with soap emulsions or polishing preparations, the floors should be scrubbed with machine or hand brush scrubbing using non-alkali soaps and clean water.

(52) Hydrofluoric, sulphuric, muriatic or other corrosive acids should not be used in solutions for cleaning floors. The most dilute solutions are the most corrosive.

Polishing—

(53) Where is it intended that this contractor polish the floors with special mixtures of soap emulsions or other polishing compounds or preparations it should be so stated in the specifications and the method of polishing be described.

Anti-Slip Foors—

(54) Abrasive grits, where called for, shall be used in the composition of the terrazzo mix to make the surface anti-slip, in the following proportions:

(55) For the heavy duty floors, two (2) parts of abrasive to three (3) parts of marble granule and the abrasive aggregate to be mixed in the terrazzo aggregate for its entire thickness.

(56) For light traffic floors, the abrasive shall be sprinkled on the surface only, and to show in proportion of five (5) parts marble granule to one (1) part abrasive aggregate.

Terrazzo Base—

(57) Where terrazzo base is called for, it shall be composed of a mixture as specified for floors. Base to be the height called for with a one-quarter (¼") inch projection beyond finished wall line or flush as required (state which). Where base is required flush with the wall line, a metal base bead, furnished and set by others, shall be set to a true line to form finish between base and plaster surface above.

(58) Base and border shall be divided approximately every four (4') inches lineal feet using metal dividing strips of No. ( ) B. and S. gauge and of brass or white metal as used in terrazzo floor. The walls back of the base to have a scratch coat of cement and sand mortar, set by others, brought to a line one (1") inch back of the finished face of the base. This contractor shall then apply a mix of one part cement to two parts sand which shall be brought to within three-eighths (⅜") inch of the finished face of the base into which the metal dividers shall be set while the scratch coat is still plastic. *Note*—If base is to be applied against wood or metal studding over lathing, the lathing with a scratch coat must be provided by others.

(59) Surfacing and grouting shall be done in all respects as specified for floors Base to be rubbed with a No. 100 or finer stone to leave the surface with a home-finish.

(60) Specifications shall state whether plinth blocks are required and whether moulded or plain.

Terrazzo Stair Treads, Platforms and Landings—

(61) Where terrazzo is to be placed on concrete stair construction the rough concrete, installed by others, shall be kept two (2") inches below the finished platforms, landings and treads and one and one-quarter (1¼") back of the finished risers, strings and curbs.

(62) Where steel stairs are installed and are to be finished with terrazzo, the metal surfaces are to be covered with metal lath and securely anchored to the metal surfaces, by others. Allowing for terrazzo from two (2") to three (3") inches on the treads and platforms. This applies to terrazzo run in place with exposed nosings. Where risers are required to be of terrazzo, they shall be similarly treated, leaving one and one-half (1½") inches from face of steel stair construction to face of riser.

(63) Where pre-cast treads are required for steel stairs, they shall be properly reinforced for their entire length and shall have two (2) large headed bolts cast in each end to templates with treads protruding in each tread for attachment to sub-tread of steel stair. Stair contractor to provide drilling of sub-tread correspondingly and shall furnish the iron nuts and the labor of fastening same.

(64) Two and one-half (2½") inches shall be allowed for terrazzo and setting bed on pan type stairs where treads only are to be of terrazzo. Pan treads to be reinforced with two (2") inches mesh, No. eighteen (18) gauge galvanized wire netting furnished and anchored to pane by others. Thickness of the terrazzo topping to be five-eighths (⅝") inch.

Anti-Slip Stairs—

(65) Treads, platforms and landings to be made anti-slip, where required, by mixing forty percent (40%) abrasive aggregates with sixty percent (60%) marble granule.

Terrazzo Vertical Surfaces—

(66) Where terrazzo is called for on walls, columns, pilasters, toilet and shower stalls or other vertical surfaces, it shall be applied and finished as specified for floors except that No. 100 or finer grit shall be used for rubbing. (Final rub and cleaning.)

Marble Mosaic Floors—

(67) Over the cinder concrete sub-fill, installed by others, this contractor shall lay a screed-bed, composed of one (1) part Portland cement and four (4) parts clean sharp sand, and screed same to smooth and true surface, three-fourths (¾") inch below the finished floor for five-eighths (⅝") inch thick tessera and one and one-quarter (1¼") inches for Cosmati mosaic.

(68) On this mortar bed lay the tessera, previously prepared on paper to required designs, taking care to ensure that adjoining sections shall be accurately joined so that the finished work shall present an unbroken and perfectly joined surface. Remove the paper and glue by a thorough washing of the surface and then properly grout all joints.

(69) After the mortar bed and grout have set, the entire surface shall be rubbed to a smooth and even surface, free from waves, holes or other defects, as specified for terrazzo.

Marble and Glass Mosaic on Wall or Ceiling Surfaces—

(70) Where marble mosaic is to be applied on wall or ceiling surfaces, this contractor shall first cover the foundation with a proper coat of mortar, composed of one (1) part of Portland cement, two (2) parts lime and three (3) parts of sand. This shall be floated to a smooth and true surface. On this the tessera shall be applied, the paper and glue completely removed, the surface grouted, and finished in a proper manner.

(71) Where glass mosaic is called for, the foundation shall be similarly coated with mortar of the same proportion, to which the previously prepared designs shall be applied. The paper and glue shall be removed and the surfaces grouted and properly cleaned.

Protection of Adjoining Work

(72) This contractor will be required to protect the adjoining work of other contractors from the rubbing, polishing and splashing which occurs in the various processes of the terrazzo work.

(73) This contractor shall bear the expense of repairing or of replacing any damaged work of other contractors for which his operations are responsible.

Final Cleaning

(74) This contractor, at completion of his work, or when directed by the architect, shall thoroughly clean all terrazzo or mosaic surfaces, repair or replace any damaged work, leaving the work in a perfect acceptable condition.

Rubbish

(75) As the work progresses, this contractor will be required to dispose of all debris or rubbish, placing it in a chute provided for the purpose by the general contractor. In the absence of a chute the debris shall be placed at a designated place on each floor, in containers if required. Removal of rubbish or debris from the building shall be by others.

Guarantee

(76) This contractor, as a part of his contract, shall furnish a written guarantee, warranting all materials and workmanship for a period of one (1) year from the date of completion and acceptance of his work as evidenced by the date of final payment. This contractor agrees to replace in perfect workmanlike manner any or all defective work which is found to be due to faulty materials or workmanship. This guarantee does not insure against cracking due to expansion and contraction of the building or to defective preparatory work of other contractors.

L. DEL TURCO & BROS., INC.

MAIN OFFICE AND WORKS
HARRISON, N. J.
NEW YORK OFFICE: 30 Church Street (Hudson Terminal Building)—Telephone, COrtlandt 7-1854

Products

TERRAZZO
PRE-CAST ALUNDUM AGGREGATE UNITS
MOSAICS
TILING

TERRAZZO

Best Practice in Laying Terrazzo Floors

The best practice in laying terrazzo floors is to separate them from the structural slab with a bed of dry sand and a sheet of strong paper rather than to bond them to the structural slab. Thus cracks originating in the concrete floor slab will not show at the surface but stop at the sand bed.

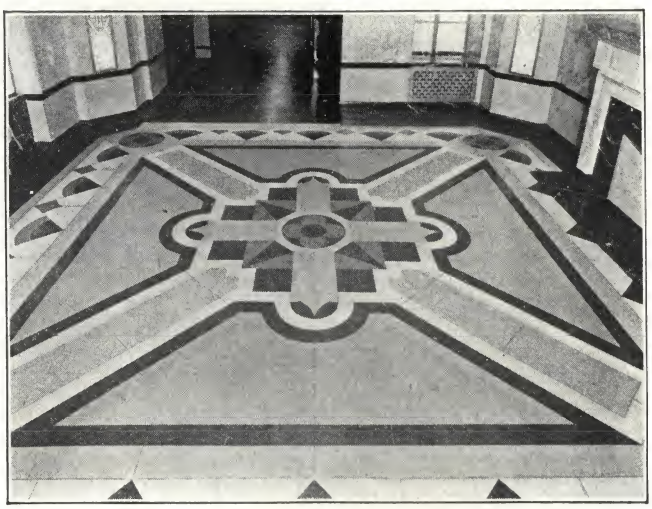
Fig. 1 shows the minimum thickness required for such a terrazzo floor. Where the thickness is more than 3 in. gravel or cinders can be added to the sand in the underbed.

Where the space is less than 3 in. it is preferable to bond the terrazzo to the concrete under it, because a thin terrazzo floor separated from the structural slab may become defective. In this case the concrete must be cleaned and wetted before applying the underbed to insure a proper bond.

Joints Formed with Brass Dividers

We form the joints in the terrazzo with brass dividing strips. Our dividers are correctly designed so that if a crack occurs it will run unnoticed along the strip. No. 20 B&S gauge is the standard thickness but we use thicker strips when certain decorative effects are to be obtained. White metals are also sometimes used instead of brass.

The most effective method of preventing or localizing cracks is to run continuous joints the entire length and width of the room parallel with the walls and columns (Fig. 2), exercising care that joints occur over beams and girders, and dividing the surface in sections of not more than 16 sq. ft.



Terrazzo Floor in Lobby, 7 Park Avenue, New York, N. Y.

Guaranteed Against Cracking for Two Years

Terrazzo floors laid by us in accordance with our specifications are guaranteed for two years against cracks.

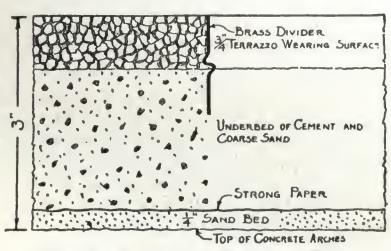


Fig. 1. Section of Terrazzo Floor

Terrazzo Base and Plinth Blocks

Terrazzo base is either precast and finished with suitable machinery at the shop and installed at the job the same as marble, or it is applied plastic on the job. Precast base has a better finish than the base run at the job and it costs about 50% more. Plinth blocks are always precast and delivered at the building in a finished state.

Specifications for Terrazzo Floors

All work to be laid in accordance with specifications of L. DEL TURCO & BROS., INC. Marble granule shall be of colors as selected. Cement (if white cement, state) to be colored if required. Submit samples.

Over the concrete, specified elsewhere, lay a bed of dry sand ¼ in. thick, and cover the sand with strong paper equal to sisalkraft. Lay the underbed composed of cement and coarse sand 1 to 4, and level off to exactly ¾ in. below the finish floor. Form borders and patterns (or squares) as shown on plans (if these are not detailed state here the size of the squares desired) by embedding in the mortar approved brass dividers (state gauge or thickness), set with their top level with the finished floor.

The dividers must be of a type that will divide the floor effectively and provide adequate anchorage so that they remain permanently embedded into it. When the underbed has hardened sufficiently to withstand rolling, spread the terrazzo aggregate ¾ in. thick composed of two parts of marble granule and one part portland cement. Roll and trowel in the best manner.

After the terrazzo has set grind the surface with abrasive stones using electric machines, and by hand where the machines do not reach. Leave the surface smooth and free from holes. Clean thoroughly, when so directed, and deliver the work in perfect condition.

Specifications for Terrazzo Base and Plinth Blocks

Plastic Base—Terrazzo base shall be .... in. high coved at junction with the floor and rounded at the top. It shall be set ¼ in. beyond face

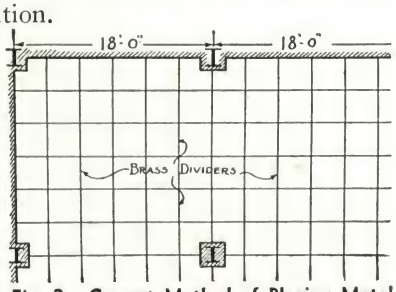


Fig. 2. Correct Method of Placing Metal Floor Dividers

of the plaster [flush with plaster]. Colors to be as selected. Base shall be run at the building integral with the terrazzo border. It shall be jointed about every 5 ft. with vertical brass strips. The base shall be rubbed and finished smooth, and washed at completion.

Precast Base—Furnish and install a terrazzo base .... in. high, coved at floor and rounded at top.

Base shall be precast, finished at shop, and delivered at the building ready to be installed. It shall be cast in lengths of about 5 ft. properly reinforced.

Base shall be anchored to the walls in a substantial manner. Point up the joints neatly and wash thoroughly at completion.

Plinth Blocks—Of the same terrazzo material shall be provided under all door trim wherever terrazzo base occurs.

Samples—Shall be submitted to the architect before proceeding with the work.

PRECAST ALUNDUM AGGREGATE TREADS AND TILE

Alundum Aggregate Treads

Alundum aggregate treads are made of a mixture of three parts of granulated marble and two parts of alundum aggregate, bonded with cement and reinforced with steel rods. The proportion of alundum and marble can vary, but the above will answer the requirements in nearly all cases.

The treads and platforms are precast and finished at the shop with suitable machinery and installed at the building by marble setters in the same way as marble.

Where Used—Alundum aggregate treads are used in schools, hospitals, hotels, office buildings, public buildings, apartment houses and wherever a safe tread with pleasing appearance is required.

Durable—Alundum abrasive is produced by the vitrifying process. It is a hard tough substance and our Alundum aggregate treads will outlast marble four times.

Colors—Made in various colors and with the help of marble granule and cement, any desired tone can be obtained.

Beautiful combinations can be worked out using Alundum aggregate treads with marble risers and strings.

The Dovetail-anchor Method of Fastening Precast Treads

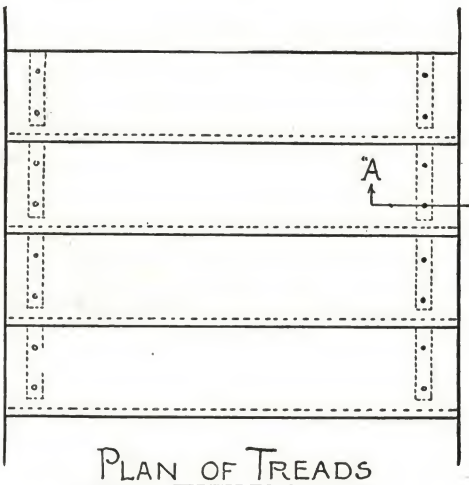
We have devised a practical and effective method of securing precast treads to steel stairs. The tendency of all cementitious products to contract and warp in the setting process frequently results in loosening of the tread. This difficulty is now eliminated absolutely by the use of our *Dovetail-anchor Method.*

This method consists of placing a metal dovetail groove across the bottom of the tread at each end. Corresponding metal anchors are bolted to the steel subtread. When the tread is installed the dovetail grooves are fillled with mortar and the tread set so that the anchors fit within the grooves. As the mortar sets the tread becomes permanently fastened to the steel plate and cannot become loose.

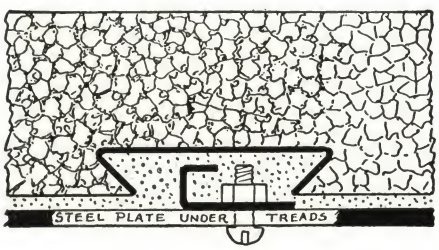
Note: The drilling of the holes for the bolts in the steel subtread should be specified under the iron work.

Alundum Aggregate Tile

We also manufacture alundum aggregate tile in 12x12, 9x9 and 6x6-ft. sizes to be used for stair platforms, for store entrances, ramps and landings and wherever a slipproof floor is required.

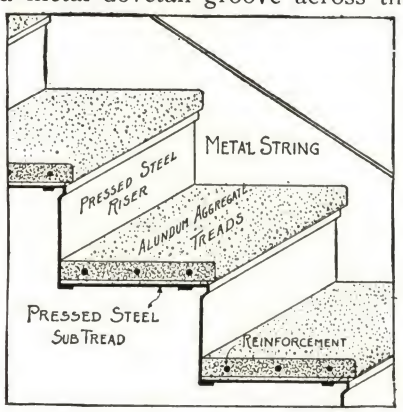


PLAN OF TREADS

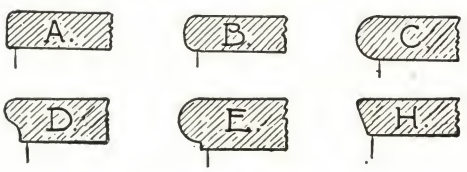


SECTION THRU "A A"

Method of Fastening Precast Alundum Aggregate Treads by the Dovetail-anchor Method



STEEL CONSTRUCTION WITH ALUNDUM AGGREGATE TREADS



Types of Nosings

Specifications

Note: Trade Jurisdiction—Precast Alundum Aggregate Treads and Tile are installed by marble setters and should be specified under "Marble Work."

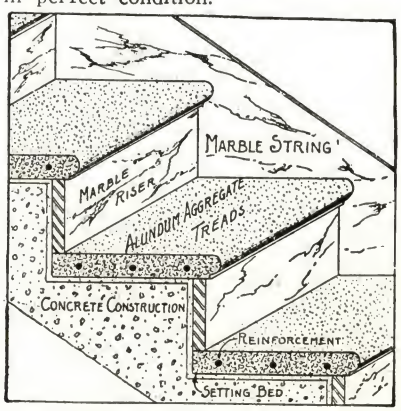
Furnish and set where shown on drawings, precast Alundum Aggregate treads and platforms, using two parts of alundum aggregate to three parts of marble granule. Submit samples and shop drawings.

Treads shall be ..... thick with nosing as detailed. Top treads of same width as the others, shall be used at floor levels and at intermediate platforms. Platforms shall have Alundum Aggregate tiles (state size) of same material as treads.

All precast alundum aggregate materials shall be manufactured by a licensee of the Norton Company in strict accordance with the specifications of the Norton Company.

All treads shall be installed in cement mortar and those treads occurring on steel stairs shall be anchored to the steel subtread using the Dovetail-anchor Method of L. DEL TURCO & BROS., INC. All alundum aggregate tiles shall be embedded in cement mortar.

All joints must be pointed up neatly, and the whole delivered at completion in perfect condition.



CONCRETE CONSTRUCTION WITH ALUNDUM AGGREGATE TREADS AND MARBLE RISERS & STRING

T. M. C. LOCKSTRIPS

FOR TERRAZZO, COMPOSITION, LINOLEUM AND CEMENT FLOORS

LOCKSTRIP MANUFACTURING CORPORATION

36-09 Vernon Boulevard, LONG ISLAND CITY, N. Y.

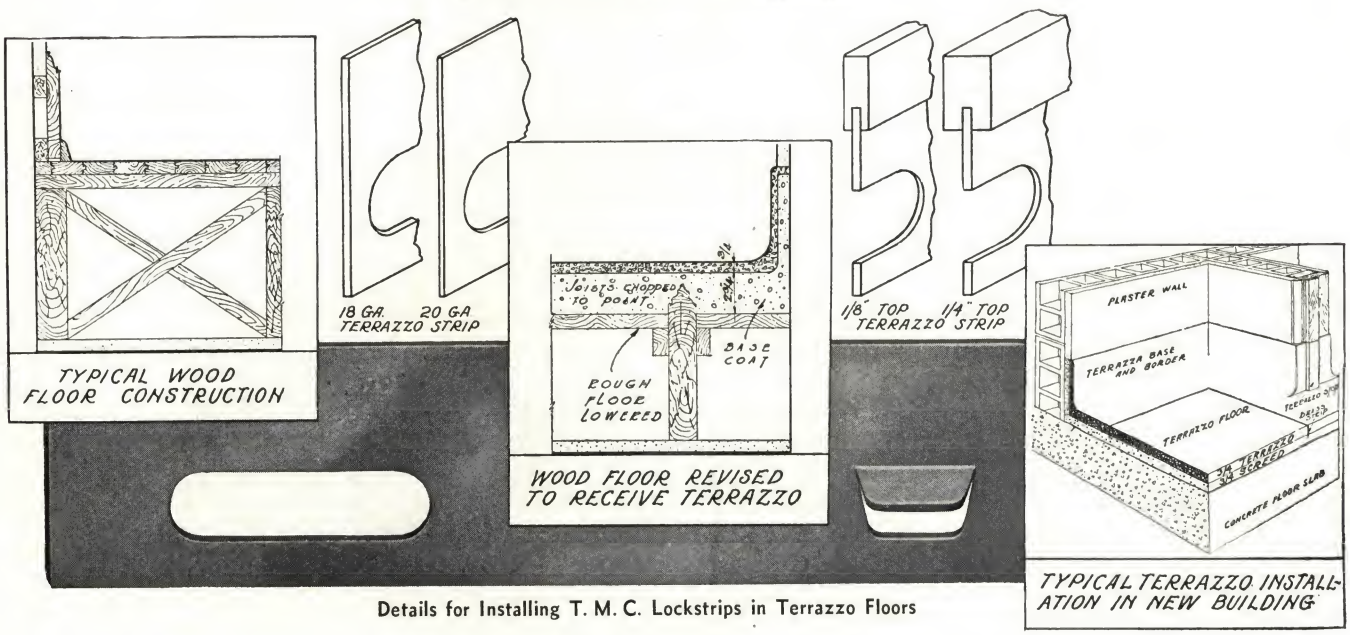
Products

T. M. C. Lockstrips (patented brass dividing strips) for terrazzo, marble, composition, linoleum and cement floors, base and wainscots and plaster base grounds.

TRADE-MARK

Distribution

Any contractor can obtain T. M. C. Lockstrips direct from our factory or through the warehouses of the Chase Brass & Copper Co.



Details for Installing T. M. C. Lockstrips in Terrazzo Floors

TEN GOOD REASONS WHY ARCHITECTS OF REPUTE SPECIFY T. M. C. LOCKSTRIPS FOR TERRAZZO AND CEMENT FLOORS

(1) Prevent cracks in surface of floor.
(2) Insure uniform thickness of terrazzo aggregate.
(3) Stay accurately in position.
(4) Free from waves or curvature.
(5) Permit execution of intricate designs and patterns.
(6) Equally as efficient for terrazzo cove base and wainscoting as for terrazzo floors.
(7) There is a size and type for every individual taste and need.
(8) Cement strips are scientifically designed for *cement* work.
(9) Protected by valid patents.
(10) Guaranteed by a reputable manufacturer.

(1) T. M. C. Lockstrips Prevent Cracks

The slotted openings or locks in T. M. C. Terrazzo Floor Strips, form an intentional weak spot in the underbed. If cracks occur through expansion and contraction, they will localize at these weak spots and not travel to the surface of the floor.

(2) They Insure Uniform Thickness of Aggregate

The wings on T. M. C. Lockstrips provide an accurate measuring gage for a uniform thickness of aggregate. With T. M. C. Lockstrips architects can be assured of getting exactly ½, ⅝ or ¾ inch of surface coating as called for in their specifications. With these T. M. C. "wings," you have positive optical proof that the strip has not been pushed down too deep into the underbed, with proportionately elss aggregate in the top coat. An aggregate that is too thin cannot be rolled or compressed to a proper density, consequently it will not wear satisfactorily, and has a much greater tendency to crack. Under no circumstances, do we recommend a thickness of aggregate less than ⅝ inch and in most cases ¾ inch is better.

TEN GOOD REASONS WHY ARCHITECTS OF REPUTE SPECIFY T. M. C. LOCKSTRIPS FOR TERRAZZO AND CEMENT FLOORS (Continued)

(3) They Cannot Be Pushed Out of Position



T. M. C. patented wings also provide a sure means of setting strips straight horizontally and true vertically. The long slot holes and the half round openings under the wings, provide the means for a perfect bond between the strip and cement underbed. The strips cannot be pushed out of line in rolling the terrazzo aggregate, nor can they be further depressed if in spots, the underbed should happen to be of a poor mixture.

(4) T. M. C. Lockstrips Are Free from Waves or Curvature

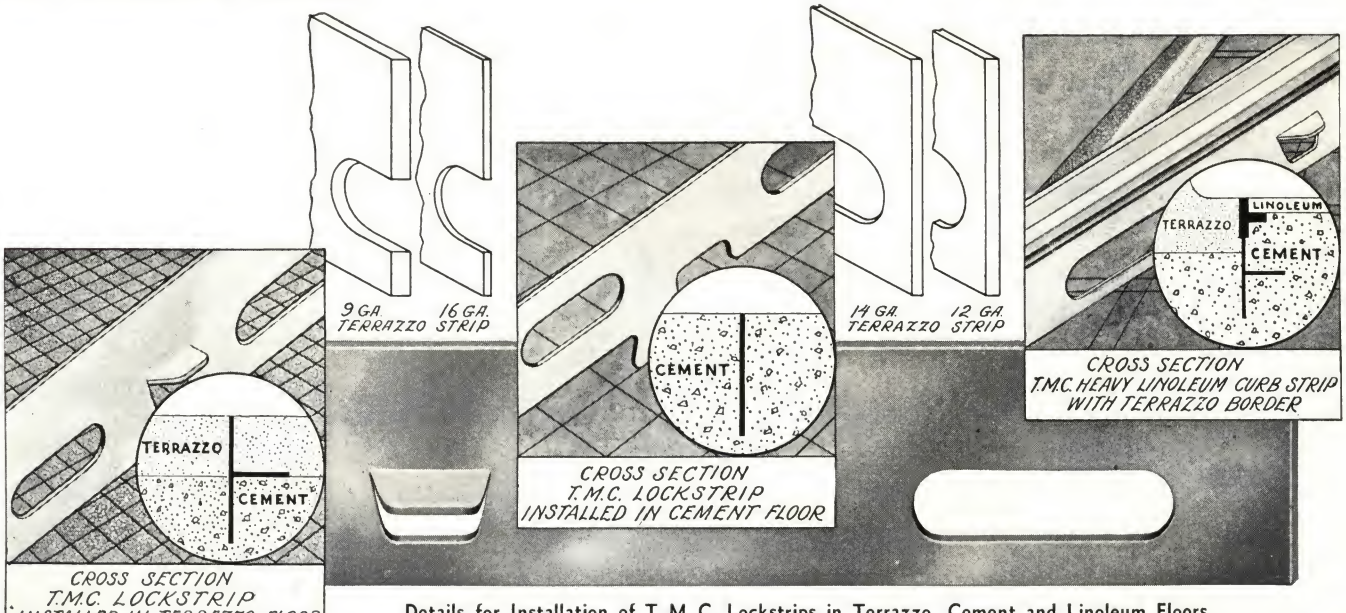
Superior quality of metal, combined with specially designed presses for punching out the slots and wings, insures T. M. C. Lockstrip being perfectly straight and free from waves or curvature.

(8) T. M. C. Cement Lockstrips

T. M. C. Lockstrips for cement floors and sidewalks meet with the hearty approval of architects, contractors and owners. They eliminate entirely the dirt and filth catching creases in old style cement floors. With T. M. C. Lockstrips, a cement floor or sidewalk in one or two colors can be laid as smooth and clean as a ballroom floor. This type of cement floor is ideal for outside porches on suburban and country residences.

(9) Protected by Patents

T. M. C. Lockstrips are fully protected by letters patent issued by the United States Patent Office, which have been repeatedly upheld by court decisions.



Details for Installation of T. M. C. Lockstrips in Terrazzo, Cement and Linoleum Floors

(5) Intricate Designs and Patterns

By reason of their flexibility, T. M. C. Lockstrips may be worked into designs and patterns that are most intricate and complicated. With T. M. C. Lockstrips, college and State seals, portraits and symbolic figures have been executed in terrazzo with perfect success.

(6) Cove Bases and Wainscoting

Satisfactory terrazzo wainscoting and cove bases are easily executed with T. M. C. strips.

(7) Range of Sizes and Types

In addition to a wide range of widths and thicknesses for straight terrazzo and cement work, T. M. C. Lockstrips are also made for composition floors and for combinations of linoleum with terrazzo, or cement.

(10) Guaranteed

If strip of obscure or unknown origin is installed in a floor and later, failures or defects appear in the completed job, it is most unsatisfactory to have a contractor fall back on the plea that the trouble must have been caused by the strips. As a matter of fact sometimes it is the strip, but if it was made by an obscure manufacturer or perhaps its origin totally unknown, a reasonable adjustment of the trouble is impossible.

The Lockstrip Manufacturing Corporation stands squarely back of every foot of genuine T. M. C. Lockstrip. Look for the trade mark.

WHERE T. M. C. LOCKSTRIPS ARE USED AND TYPES BEST SUITED TO INDIVIDUAL APPLICATIONS

T. M. C. Lockstrip for Terrazzo

T. M. C. Lockstrips are made in a variety of thicknesses to meet individual preferences of architects and owners. The size and type in most general demand is plain brass T. M. C. Lockstrip, 1¼ in. wide, 20B&S gage thick, for ⅝-in. terrazzo finish. Five other thicknesses from 20 gage to ¼ in., are also available (see illustrations).

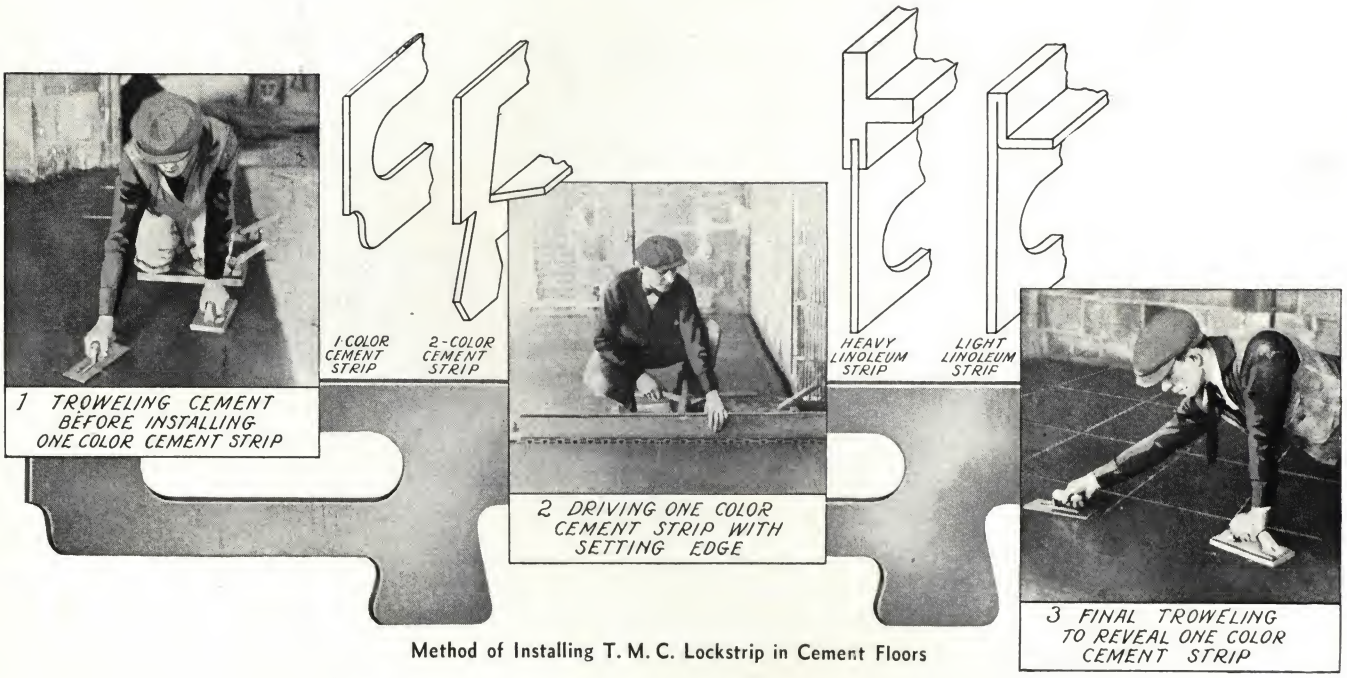
By means of an ingenious manufacturing operation, T. M. C. Lockstrip is produced with a ⅛ or ¼-in. thickness on top, with an 18 B&S gage base. This reduces the weight of metal required and cuts down on the cost proportionately. This patented method of manufacture also permits assembling brass strips with nickel silver tops, a feature of vital importance where expensive exposed metal is desired, yet where cost is a factor.

factories, industrial plants, loading platforms, railroad stations and warehouses. Also for outside porches and sidewalks. This type of floor construction is particularly desirable in food manufacturing plants and other places where sanitary conditions are imperative.

Lockstrip Curb for Linoleum and Rubber Tile

A necessary detail for the proper laying of linoleum or rubber tile to a terrazzo border or cove base, in hospitals, hotels, clubs, churches and office buildings.

Establishes a definite level for the cement underbed and correct sinkage for the linoleum. Made in light gage metal for cement border and in heavy outline for terrazzo borders.



Method of Installing T. M. C. Lockstrip in Cement Floors

Standard T. M. C. Lockstrips are eminently suitable for terrazzo floors, cove bases, borders and wainscoting, in banks, hotels, public buildings, hospitals and institutions.

T. M. C. Cement Strips

T. M. C. Cement Strips (Lockstrip type) are ideal for cement floors, in uniform or alternating colors, in

T. M. C. Cove Base Strips

Scientifically designed strips for the proper construction of a cove base in hospitals, hotels, theatres, etc. These T. M. C. strips embody the same "locking" principle as in straight terrazzo strips. All cracks are localized beneath the surface. Uniform and accurate thickness of terrazzo aggregate is assured through the use of these strips.

WHERE T. M. C. LOCKSTRIPS ARE USED AND TYPES BEST SUITED TO INDIVIDUAL APPLICATIONS

T. M. C. Lockstrip for Composition Floors

A specially designed angle strip ideally suited to floors of composition blocks in department stores, schools, hospitals and hotels.

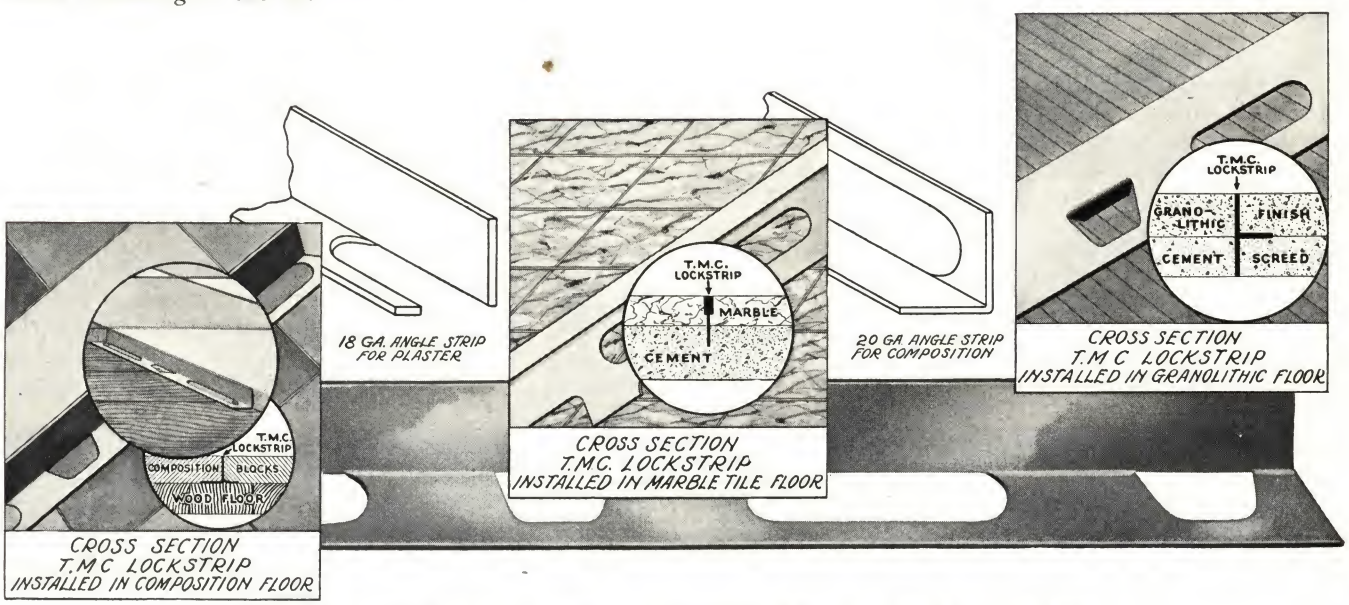


T. M. C. Lockstrip for Marble Tile Floors

Used in office buildings, banks, theatres and hotels for dividing lines or joints in marble tile floors. Available in brass or nickel silver. Gives the floor a most attractive and artistic appearance. Wears down with the marble and prevents spalled or broken edges. Also forms an anchorage at the side which prevents loosening of the tile

T. M. C. Lockstrip for Heavy Duty Granolithic Floors

Forms a floor armoring which prevents chipping and wear by impact of hard truck wheels, and sliding heavy objects directly on the floor surface. The advantage of brass over steel for this type of floor is that the brass will wear down uniformly with the granolithic finish, thus obviating depressions or cupping, which occurs where a harder metal, such as steel, is employed.



Method of Installing T. M. C. Lockstrip in Composition, Marble Tile and Granolithic Floors

SUGGESTED FORM OF SPECIFICATIONS

For Terrazzo Strips

As indicated on plans or separately specified, all terrazzo work shall be divided into panels, borders and designs, with T. M. C. Lockstrips as manufactured by the Lockstrip Manufacturing Corporation. All strips shall be of brass, ... wide over all; .... inch (or gage) thick at top; .... gage at bottom; for .... inch thickness of terrazzo aggregate.

For Cement Strips

As indicated on plans or separately specified, all cement floors shall be divided into panels with T. M. C. Brass Cement Lockstrips as manufactured by the Lockstrip Manufacturing Corporation. Strips shall be .... wide over all; .... gage (or inch) thick at top; .... gage at bottom.

For Composition Floors

All composition floors shall be divided into panels of sizes indicated on plans or called for in specifications, with T. M. C. Lockstrip angles size .... in., No. .... B&S gage brass, as manufactured by the Lockstrip Manufacturing Corporation, 36-09 Vernon Boulevard, Long Island City, N. Y.

For Marble Tile Floors

All marble tile floors specified or indicated on plans shall have the joints formed with T. M. C. Lockstrip Type "C," .... in. thick top, No. .... B&S gage brass or nickel, as manufactured by the Lockstrip Manufacturing Corporation, 36-09 Vernon Boulevard, Long Island City, N. Y.

THE MARBLEITHIC CO.

J. ELLIOT PEIRCE, Proprietor

Manufacturers and Contractors, Pre-cast Terrazzo, Marble and Tile

DAYTON, OHIO

Manufacturers and Contractors

MARBLEITHIC (PRE-CAST TERRAZZO) FLOOR TILE.

MARBLEITHIC (PRE-CAST TERRAZZO) NON-SLIP FLOOR TILE.

MARBLEITHIC (PRE-CAST TERRAZZO) BASE.

MARBLEITHIC (PRE-CAST TERRAZZO) WAINSCOT, including STALL PARTITIONS, DOOR and WINDOW TRIM.

MARBLEITHIC (PRE-CAST TERRAZZO) STAIRS.

Contractors in Marble and Tile.

Marbleithic (Pre-cast Terrazzo) Products

We manufacture and erect pre-cast terrazzo (trade-name "Marbleithic") for practically all purposes where marble can be used, as floor tile, integral treads and risers, base, wainscot, stair strings, balustrades and rails, door and window trim; moulded or plain; honed or polished finish.

This is a hard dense stone equal to the marble aggregate in resistance to penetration by liquids.

Marbleithic products are manufactured by a special process which produces a stone of maximum density and solidity. The product is strongly reinforced with steel when necessary. The surface is rendered wear resisting by special treatment in finishing.

The marble chips are given a high, polished finish where desired, similar to polished marble. Floors, stair treads, etc., are finished with fine hone finish.

Marbleithic stairs, floors, etc., have been in use for thirty-four years.

Floor Tile—Marbleithic floor tile is manufactured in any desired design and size with the marble chips and cement as required to harmonize with the required color scheme.

Non-slip Floor Tile—Non-slip Marbleithic floor tile can be supplied where desired for elevator and entrance lobbies. These non-slip tile are made with the addition of a hard abrasive aggregate to the marble chips and cement and retain their non-slip qualities after continued and hard wear, as the abrasive is distributed throughout the marble aggregate.

Stairs—Marbleithic stairs are executed in the same manner as marble stairs. They are erected on concrete, wood or iron substairs, either complete with wall and balustrade string or in combination with other materials as required. Non-slip integral treads or separate treads as well as non-slip floor tile are manufactured where required.

Special attention is given to ornamental stairs, calling for curved and moulded work.

Base and Wainscot—Marbleithic is used for sanitary, plain or moulded base, wainscot, door and window trim for corridors, stall partitions for toilet rooms, etc.

Typical Installations

Chamber of Commerce, Minneapolis, Minn.
Union Station, St. Paul, Minn.
Singer Building, New York, N. Y.
Hotel Commodore, New York, N. Y.
U. S. Naval Academy, Annapolis, Md.
E. F. Albee Theater, Brooklyn, N. Y.
Proctor Theater, 85th Street, New York, N. Y.
Keith-Albee Theater, Columbus, Ohio
Hermann Hospital, Houston, Tex.
E. F. Albee Theater, Cincinnati, Ohio



Stairway in Keith Memorial Theater, Boston, Mass.
THOMAS W. LAMB, Architect
Treads, newels, strings and hand rails in White Marbleithic

MANHATTAN TERRAZZO BRASS STRIP CO., INC.

Exclusive Manufacturers of Dividing Strip for Terrazzo

151-155 East 128th Street, NEW YORK, N. Y.

Products

TWIN ANCHOR BRAND METAL STRIPS in various styles, gages, widths and lengths for terrazzo, cement and composition flooring.

HOSPITAL GRILLES; BASE BEADS; COVE BASE DIVIDERS; PLAQUES for Panel Centers; SCRIPT or BLOCK LETTERS.

Facilities

Our plant is modern in every respect and is equipped with the latest type of machinery. Our personnel consists of highly trained and experienced workmen.

We are thus able to handle any size order at short notice.

DIVIDING STRIPS FOR TERRAZZO WORK

Terrazzo mosaic is one of the oldest of arts, dating back to the time of the Venetians and Romans. The industry was first originated by utilizing small pieces of varicolored marble, mixing them with mortar, and spreading them over a floor area. Pumicestone was used to surface off and smooth over the finish.

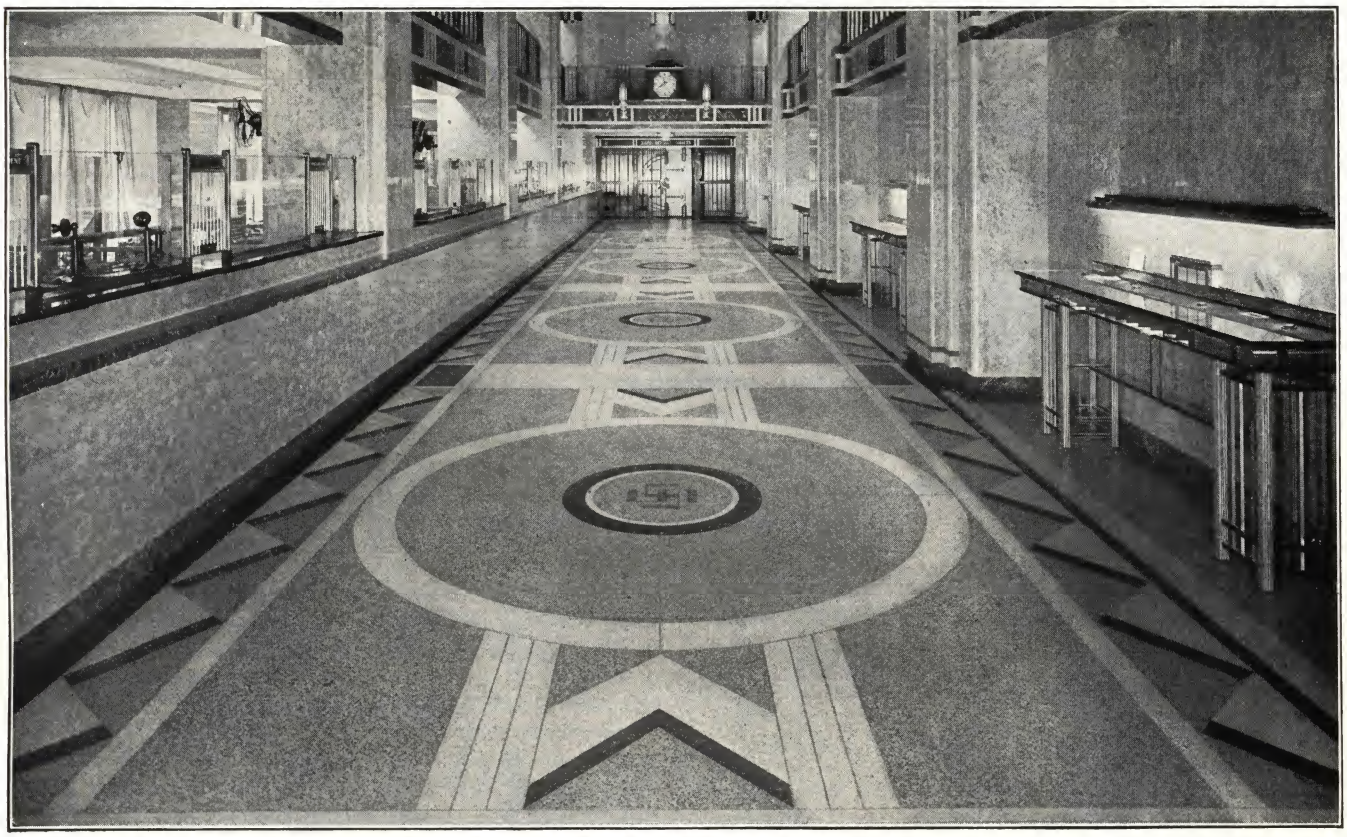
Terrazzo has been used extensively for flooring in this country for many years. It is laid plastic, allowed to set, is ground and polished smooth. This furnishes sanitary, durable, fireproof and remarkably long wearing floors in attractive colors.

Yet terrazzo flooring, with all its admitted advantages, was not always satisfactory, because cracking formerly proved a serious objection. The introduction of brass dividing strips, however, helped to overcome this difficulty to a great extent, but its high cost made it prohibitive for commercial terrazzo floors. After considerable experimenting we developed machinery which enabled us to cut the cost of brass strips 50% and, as a result, terrazzo flooring has forged to the front as a flooring industry.

Dividing strips provide deep, effective joints in the floor. Should a crack occur, it will in most cases run along the strip and be practically unnoticeable. The use of dividing strips of brass and other metals also permits the laying of successive or adjoining panels, thus saving considerable time and eliminating the expensive method of laying alternate sections, as well as working out hundreds of attractive designs.

The great variety of colors and shades obtained by mixing various kinds of marble in correct proportion, enables the carrying out of any decorative scheme desired. The thin metal lines of the dividing strips definitely and neatly give the floor an artistic effect not easily obtained with other materials.

The strip is principally intended to prevent or localize cracking and, in addition, permits the architect to create any design desired to blend with the entire decorative scheme.



Sterling National Bank, 42nd Street and Lexington Avenue, New York, N. Y.
WALKER & GILLETTE, Architects

MANHATTAN STANDARD TERRAZZO STRIP TYPE B

For terrazzo designs of all kinds, the simplest, most pliable, economical and easily handled Manhattan Strip is the Type B Twin Anchor Brand. The other types of strips of the Twin Anchor Brand and their recommended uses are given on succeeding pages.

Made of brass (Anaconda semihard), nickel-silver and white alloy zinc in various B&S gages, widths and lengths. On special order, bronze and copper strips in standard sizes can be supplied at short notice.

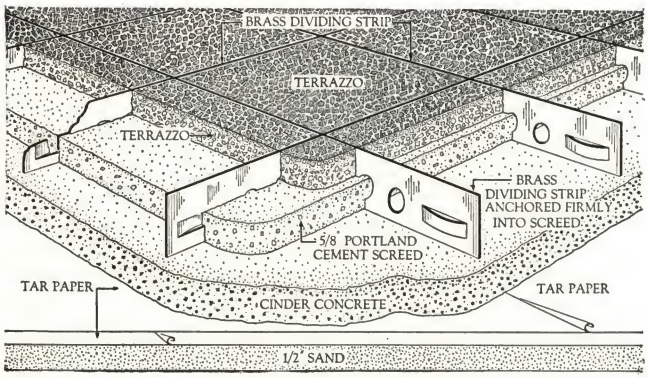
The illustrations below clearly indicate the size, design and application of the strips. The metal is rigid vertically, but sufficiently pilable horizontally to permit its conforming to practically any form desired for figures, shapes and designs.

Attention is especially called to the curved projections which are integral parts of the strip. These perform a unique duty in that they positively anchor in the *screed* and do not depend on the finish coat of terrazzo to keep them in place. The arc anchor does not form air pockets, which result in the cracking of the terrazzo, by virtue of the fact that there is an angular incline to the arc. When this arc penetrates the screed it shears off or displaces the screed, forcing it sideways through the opening, thus forming the lock. The cross section below fully illustrates this novel feature.

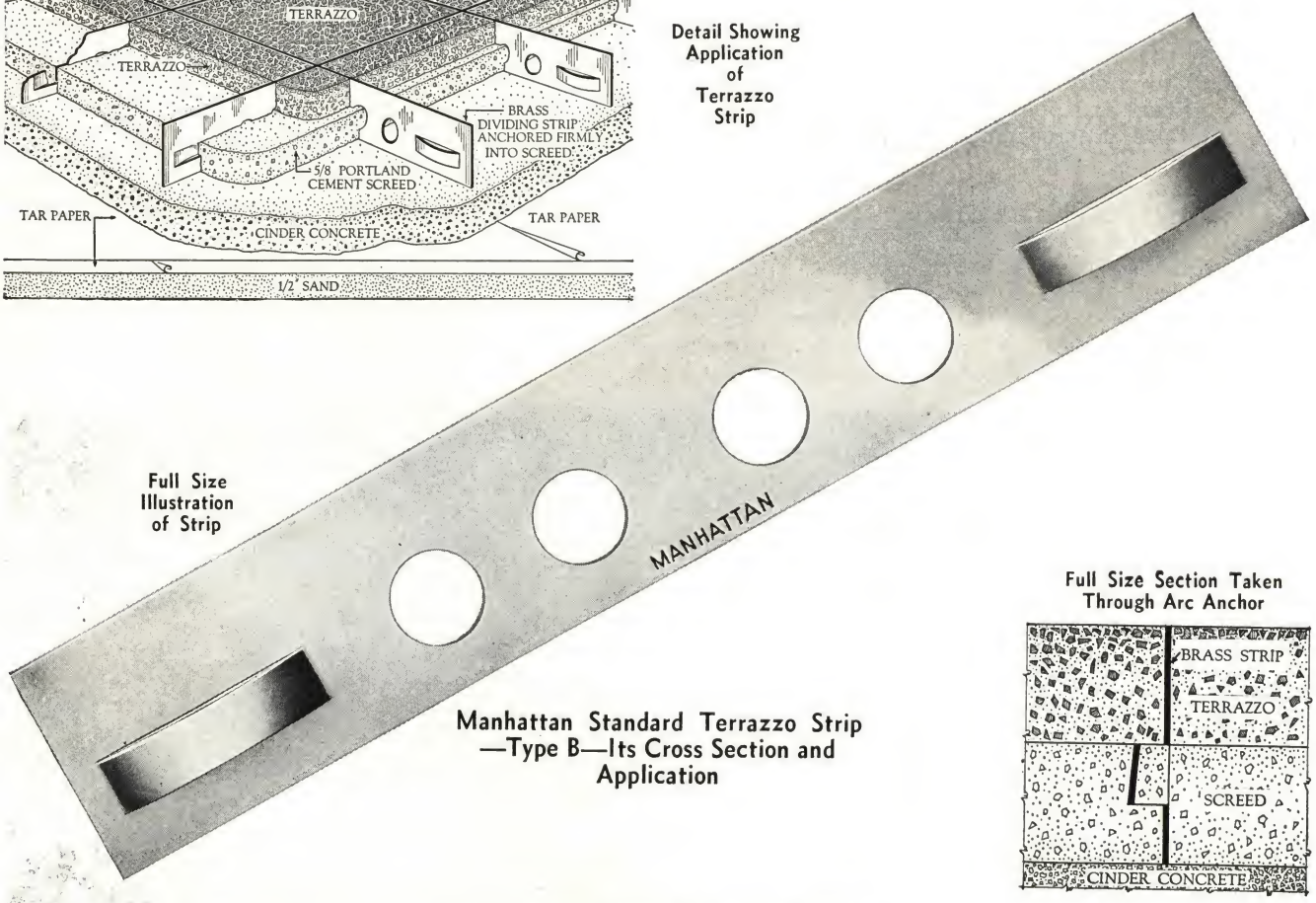
With this firm anchorage, there is no danger of the strips getting out of true line, horizontally or vertically, even while applying and rolling the terrazzo aggregate. The punched holes in the strip are an additional means for locking.

Type A—Same as Type B without punched holes.

White Alloy Zinc—Strips of this metal have been successfully used on many jobs at a favorable cost. They are being widely acclaimed by architects.



Detail Showing Application of Terrazzo Strip



Full Size Illustration of Strip

Manhattan Standard Terrazzo Strip —Type B—Its Cross Section and Application

Full Size Section Taken Through Arc Anchor

STANDARD SIZES OF TYPE B TERRAZZO STRIPS

Size, in.	B&S gage	Length, ft.	Size, in.	B&S gage	Length, ft.	Size, in.	B&S gage	Length, ft.	Size, in.	B&S gage	Length, ft.
Brass Strips						**Nickel-silver Strips**					
¾	20	4–5–6	1	12	6	1¼	20	6	1¼	12	6
1	20	4–5–6	1¼	12	6	1¼	18	6	*1¼x⅛	.....	6
1¼	20	4–5–6	1¼	11	6	1¼	16	6	*1¼x3/16	.....	6
1½	20	6	1¼	10	6	1¼	14	6	*1¼x¼	.....	6
1	19	4–5–6	1	9	6						
1¼	19	4–5–6	1¼	9	6	**White Alloy Zinc Strips**					
¾	18	4	1x⅛	.....	6						
1	18	4–5–6	1¼x⅛	.....	6						
1¼	18	4–5–6	1½x⅛	.....	6	1	18	6	1	12	6
1½	18	6	1x3/16	.....	6	1¼	18	6	1¼	12	6
1	16	6	1¼x3/16	.....	6	1	16	6	1x⅛	.....	6
1¼	16	6	1x¼	.....	6	1¼	16	6	1¼x⅛	.....	6
1½	16	6	1¼x¼	.....	6	1	14	6	1¼x3/16	.....	6
1	14	6	1½x¼	.....	6	1¼	14	6	1¼x¼	.....	6
1¼	14	6	2x¼	.....	6						

*Not carried in stock.

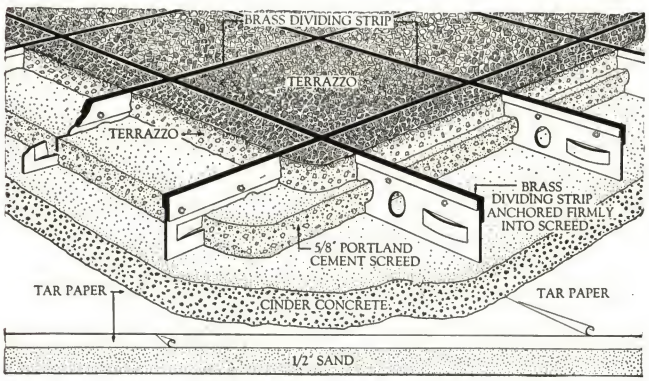
MANHATTAN HEAVY TOP TERRAZZO STRIP

This is a design recently developed to give the architect and owner the often desired wide wearing surface, without the prohibitive cost of material and handling of a solid strip of the same thickness. The saving in metal effected by the use of this type, over that of a solid metal strip, is approximately 35% to 50% depending on the gage used. It also has the advantage of shaping up easily for special design work.

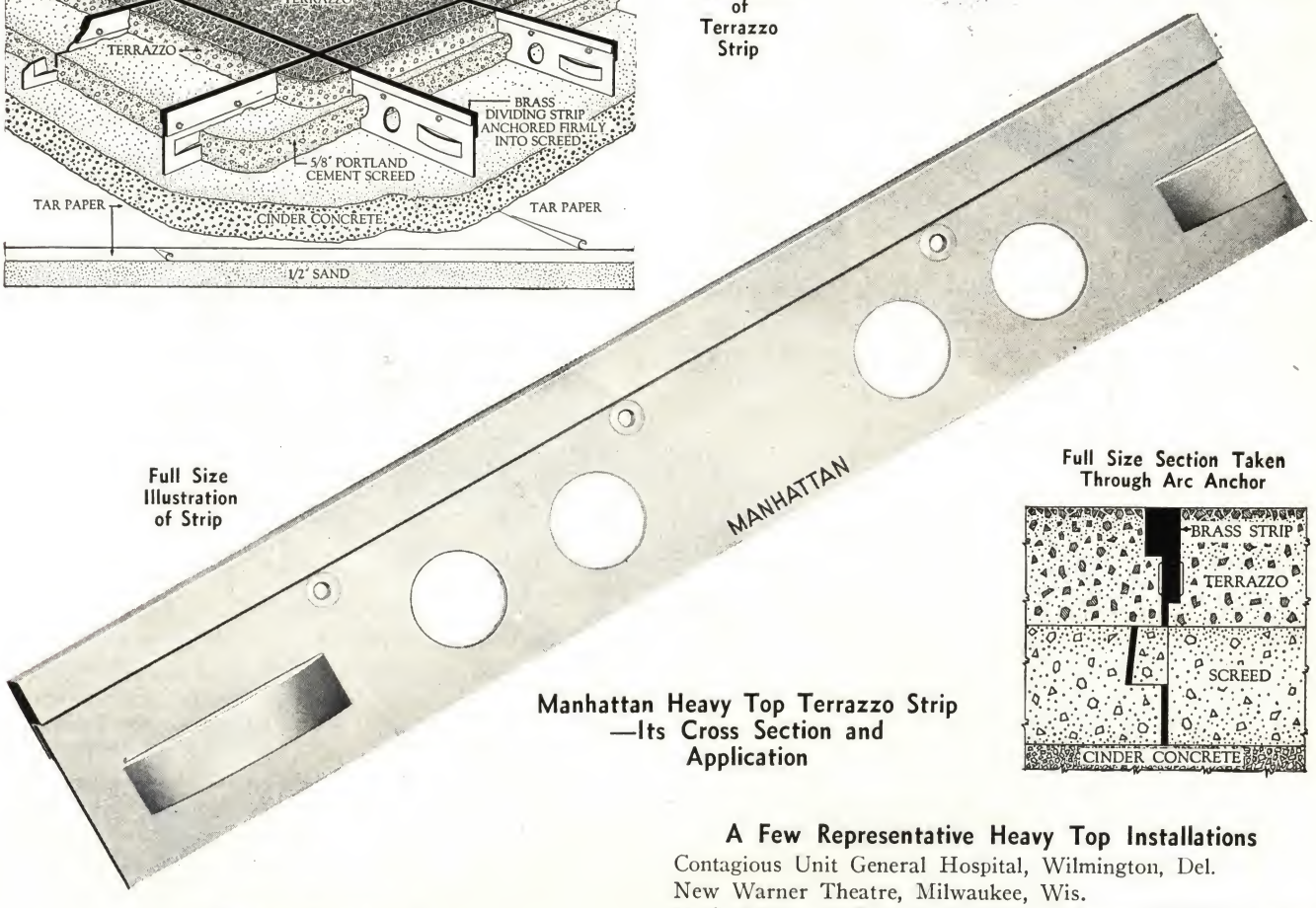
These strips are furnished with *brass* or *nickel-silver* securely riveted to a bottom strip which is identical to the Type B strip shown on the previous page. The bottom strip used with the brass top is made of 20 B&S gage brass, whereas it is made of 18 B&S gage white alloy zinc for use with the nickel-silver top. Tops are available in $\frac{1}{8}$, $\frac{3}{16}$ and $\frac{1}{4}$-in. thicknesses. $\frac{3}{8}$ and $\frac{1}{2}$-in. taps may also be had but of a different construction. The total width of all sizes of strips is approximately $1\frac{1}{4}$ in. They can also be furnished in widths of 1 and $1\frac{1}{2}$ in. upon short notice. All sizes are furnished in 6-ft. lengths only.

Assembly of the bottom strip and heavy top is by means of eyelet rivets as illustrated below. (This method is fully covered by our patents.) They are spaced 2 ins. apart and make a highly favorable method of fastening which is firm and will not work loose. By this method of fastening there is no chance of the assembly working loose or becoming separated, either during installation or after the floor has been completed and is in use.

The bottom strip, being identical to the Type B strip, imparts to this heavy top type all the features and advantages of the thin strip as outlined on the previous page. The illustrations on this page also show the firm anchor.



Detail Showing Application of Terrazzo Strip



Full Size Illustration of Strip

Full Size Section Taken Through Arc Anchor

Manhattan Heavy Top Terrazzo Strip —Its Cross Section and Application

Rubber Top Strips

Where it is desired to separate white or other light toned terrazzo colors from each other in sharply defined designs, we recommend the Manhattan Strip with a heavy top of hard black rubber riveted to a brass bottom strip. This strip is constructed and installed the same as the other heavy top strips, and is made with $\frac{1}{8}$-in. top on 18 B&S gage brass in 4-ft. lengths only.

It is very adaptable to varied shapes and designs and the rubber top has proven to be a very wearable walkway surface.

A Few Representative Heavy Top Installations

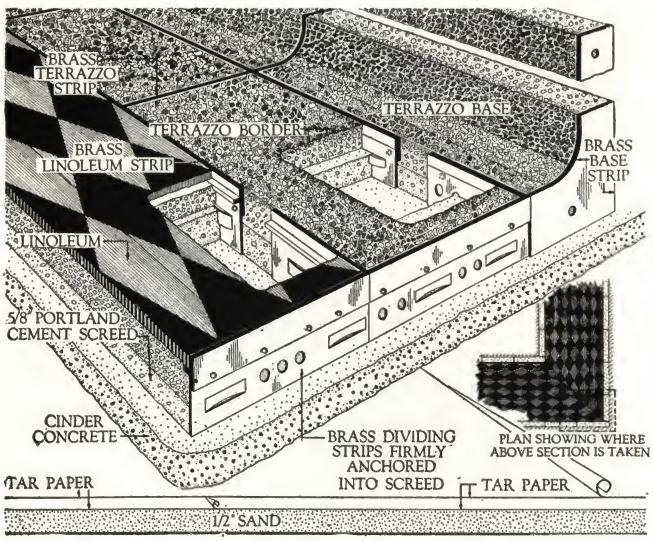
Contagious Unit General Hospital, Wilmington, Del.
New Warner Theatre, Milwaukee, Wis.
U. S. Veterans' Hospital, N. P. Convalescent Building, Perry Point, Md.
Franklin County Courthouse, Malone, N. Y.
Brooklyn Union Gas Company, Flatbush Avenue and Duryea Place, Brooklyn, N. Y.
Main Office Building, Southern Bell Telephone & Telegraph Company, Louisville, Ky.
N. P. Infirmary Building, U. S. Veterans' Hospital, Knoxville, Iowa
Pittsfield High School, Pittsfield, Mass.
Power City Trust Company, Niagara Falls, N. Y.
South Barracks Building, West Point, N. Y.
Tower Petroleum Building, Dallas, Tex.

MANHATTAN TERRAZZO STRIP FOR LINOLEUM, RUBBER AND ASPHALT TILE WALKWAYS

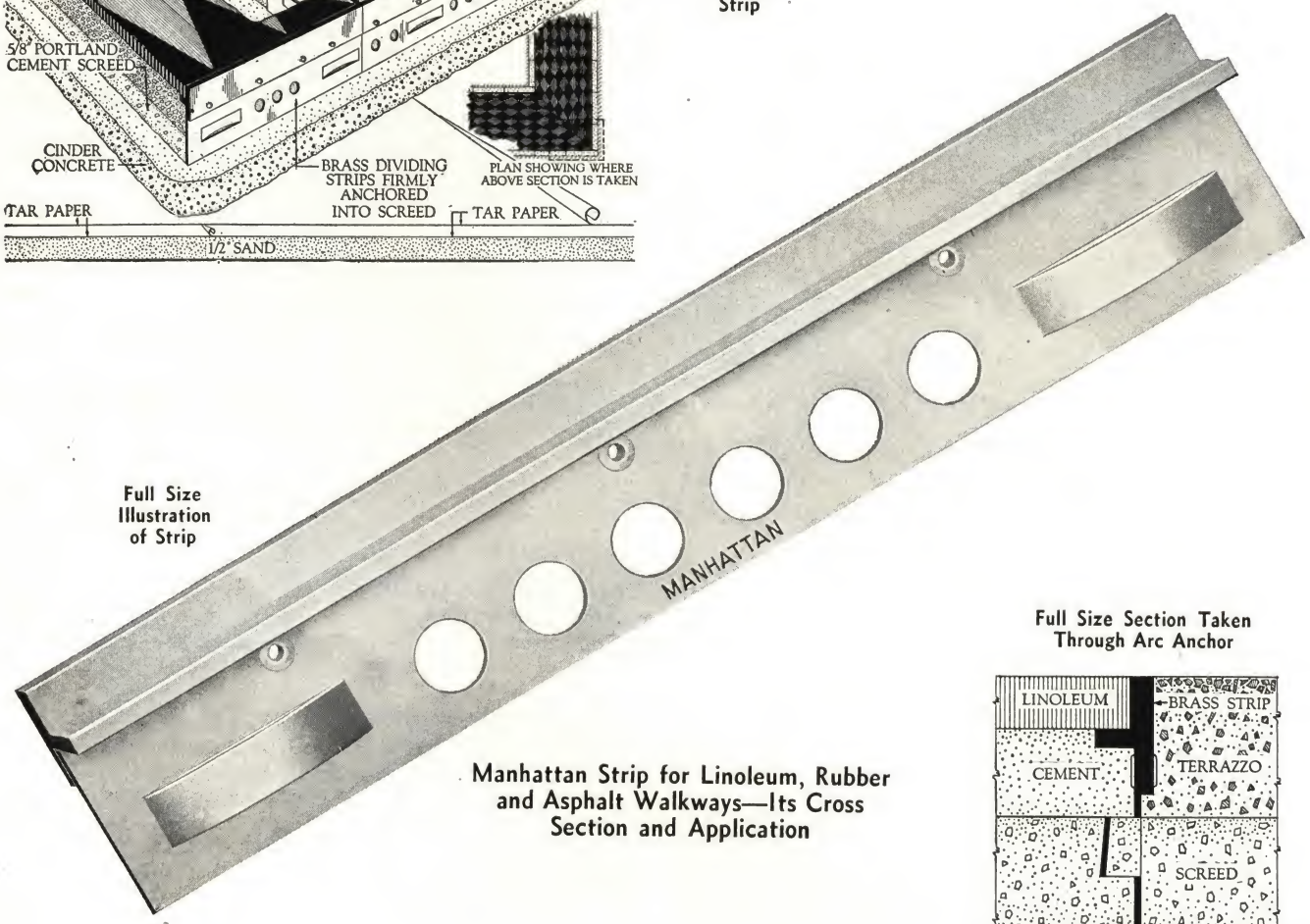
Where it is desired to provide a walkway surface between terrazzo borders or cove bases, the installation of the Manhattan Linoleum Strip is recommended. This strip is constructed the same as the heavy top type with the exception that an offset or projection below the top of the strip extends from the strip on one side. This projection provides a bearing surface for the linoleum at the proper depth to permit the surfaces of the linoleum and brass strip to be flush. The manner of installation is clearly pictured in the detail below. Such installations are particularly suitable in corridors and rooms of hospitals, public buildings, schools, clubs, hotels, churches, etc.

This strip is made of brass only in the following sizes: $\frac{1}{8}$-in. top for $\frac{3}{16}$ and $\frac{1}{4}$-in. linoleum and $\frac{3}{16}$-in. top for $\frac{1}{4}$-in. linoleum. Furnished in 6-ft. lengths only.

Points of Advantage—The strip provides an integral unit for receiving the linoleum, rubber or asphalt tile as well as providing a perfect abutment for the terrazzo border or cove base. The projection acts as a depth gage for the cement finisher, which results in the linoleum, terrazzo border, and brass strip being at exactly the same level. This aids in the prevention of chipping the edges of the terrazzo or tearing the linoleum. The strip also serves as an abutment for cove base dividers which are generally spaced at 3-ft. intervals. Cracking of the terrazzo border is controlled as in large floor areas where strips are used, and cracks in the screed under the linoleum are prevented from extending into the terrazzo border. The previously mentioned features of anchorage and rivet assembly also apply to this strip.



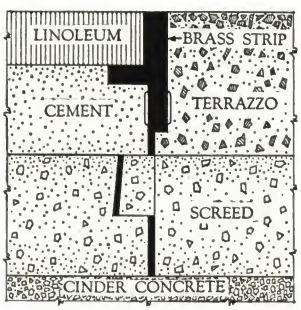
Detail Showing Application of Linoleum Strip



Full Size Illustration of Strip

Manhattan Strip for Linoleum, Rubber and Asphalt Walkways—Its Cross Section and Application

Full Size Section Taken Through Arc Anchor



A Few Representative Users of Manhattan Linoleum Strips

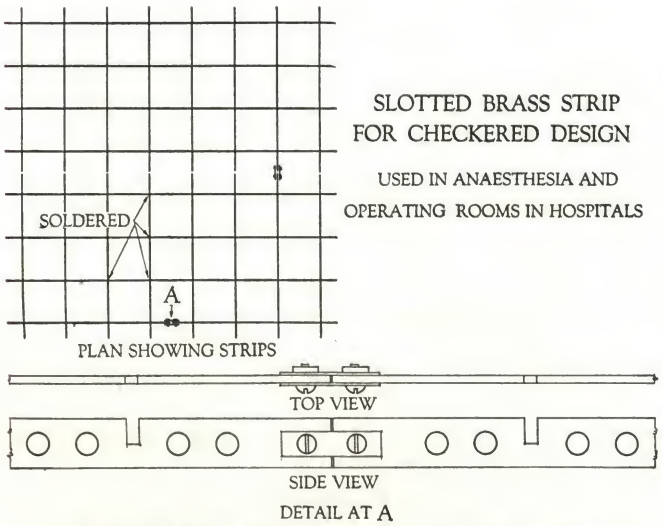
Job	Location	Architect	Terrazzo Contractor
Wieting-Johnson Memorial Hospital	Syracuse, N. Y.	Melvin L. King	Italian Mosiac & Marble Co., Inc.
Good Samaritan Hospital	Dayton, Ohio	Schenck & Williams	Serena Bros. Art Terrazzo Mosiac & Tile Co.
DonMoyer School	South Bend, Ind.	Freyermuth & Maurer	South Bend Terrazzo & Tile Co.

MANHATTAN HOSPITAL GRILLES

Where terrazzo is used in surgical operating rooms, anaesthesia rooms or allied rooms and corridors, the floors should be divided by metal strips of fairly heavy thickness into small squares or tiles. All strips should be connected to make positive electrical contact at all intersections, and the entire system should be grounded to water pipe or some other suitable conductor. This will prevent any danger of electric spark due to potential difference igniting any gas which may be present around the patient who is under anaesthesia on the operating table.

Concerning this subject, the National Board of Fire Underwriters states and recommends as follows: "The most elusive form of ignition of an anaesthetizing gas or vapor is the static spark. To guard against this hazard, insulating material should be avoided and machines, tables, patients and operators bonded together and to the floor and the latter thoroughly grounded."

The Manhattan system of grounding for the elimination of static has been in use for two years in conjunction with terrazzo, tile and composition floors. Many hospitals over the entire country have included these grilles in their specifications, realizing their vital importance.

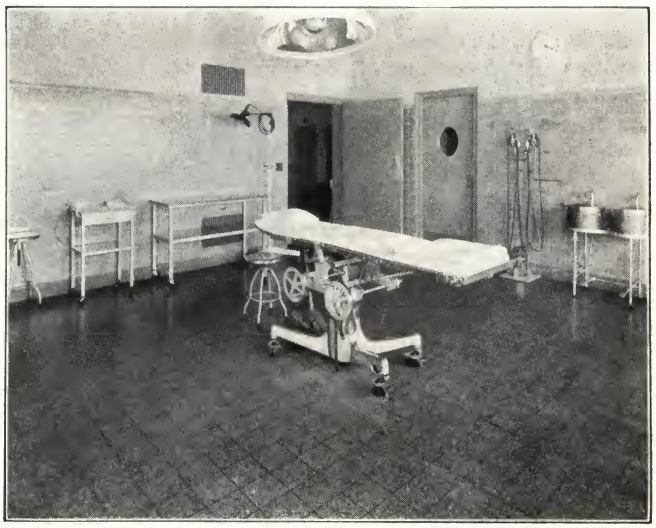


Method of Bolting Sections Together to Form One Unit

The grilles are available in 4, 5 and 6-in. squares for terrazzo and composition floors—6-in. squares are recommended for economy. For tile floors the squares are usually ½ in. larger than the individual tiles. Squares of the above size are small enough to assure contact with the foot of a small person.

Heavy metal is essential for a good contact. $\frac{1}{16}$ to ⅛-in. brass or white alloy zinc has mainly been used. The depths are as follows: ¾, 1 or 1¼ in. for terrazzo; 1 or 1¼ in. for tile and ⅝ in. for composition floors (fitted for nailing to the floor). For terrazzo, ¾x⅛-in. brass is recommended.

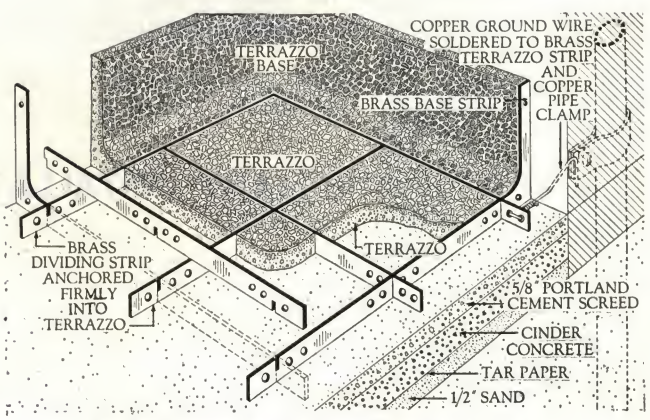
The strips are slotted and soldered so that they are united electrically. The grounding is completed by connecting the system in each room or corridor with a water or steam pipe. The grilles are shipped in sections approximately 36x36 ins. and are joined on the job by brass bars and bolts. The assembly and grounding of the units requires comparatively little labor, as each section is numbered and an assembly drawing is supplied to every job.



Operating Room with Manhattan Hospital Grilles in Floor, Doctors Hospital, New York, N. Y.

Several of the Hospitals That Have Installed Manhattan Hospital Grilles

Brooklyn Hospital, Brooklyn, N. Y.
Big Sisters Hospital, Ventura, Calif.
Charlotte Hungerford Hospital, Torrington, Conn.
Doctors Hospital, New York, N. Y.
Delsin Sanitarium, Brooklyn, N. Y.
Easton Hospital, Easton, Pa.
Foote Memorial Hospital, Jackson, Mich.
Glen Lake Sanatorium, Glen Lake, Minn.
Holy Name of Jesus Hospital, Gadsden, Ala.
Hillman Hospital, Birmingham, Ala.
Harbor View Hospital, Seattle, Wash.
Hospital of State University of Iowa, Iowa City, Iowa
Kings County Hospital, Brooklyn, N. Y.
New Hospital of Penn Industrial Reformatory, Huntingdon, Pa.
U. S. Veterans' Hospital, Mt. Alto, Washington, D. C.
U. S. Veterans' National Home Hospital, Milwaukee, Wis.



Details Showing Application of Hospital Grilles

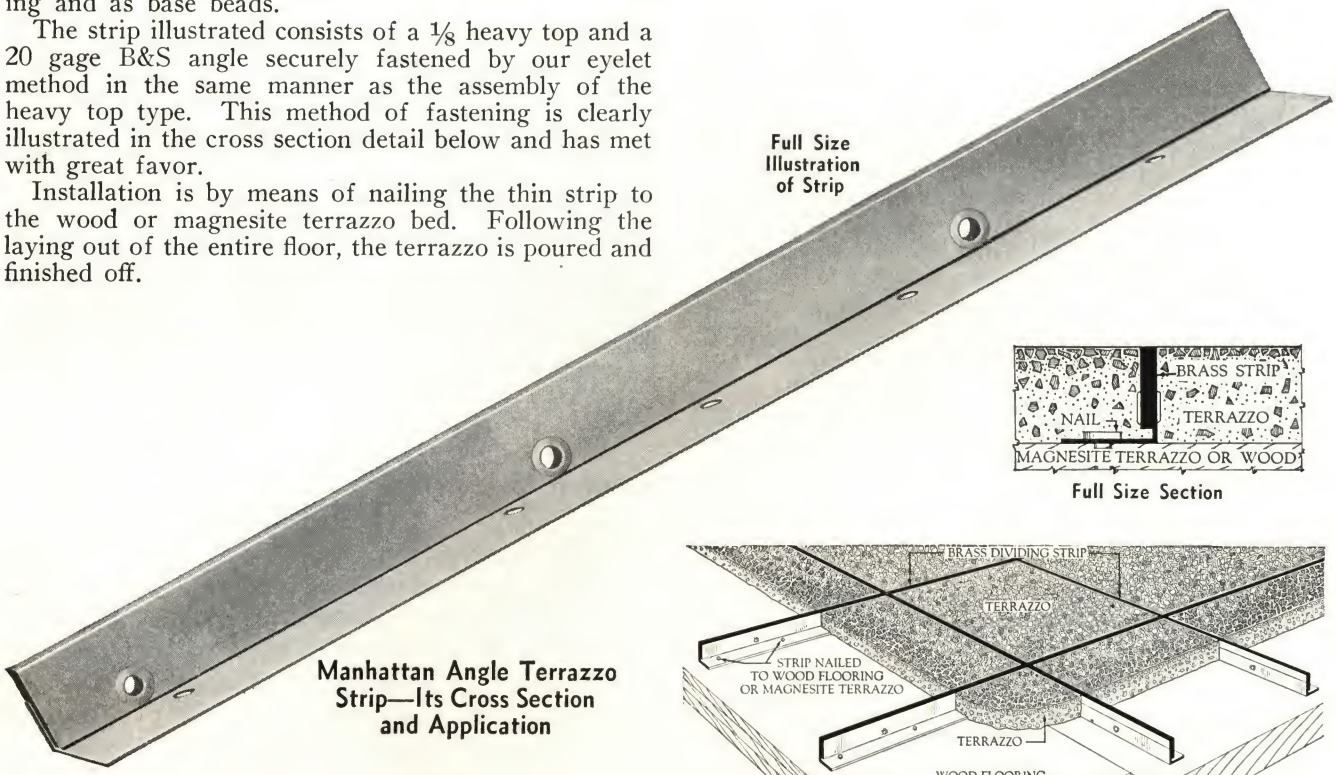
MANHATTAN ANGLE TERRAZZO STRIP

The use of angle strip permits of the laying of terrazzo over old or new wood floors or over a magnesite terrazzo bed. A floor thus laid becomes flexible, resilient and non-cracking, and is particularly suitable in homes, hospitals, hotels, stores, schools, etc. May be used also for all types of composition and mastic flooring and as base beads.

The strip illustrated consists of a 1/8 heavy top and a 20 gage B&S angle securely fastened by our eyelet method in the same manner as the assembly of the heavy top type. This method of fastening is clearly illustrated in the cross section detail below and has met with great favor.

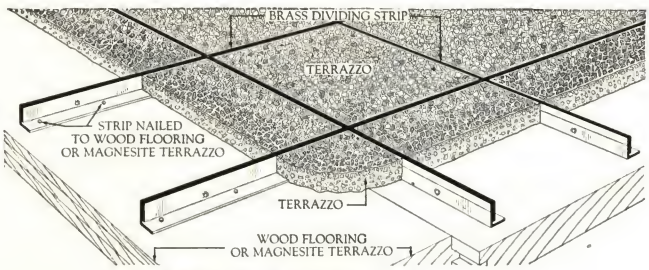
Installation is by means of nailing the thin strip to the wood or magnesite terrazzo bed. Following the laying out of the entire floor, the terrazzo is poured and finished off.

The Manhattan angle strips are stocked in the following sizes: 1/4x3/8, 1/2x3/16, 1/2x1/2 and 5/8x5/8 in., in 20 B&S gage metal; 3/8x3/8 and 3/8x5/8 in., in 18 B&S gage metal. Can also be had in various other gages on short notice. All sizes are furnished in 6-ft. lengths.



Manhattan Angle Terrazzo Strip—Its Cross Section and Application

Full Size Section



Detail Showing Application of Terrazzo Strip

RECOMMENDED SPECIFICATION AND TERRAZZO FLOOR ACCESSORIES

Recommended Specification

The MANHATTAN TERRAZZO BRASS STRIP CO., INC. recommends that the Architect use the standard specification of the National Terrazzo and Mosaic Association.

Cove Base Dividers

We can furnish from stock, cove base dividers with standard radius, in 20 B&S gage to 1/8-in. material. Also hospital base dividers and special shapes to order.

Bronze Placques for Panel Centers

Bronze placques have become very popular for use in the centers of panels.

We maintain an assortment of the designs which are used regularly; or can furnish special placques to order.

Our bronze placques are constructed with ample provision for inserting and anchoring in the floor.

Brass Lettering

We can furnish script or block letters in all sizes, ready to insert when the terrazzo is installed.

Write for prices, including sketch showing dimensions desired. We carry 4 and 6-in. solid cast brass or white metal block letters in stock.

Low Cost

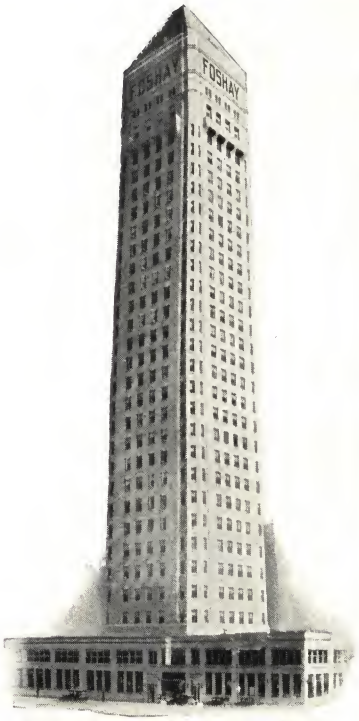
We are in position to quote very attractive prices on strips because we specialize. Our patented labor-saving machinery, low overhead and small margin of profit enable us to make low prices possible.

Let us send you estimate and samples.

A FEW OF THE MANY INSTALLATIONS USING MANHATTAN STRIP

Shortridge High School, Indianapolis, Ind.
City Hospital, Biloxi, Miss.
Reymer's Main Store, Pittsburgh, Pa.
Children's Hospital, Akron, Ohio
Foltis Fisher Foods, New York, N. Y.
St. John's Hospital, Brooklyn, N. Y.
Book Arcade, Detroit, Mich.
Syracuse Memorial Hospital, Syracuse, N. Y.
New York Telephone Building, Brooklyn, N. Y.
Patrick Henry Hotel, Roanoke, Va.
Christ Hospital, Palisades, N. J.
St. Anne's Hospital, Chicago, Ill.
Jefferson Hotel, St. Louis, Mo.
Petroleum Building, Midland, Tex.
Michigan Theatre, Flint, Mich.
Weatherby Building, Portland, Ore.
Good Samaritan Hospital, Cincinnati, Ohio
St. Michael's Scholastic, Spokane, Wash.
Mercy Hospital Addition, Springfield, Mass.
Anglican College, Vancouver, B. C.
Palmolive Building, Chicago, Ill.
Y. M. C. A., Dayton, Ohio

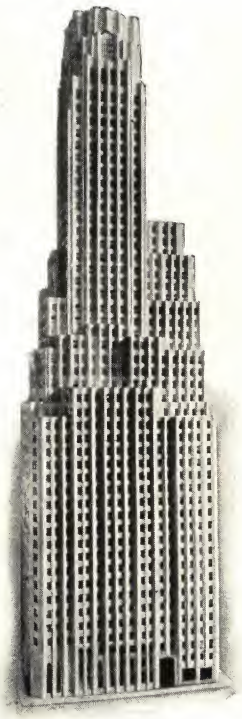
A FEW REPRESENTATIVE BUILDINGS IN WHICH MANHATTAN SUPPLIED THE TERRAZZO STRIPS



Foshay Tower, Minneapolis, Minn.



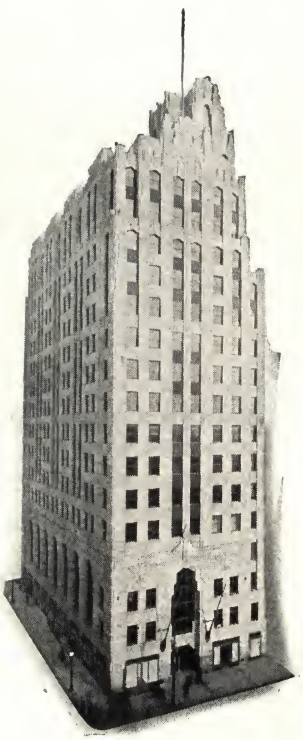
Empire State Building, New York, N. Y.



One Wall Street,
New York, N. Y.



Sterick Building,
Memphis, Tenn.



Union Industrial Bank,
Flint, Mich.

NATIONAL HELIOPORE FLOOR CORPORATION

Manufacturers and Designers of Resilient and Permanent Floors

EXECUTIVE OFFICE AND SHOWROOMS

53 State Street, BOSTON, MASS.

LICENSED AGENTS OR REPRESENTATIVES

EASTERN NEW YORK, CONNECTICUT, and NEW JERSEY; V. Foscato, Inc., 40th Avenue and 22nd Street, Long Island City, New York.
WASHINGTON, D. C., Standard Art Marble & Tile Co., 118 E Street, N. W.
MARYLAND, Joseph B. Dunne & Son, 853 North Howard Street, Baltimore.
DELAWARE, International Mosaic & Tile Co., 2801 Market Street, Wilmington.
MAINE, Maine Heliopore Service Corp., Rockland, Me.
PHILADELPHIA, SCRANTON, and EASTERN PENNSYLVANIA; United Marble & Tile Co., Home Office, Pittston, Pa.
CLEVELAND, OHIO, Roy-Cliffe Marble Co., 4500 Euclid Avenue.
COLUMBUS, OHIO, Ardit Mosaic & Tile Co., 665 West Mound Street.
CINCINNATI, OHIO, Martina Mosaic & Tile Co., 561 Reading Road.
DAYTON, OHIO, Serene Brothers Art Terrazzo Mosaic Tile Co.

Representatives for any Section of United States on Request

HELIOPORE FLOOR SPECIFICATIONS OVER EXISTING WOOD FLOORS OR ON SUBFLOORS

New Construction

Figs. 1 and 2 below show in diagram Heliopore Floor Construction when a wood subfloor is the base.

First, the wood subfloor is covered with two layers of waterproof felt building paper lapped to prevent all seepage of water.

Second, the band-iron base strips are nailed down to the wood subfloor in parallel lines the exact distance apart as the size of the blocks or panels, care being taken to have the hooks on a line and exactly opposite each other.

Third, the brass, zinc, or nickel silver floor strip is then hooked onto this base strip and turned up into an upright position.

Fourth, the dividing strips are then inserted between the upright strips dividing the entire floor into the proper sized areas.

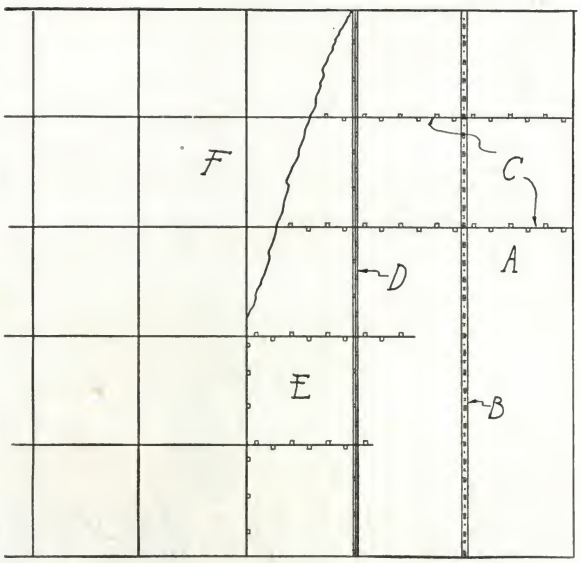


Fig. 1 Diagram Showing Progress of Heliopore Construction on Wood

A. 2 ply waterproofing to prevent seepage. B. Bandiron Base stripes nailed to wood floor. C. Heliopore Longitudinal strips. D. Heliopore Dividing strips. E. Moulds formed by strips. F. Terrazzo composition finish.

Fifth, into these firmly anchored molds formed by the strips, is placed ⅞ in. of straight terrazzo (2 to 1 mix). The floor is then finished in accordance with the standard practices.

When finished, the floor consists of a group of poured-on-the job individual terrazzo tiles firmly anchored on four sides to the base, affording a perfect terrazzo job with the following out-of-the-ordinary advantages:

1. The tiles being hinged together and anchored to the wood floor will have the resiliency of the supporting wood floor, they moving exactly as a wood floor does.

2. Due to the fact that at all times the Heliopore strips firmly hold these tiles down against the base, a thickness of

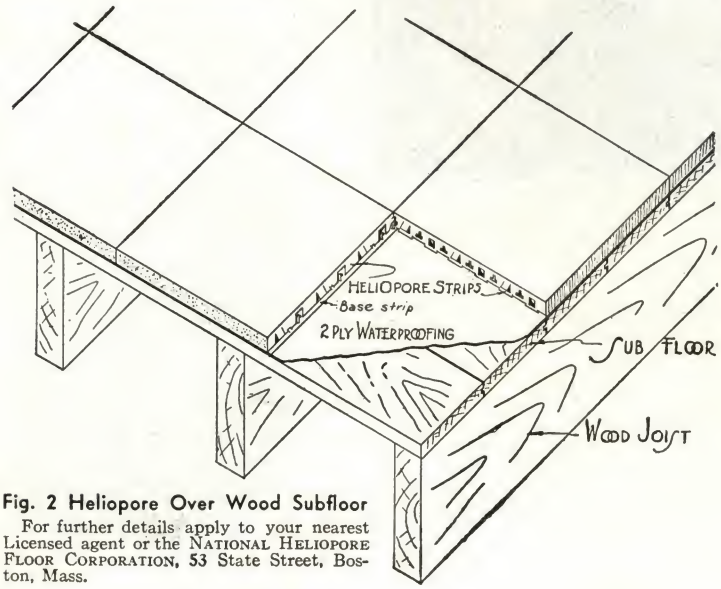


Fig. 2 Heliopore Over Wood Subfloor

For further details apply to your nearest Licensed agent or the NATIONAL HELIOPORE FLOOR CORPORATION, 53 State Street, Boston, Mass.

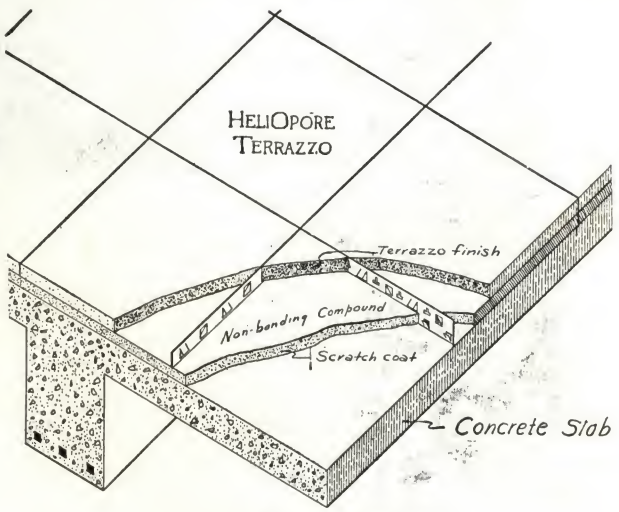


Fig. 3 Heliopore Over Concrete

only 7/8-in. of terrazzo is required, thereby adding only 11 lbs. weight per square foot to the subfloor, permitting these floors to be laid in remodeling work as well as in new construction.

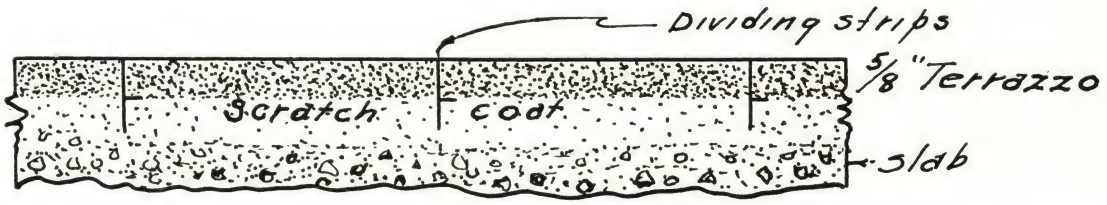
3. Heliopore Floors laid under these specifications *will not crack.*

4. Heliopore Floors are less expensive than tearing out wood floors, putting in a cement base, and laying two inches of terrazzo, with wire mesh reinforcing, and they also give absolute security against cracking.

Heliopore Floors will not crack due to ordinary settlement or shrinkage in your building.

WHY ORDINARY TERRAZZO LAID BY EXPERTS MAY CRACK

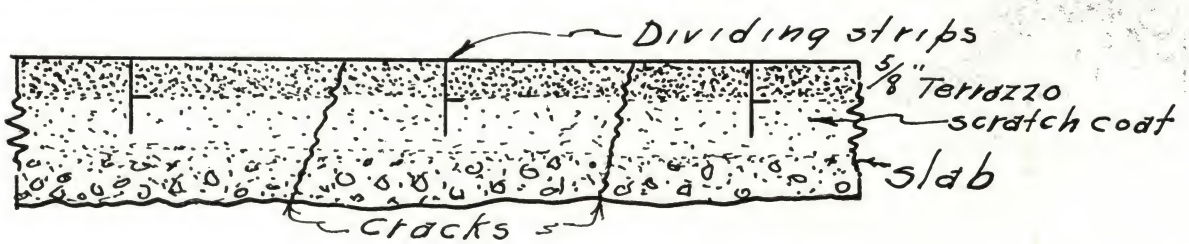
The first illustration shows how many terrazzo floors are laid:



On the following cross section of such a terrazzo floor, note that the dividing strips do *not* cut through to the base because of the necessity to hold the floor down by bonding to the base. As you will note, the scratch coat is in one complete piece or monolithic slab. Now what happens if the building settles?

Then 7/8-in. of terrazzo is placed and finished in the usual manner.

Now one can readily see that when a crack appears in the scratch coat, it can only go as far as the break in the bond and stops there. The top slab being completely separated, yet held in place on four sides by the special



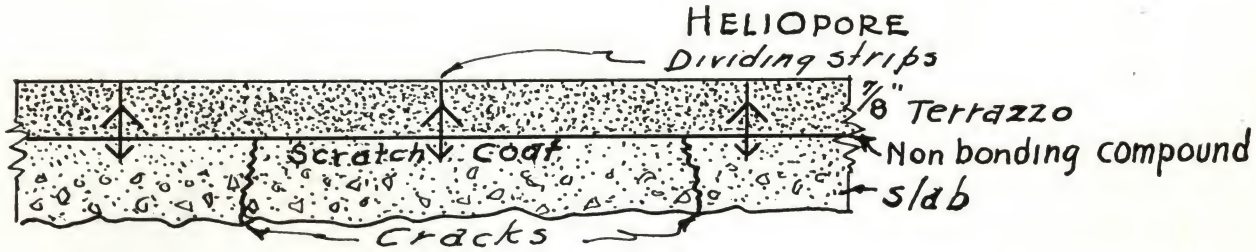
A crack appears in the scratch coat, and it being bonded to the terrazzo top, will invariably carry through to the surface causing an unseemly-looking floor. Now don't blame your terrazzo man for the crack. It is impossible to prevent it under the old system. Until you can prevent a building expanding or contracting or settling, terrazzo laid under the old method cannot be expected to be perfect.

Heliopore Floor absolutely protects you against cracking, no matter whether your building settles or not.

Here is the principle which has been tried, tested, and proved:

patented strips, cannot crack but will settle with the building, being pulled down by the strips the exact amount of the settlement which is usually minute, but still is enough to cause a crack in an otherwise beautiful floor. No matter how much the scratch coat cracks, none will appear in the isolated top block.

Many methods have been tried to prevent cracking in terrazzo—the two most common now in vogue being a sand cushion laid over the foundation to prevent a bond, and the laying of an asphalt cushion to prevent a bond. Both these methods require, however, a 2- or 3-in. slab as they rely upon gravity to hold them down.



At least 1/2-in. of scratch coat is laid and bonded to the floor slab. Heliopore strips are anchored into this scratch coat as in ordinary terrazzo, except that they anchor in by virtue of lugs in the bottom section, absolutely preventing the strip from rising. Next, a non-bonding coat completely covering the surface of the scratch coat to *prevent* a bond with the terrazzo finish.

Why not use the guaranteed, improved, modern Heliopore Floor method of preventing cracks and lay only 1 1/2 inches?

For further details apply to your nearest licensed agent or the NATIONAL HELIOPORE FLOOR CORPORATION, 53 State Street, Boston, Mass.

FLOOR ACCESSORIES CO., INC.

Terrazzo Dividing Bars and Ankortite Recessed Floor Bar

GENERAL OFFICE

KANSAS CITY, MO.

AGENTS IN PRINCIPAL CITIES

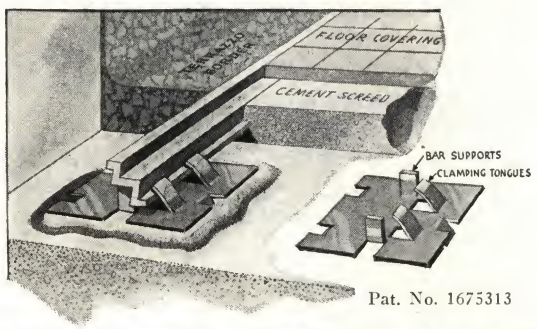
For Ankortite Floor Joiners and Brass Thresholds, Masonry Slots and Shelf Angle Fixtures and Tackless Carpet Strips, see Manufacturers' Index

ANKORTITE RECESSED FLOOR BAR

For Joining Linoleum or Rubber Tile to Terrazzo or Concrete
(Used with Either Horizontal or Vertical Anchor Clips)

The recessed floor bar is an anchored bar extensively used where an offset is provided for linoleum or other applied flooring where it joins concrete, terrazzo, tile or other material in public buildings, schoolrooms, hospitals; in corridors, around elevator mats at floor landings, etc.

When linoleum or composition flooring is used in room and corridors a most attractive, economical, sanitary and practical installation is obtained by extending a cement or terrazzo border, either with cove or square base, a few inches from the wall and using the Ankortite Recessed Floor Bar to form the offset for receiving the applied covering. This makes a perfect abutment of the two materials, leaving no opportunity for the collection of germs or dirt and at the same time making an ornamental border for the finished floor.



Installation of Recessed Floor Bar with Horizontal Anchor Clips

Anchors are snapped on the bar on about 2-ft. centers and are set on cement pads to bring shoulder of bar to height of fill. Bar then serves for screeding both inside and border fills

Advantages

(1) This bar forms the offset for receiving the applied floor covering.

(2) It makes a close, perfect abutment of the two floor materials on the same level, with an ornamental polished brass or white metal strip $\frac{5}{32}$ in. wide in evidence.

(3) Gives a straight binding edge for cutting and fitting the applied covering.

(4) Makes a smooth, level base for the covering that brings its surface even with the top of the bar and outside border.

(5) Protects the border material against crumbling or chipping.

(6) Top of bar serves as a screed for finishing border material to proper level.

(7) Shoulder of bar is also a screed for striking off the inside fill.

(8) Serves also as a dividing bar between the two fills, preventing cracks from the inside field extending into the border material.

(9) The cement screed may be any specified thickness.

(10) Anchor clips spaced on approximately 2-ft. centers hold the bar upright and in alignment. Both types of anchors snap on the bar in one quick movement and may be slid on the bar to either side of peaks or unusually high points in the floor slab.

The Ankortite Recessed Floor Bar repays its entire cost in the time and labor saved in placing the terrazzo or concrete and in trimming and laying the covering. This is not merely our own statement but comes from terrazzo and floor covering contractors who have used it and are in position to judge comparative costs. The bar is not an expense, therefore, and in addition it gives the advantages mentioned in the foregoing paragraphs.

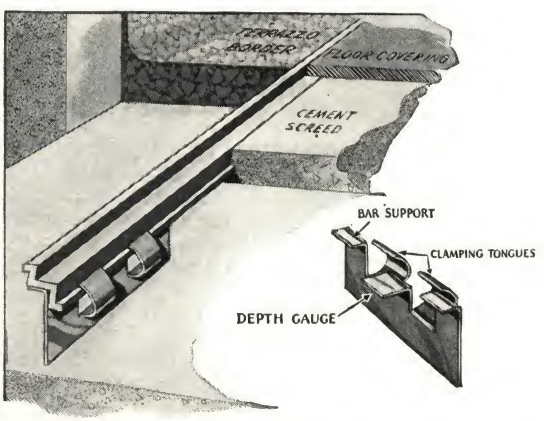
Prices

The Ankortite Recessed Floor Bar is made of extruded brass and hardened white metal. It accommodates applied flooring either $\frac{3}{16}$ in. or 6 mm. thick as the offset on one side of the bar is $\frac{3}{16}$ in. deep and on the other side is 6 mm. deep.

Stock lengths 8 ft. Price per linear foot in stock or cut lengths, including necessary quantity of anchor clips and freight allowed:

	White Metal	Brass
1 to 100 ft.	$0.15	$0.20
101 to 500 ft.	.13	.18
501 to 1000 ft.	.12	.16
1001 ft. and over	.11	.15

Note: When ordering be sure to specify whether vertical or horizontal anchor clips are desired and the thickness of floor covering to be used. This information must be given before the order can be filled.



Installation of Recessed Floor Bar with Vertical Anchor Clips

Anchors are snapped on the bar on about 2-ft. centers and inserted in cement screed until the depth gauge rests on top of the screed. Vertical anchor clips are furnished with the depth gauge to govern ½, ⅝, or ¾-in. terrazzo finishes.

Typical Specifications Recessed Floor Binding Bars

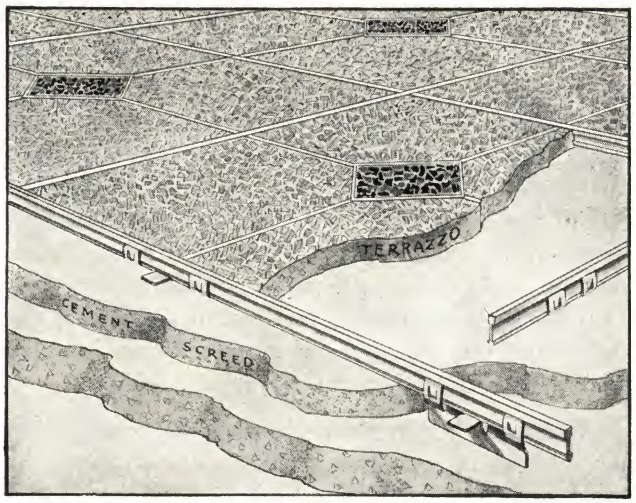
At edges of terrazzo [cement] borders joining linoleum [rubber tile] floors, set Ankortite Recessed Brass [White Metal] Floor Bars with slidable Vertical [Horizontal] Anchor Clips to be spaced and set as per manufacturer's directions. Finish outside border flush with top of bar and cement screed flush with shoulder of bar. These bars are made and marketed by FLOOR ACCESSORIES CO., INC., Kansas City, Mo.

ANKORTITE DIVIDING BARS

For Terrazzo or Cement Floors

These bars are designed to give a wide wearing surface with minimum cost. Being a heavy multiple-angle bar, they are rigid and free from waves or curves and give a rich, attractive appearance to the floors.

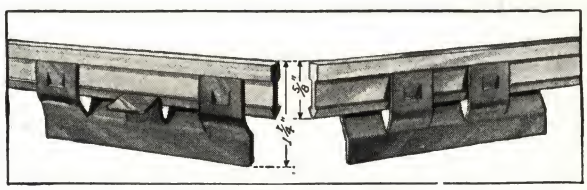
Ankortite Dividing Bars are made of extruded brass, hardened white metal or nickel silver and furnished with the wearing surface in three widths—⅛, $\frac{3}{16}$ and ¼ in. They are anchored in the cement screed with anchor clips that are snapped on the bar at intervals of approximately 12 in. and are slidable along the bar.



Patent No. 1675313

The ledges of the bar and uneven outline of the anchors fill with cement, making a perfect bond between the bar and cement underbed. The anchor clips attached to the bars are embedded in the cement screed to the depth gauges and grip the bar firmly, holding it rigidly upright so it is not pushed out of place in rolling the terrazzo aggregate. The bar itself is ⅝ in. deep, and two sizes of anchors are furnished. For a ⅝-in. terrazzo fill the measurement from top of bar to bottom of anchor is 1¼ in., and for a ¾-in. terrazzo fill the measurement is 1½ in. overall.

Ankortite Dividing Bars may be used also for trap rock or cement floors, as well as terrazzo, to prevent or localize cracking and to replace scoring. They permit the designer to create and use various patterns of floors with two or more colors, if desired.



Anchor Clips Snap on Bar

They are furnished with depth gauges for ½, ⅝ or ¾-in. terrazzo finishes

We also manufacture on the same principle 18-gauge and 20-gauge brass and white metal Ankortite Dividing Strips with slidable anchor clips. The bars and strips are made in brass and white metal in stock lengths of 6 ft. Ample stocks of the different sizes are maintained for immediate shipments.

PRICES

	White metal	Brass
Ankortite Dividing Bar, ⅛-in. top..	.08	.10
Ankortite Dividing Bar, $\frac{3}{16}$-in. top..	.10	.12
Ankortite Dividing Bar, ¼-in. top..	.12	.15
Ankortite Dividing Strips, 20-gauge..	.03¾	.04½
Ankortite Dividing Strips, 18-gauge..	.04¼	.05½

Prices on nickel silver quoted on application.

Prices include necessary quantity of anchor clips. Freight allowed on quantities 500 ft. or more.

Note: When ordering be sure to state thickness of terrazzo finish, whether ½, ⅝ or ¾ in. thick.

Typical Specifications Ankortite Dividing Bars

General Construction—A bed of dry, clean sand approximately ½ in. thick shall be spread over the rough concrete floor and covered over with a layer of tar paper. Over the sand and tar paper shall be poured a cinder concrete fill approximately ¾ in. thick and screeded to a smooth uniform level 1¼ in. below the finished floor surface. On the cinder concrete base shall be poured a screed coat ⅝ in. thick consisting of 1 part cement and 4 parts sand screeded to a uniform level.

Brass Dividing Bars—Ankortite Brass Dividing Bars with slidable anchor clips as manufactured by the FLOOR ACCESSORIES CO., INC., Kansas City, Mo., and having an exposed surface of ⅛ in. [$\frac{3}{16}$ in.] [¼ in.] shall be furnished and installed in all terrazzo floors as shown on plans.

The anchor clips shall be spaced on the bars on approximately 12-in. centers and embedded in the cement screed so that the top edge of the dividing bar will be level with the finished floor surface.

When the underbed has hardened sufficiently to withstand rolling, a terrazzo surface ⅝ in. [½ in.] [¾ in.] thick and consisting of 2 parts of marble granules and 1 part portland cement shall be filled in and troweled to a smooth surface. After the terrazzo has set it shall be ground and polished to a smooth, level finish.

ADAMS PRODUCTS, INC.

MAINTENANCE ENGINEERS

Specialized Floor Treatments, International Service, Electric Equipment and Materials

ST. PAUL, MINN.

BRANCH OFFICES

PHILADELPHIA, PA. LOS ANGELES, CALIF. TORONTO, ONT. CHICAGO, ILL. SAN FRANCISCO, CALIF. MONTREAL, QUE. PORTLAND, ORE.

MEMBERS NATIONAL TERRAZZO & MOSAIC ASSN.

TERRAZZINE TREATMENT FOR TERRAZZO

Its Purpose

To seal the moisture into the floor—effecting a slow and substantial curing.

To protect from stains during period of construction.

To permanently seal terrazzo against the penetration of dirty and disintegrating scrubbing solutions.

To permanently stop powdering and discoloring.

To greatly eliminate pitting.

To bring out the true, rich colors of the marble chips.

To effect a permanent sheen that does not track.

Is not slippery.

Does not darken terrazzo.

Contains no alkali or mineral oils.

Terrazzine and Its Action on Terrazzo

Terrazzine is composed of carnauba (a product of Brazil, S. A.) as its base and certain oxydizing oils and dryers. The carnauba is used as the base because of its transparent nature, its ability to fill, seal and preserve and to remain unaffected under strong cleaning solutions bearing caustic, alkali and sodas, all of which are used in soaps and which penetrate and weaken cement structure, especially affecting the bond between the cement fill and chips.

Terrazzine not being soluble in water, affords a protecting film during the period of building and which eliminates many common stains, especially tobacco, which is quite impossible to remove after having once penetrated and dried.

Terrazzine cannot be scrubbed out of terrazzo. The surface film is required during the building period only; just prior to occupancy it is removed. The real treatment has penetrated into the floor. Such dust as might occur through granular cuttings is absorbed into the pores filled with Terrazzine. A smooth non-porous surface is effected. Terrazzine is not a surface treatment, it is penetrated into the floor, therefore it is not slippery.

Terrazzine reduces maintenance costs. Dirt cannot penetrate the immediate surface, therefore, less material and less effort is required to clean, reducing maintenance costs and insuring permanent beauty.

Kindly advise the manufacturer when Terrazzine is specified. We operate in all parts of the United States.

Specifications: Terrazzine for Terrazzo

Paragraph No. 1—"Within one hour after final or polish grinding (immediately after drying of surface water), all Terrazzo surfaces are to receive a heavy coating of Terrazzine—Formula C1LO, manufactured by (X—and to be applied by—) the ADAMS PRODUCTS, INC., St. Paul, Minn. Application is to be made with a spreading mop, working base material well into the minute pores of the cement fill and chips with a heavy coating overall, and left to penetrate and surface dry for at least one-half hour, whereupon it shall serve as a protecting coat against granular wear, tobacco, water and plaster stains, paint, cement, plaster and other common bondings." Upon completion of building (just prior to occupancy), all treated areas are to be given a thorough scrubbing and resurfacing, removing all paint, plaster, dirts and other bonded surface matters.

Remarks: All finished surfaces shall be sealed permanently against powdering, shall not be slippery, shall bear the true rich colors of the natural base, shall be sealed permanently against the penetration of dirts and shall be of a smooth, evenly glazed non-tracking finish and shall not be darker in color.

Notes: *If specified (X—*ADAMS PRODUCTS, INC.*—), ample material and perfect workmanship are assured. With each contract we offer our Free Maintenance Engineering Service, providing instructions and systematic setup covering maintenance on all floors treated, insuring proper care, continued beauty and low maintenance costs.*

Other Treatments on Cork, Asphalt Tile and Rubber Tile, write for specifications.

Costs

Paragraph No. 1—

Floor price per square foot, entire United States, 7/8 to 1¾¢.

Material—Coverage: 600 sq. ft. per gal.

Note: When transportation exceeds 10% of gross contract this will be charged extra.

VESTAL CHEMICAL LABORATORIES, INC.

Manufacturers of Products for the Treatment and Maintenance of Terrazzo

HOME OFFICE
ST. LOUIS, MO.

NEW YORK OFFICE, 385 Gerard Avenue

CHICAGO OFFICE, 230 East Ohio Street

WAREHOUSES AND LOCAL REPRESENTATIVES

ATLANTA, GA.	CLEVELAND, OHIO	DENVER, COLO.	KANSAS CITY, MO.	MEMPHIS, TENN.	NEW ORLEANS, LA.
CHICAGO, ILL.	COLUMBUS, OHIO	DETROIT, MICH.	LOS ANGELES, CAL.	MILWAUKEE, WIS.	NEW YORK, N. Y.
CINCINNATI, OHIO	DALLAS, TEX.	HOUSTON, TEX.	LOUISVILLE, KY.	MINNEAPOLIS, MINN.	PHILADELPHIA, PA.
	PITTSBURGH, PA.	SAN FRANCISCO, CAL.		WASHINGTON, D. C.	

Vestal Products for the Treatment and Maintenance of Hardwood Floors, see Manufacturers' Index

Member National Terrazzo and Mosaic Association, Inc.

BRITEN-ALL TREATMENT—FOR TERRAZZO

As a conditioning process for new terrazzo, the Briten-All Method corrects efflorescence and removes the bloom, brings out the natural colors of the marble aggregate, seals the pores against the absorption of dirt and produces that beautiful lustre ordinarily acquired only with age. It neutralizes the alkaline condition of a new floor. This treatment for a new terrazzo floor is endorsed and approved by the largest terrazzo contractors.

Important: The Briten-All Treatment shall be applied either by the VESTAL CHEMICAL LABORATORIES, INC., or under instructions as outlined by them.

Estimates

Estimates furnished by any branch office or by the Home Office in St. Louis, Mo.

Specifications for Terrazzo Treatment

When Applied by the Vestal Chemical Laboratories, Inc.

After all trades have finished in the building and all tools, equipment and rubbish have been removed from the premises, all terrazzo areas shall be treated and conditioned with the Briten-All Method as outlined by and work to be done by the VESTAL CHEMICAL LABORATORIES, INC.*

When Applied by Terrazzo or General Contractor

After all trades have finished in the building and all tools, equipment and rubbish have been removed from the premises, all terrazzo areas shall be treated and conditioned with the Briten-All Method as outlined by VESTAL CHEMICAL LABORATORIES, INC.*

**Note:* In some large metropolitan areas, this treatment can best be applied by the VESTAL CHEMICAL LABORATORIES, INC., and their trained maintenance engineers; however, in other localities and when conditions warrant, a Vestal Representative will personally instruct those applying the Briten-All Treatment to insure satisfactory results.

General Maintenance of Terrazzo

Briten-All is recommended for the general maintenance of terrazzo. The continued use of Briten-All will not only keep the floor clean but will improve the appearance and leave a protective finish on the surface.

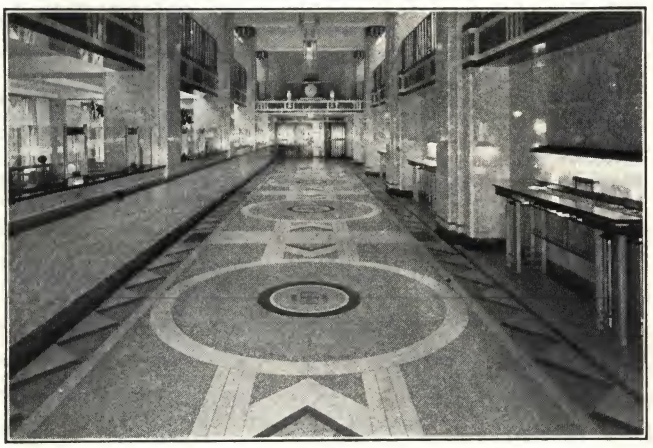
The National Terrazzo and Mosaic Association, Inc., specifically recommend the Briten-All Treatment for Terrazzo.



DePaul Hospital, St. Louis, Mo.
O'MEARA & HILLS, Architects, St. Louis, Mo.
All terrazzo in this building conditioned with Briten-All Treatment



Chapel, St. Mary's Novitiate, St. Louis, Mo.
O'MEARA & HILLS, St. Louis, Mo., Architect
All terrazzo in this building conditioned with Briten-All Treatment



Sterling National Bank, New York, N. Y.
GILLETTE & WALKER, Architects
All terrazzo in this bank conditioned with Briten-All Treatment

ACME ASBESTOS COVERING & FLOORING CO.

INCORPORATED 1907

Manufacturers of and Contractors for Magnesia Flooring

TELEPHONE
Monroe 2342, 2343

250 North Elizabeth Street
CHICAGO, ILL.

ACMETYLE MAGNESIA FLOORING

Acmetyle is a mineral composition—a floor surfacing laid as a plastic—in color combinations as desired, laid over any subbase, new or old, and enduring throughout the life of the structure it decorates.

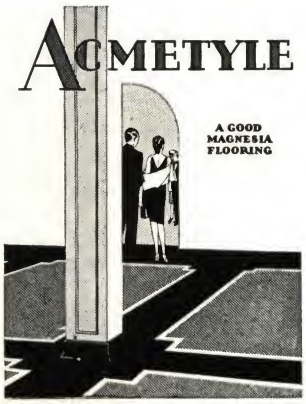
Why Acmetyle Is Used

Because it has a successful record of seventeen years' fine service in public and semipublic structures, where it has earned its reputation for extreme durability, for holding its fine appearance under heavy service, for its fireproofness, its sanitary and non-absorbent qualities, and for its low cost of maintenance.

Coupled with its low first cost, the qualities named are prime factors in the continued selection of ACMETYLE.

Where Acmetyle Is Used

Acmetyle is recommended for public buildings, courthouses, hospitals, schools, libraries, churches—also for theaters, banks, stores, office buildings, halls, social buildings and larger residences.



Old Floors Reconstructed

Acmetyle is recommended for the conversion of old, worn floor surfaces of any kind into stylish and fine appearing floors. Acmetyle is laid directly over old materials without the expense of their removal.

Special Qualities

Fireproof—Acmetyle is fireproof in itself and an Acmetyle floor will resist the spread of fire.

Colors and Designs—Ten warm and permanent colors offer combinations of two or more to harmonize with other decorative features.

Durable—Acmetyle is practically indestructible. It retains its attractiveness even under great abuse and resists the hardest wear indefinitely.

Sanitary—Acmetyle seals corners and joints. It is waterproof and non-absorbent. It offers no lodgment for dirt, grease or vermin. Simple washing makes Acmetyle *clean*.

Other Qualities—Floors of Acmetyle are comfortable, easy on the feet, non-slippery, non-dusting, light, resilient and decorative.

The Acmetyle Guarantee

Acmetyle floors are fully guaranteed against defects in either material or workmanship.

Service and Samples

For the convenience of architects, a Service Department is maintained for free, prompt information and estimates. Send for Color Index and Record Book of Acmetyle.

Some Acmetyle Installations

Midwest Athletic Club, Chicago, Ill., Michaelson & Rognstad, Architects.

Lincoln and Hammerschmidt Schools, Lombard, Ill., E. Norman Brydges, Architect, Chicago, Ill.

Osage County Courthouse, Linn, Mo., H. H. Hohenschild, Architect, St. Louis, Mo.

Berwyn Hotel Annex, Berwyn, Ill., William Sevic, Architect, Chicago, Ill.

St. John Hospital, Joplin, Mo., Brinkman & Hagan, Architects, Emporia, Kan.

SPECIFICATION AND SUBFLOOR DATA FOR ACMETYLE MAGNESIA FLOORS

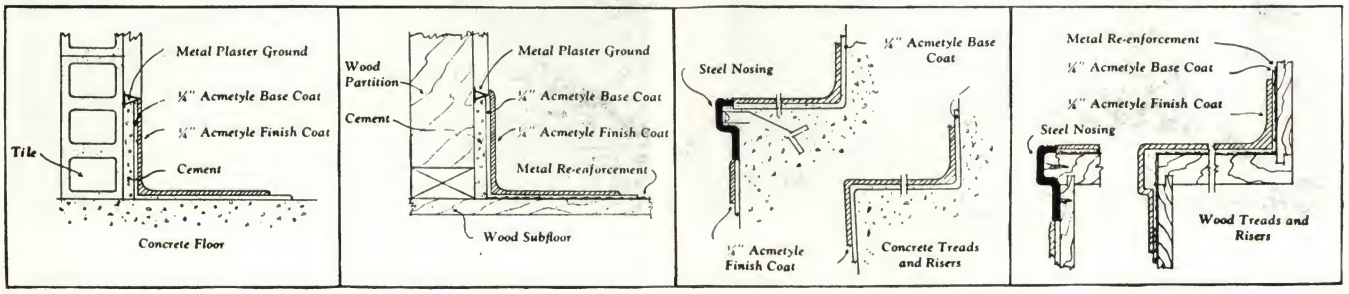
Acmetyle Magnesia Floors (and cove base) shall be furnished and installed by the ACME ASBESTOS COVERING & FLOORING CO., 250 North Elizabeth Street, Chicago, Ill., or its authorized agents, in two ¼-in. layers (or specified thickness) in such colors and patterns to be selected by the architect. All work shall be rubbed with steel wool and given one coat of liquid wax on completion.

Preparation for Acmetyle—The building shall be enclosed; plastering shall be completed; trim shall be set and stained. The temperature of rooms shall be at least 65° F. while the Acmetyle is being laid. It is important that the laying of Acmetyle be postponed as late as possible, as it is a finished material and must be protected if other trades are to work over it.

Concrete Subfloors—All subfloors shall be structurally sound, hard, clean, free from debris and bone dry. Specifications for concrete floors prepared by the Portland Cement Association are recommended. Concrete in steel stairways shall be at least 2 in. thick and reinforced. Slabs shall be brought to within ½-in. of the finishing line (or for other depths of flooring as provided by specifications) and be given a screed or float finish. Pitch desired in finished floor shall be provided in the slab. Cinder, lime or wet concrete is not acceptable as a foundation for Acmetyle.

Wood Subfloors—Six-inch sheathing, not less than ⅞-in. thick, laid rough side up, fairly close together is preferable; must be well-seasoned, securely nailed and supported so that floor is firm and not springy. No. 18 gauge metal reinforcer shall be furnished by the flooring contractor and nailed securely to the wood with roofing nails on 6-in. centers.

Backing for Wainscot and Cove Base—Acmetyle can be laid directly on brick, terra cotta, concrete and stone, all of which should be brought to within ⅜-in. of the finishing line; to bring same to the proper level use a 1:2 mix portland cement and sand not thinner than ¾-in. Acmetyle will not adhere to lime plaster or gypsum tile. Wood sheathing ⅞-in. or thicker may be used as above, securely nailed. Where Acmetyle base or wainscot is installed flush with plaster a wood or metal ground strip shall be installed by others to separate them.



AMERICAN ASPHALT TILE CORPORATION

FORMERLY RUBBERSTONE CORPORATION*

Manufacturers of Hanotile Flooring, Waterproof Cements and Wax

One Madison Avenue, NEW YORK, N. Y.

DISTRIBUTORS IN THE PRINCIPAL CITIES OF THE UNITED STATES

Products

HANOTILE FLOORING.

Also Hanotile Waterproof Cements and Hanotile Wax.

*The name of the Corporation and the name of the product were changed because the word "Rubber" in Rubberstone often gave the erroneous impression that our tile was a rubber tile.

HANOTILE
Asphalt Tile Flooring
Built like a Highway - for Wear

Hanotile Flooring

A flooring manufactured in tile form—a skillful blending of asphalts, asbestos fibre, selected pigments and fillers.

Properties—***Durability***—The wearing quality of Hanotile Flooring is truly remarkable. The entire thickness is usable as wearing surface. The tile is of uniform composition and character throughout its thickness.

Water and Dampness Resistance—The base of Hanotile is asphalt which makes it non-absorptive. It can be used on basement floors, and dampness that comes up through the subfloor will not affect the tile or the asphalt cement in which the tile are laid.

Non-staining—Stains do not penetrate and can be easily washed off. Ink, match and cigarette marks are easily removed. Highly acid and alkali resisting.

Fire Resistance—A large percentage of asbestos fibre is used in the manufacture of Hanotile so that the tile are highly fire resistant.

Resistance to Age—The tile do not harden, scuff up or become shabby from age. It is a well established fact that a Hanotile Flooring actually improves under use.

Odorless—There is no odor released from the tile.

Resistance to Slipping—The nature of the material is such that sureness of footing is given at all times.

Maintenance—Waxing is not necessary but when a waxed finish is desired the best results are obtained by using Hanotile Wax. Oils should never be used on the tile, as any appreciable quantity will soften the surface.

For washing the floor, we recommend the use of soaps such as "Clean-O-Shine," "Briten-All" and "Shine-All" used in accordance with the manufacturer's instructions. Sweeping compounds are frequently used with satisfaction, and prove non-injurious to the flooring when dampened with water or with Hanotile Wax.

Costs—Costs vary with size of tile, thickness of tile and color selection.

It is of advantage whenever possible to make color selections, etc., when writing specifications or asking for prices and estimates.

Colors—There are seven standard plain colors: gray, tan, olive green, ivy green, red, black and mahogany; five special colors: gold, rose, tuscan, silver and blue; and thirty marbleized combinations.

Sizes—Five standard sizes: 6x6, 9x9, 9x27, 12x12 and 12x24 in.

Thicknesses—Two thicknesses: $\frac{1}{8}$ and $\frac{3}{16}$ in. The $\frac{1}{8}$ in. is the standard thickness and is suitable for most types of service. The $\frac{3}{16}$ in. is recommended for stair treads, landings, elevator floors, and for other places subject to continuous, hard traffic.

In the case of wood floors, best results are obtained by the installation of a Hanotile Undercoat, approximately $\frac{3}{8}$ in. in thickness, applied directly over the lumber base with a reinforcement of wire mesh, and troweled to a smooth level finish. The standard $\frac{1}{8}$-in. thickness is laid directly over the Hanotile Undercoat.

The years of service that Hanotile will give can not be gauged by its thickness. Hanotile is a concentrated flooring.

Specifications for Hanotile

For the guidance of architects, the following simple form of specifications is suggested:

All finished floors in.... (specify spaces) ....shall be Hanotile Flooring, manufactured by the AMERICAN ASPHALT TILE CORPORATION and installed by them or their duly authorized agent.

Thickness of tile shall be.....; sizes shall be.....; colors shall be.....

All Hanotile shall have a calendered surface; shall contain no vegetable filler; and shall be equal in color to samples held by the architect.

All Hanotile shall be installed in strict accordance with manufacturer's specifications and guaranteed as to quality of materials and workmanship for a period of two years.

Preparation of Subfloors to Receive Hanotile—***Over Cement Subfloors***—All portland cement floors upon which Hanotile Flooring is to be applied are to be furnished to the Hanotile Contractor in place, of sound, solid cement, free from scale or chalky deposits, to a true, even grade and with smooth steel troweled surface at a distance below the established grade of the finished floors equal to the thickness of tile specified.

Over Wood Floors—All wood floors to serve as grounds for Hanotile Flooring must be furnished to the Hanotile Contractor in place, of single or double construction composed of well seasoned lumber to minimize the possibility of warping at a later date. They shall be structurally sound, securely nailed, and there shall be no springy boards or loose butts.

The wood floor shall be ½ in. below the grade of the finished Hanotile Flooring where the standard ⅛-in. thickness of Hanotile is to be used. The pitch or level must be given to the Hanotile Contractor in the subfloor.

The Hanotile Contractor shall furnish and install a Hanotile Undercoat approximately ⅜ in. in thickness, directly over the lumber base with a reinforcement of wire mesh and troweled to a smooth level finish. The Hanotile shall be firmly cemented in Hanotile Asphalt Cement directly to the top of the Undercoat.

THE DURAFLEX COMPANY

Duraflex-A Flooring and Duraflex Tile

BALTIMORE, MD.

NATIONAL REPRESENTATION

DURAFLEX-A FLOORING

Description

Duraflex-A Flooring is made of a ductile mineral rubber, and is applied cold in plastic form, to about the thickness of linoleum. It can be applied over new or old cement, composition, wood or steel floors, and stair treads, except heavy duty factory or shop floors and those subject to the action of oils and greases.

Duraflex-A forms a continuous seamless finished flooring that bonds solidly and practically integrally to the subfloor.

Colors—Made in solid colors: olive green, tan, brick red and black.

Physical Properties—Duraflex-A floors can be maintained in perfect condition, equal to new, at all times because the surface is renewable in whole or in part by simply recovering worn or damaged parts. The new part forms a hermetic seal with the old, or bonds solidly to the subfloor if worn through. For this reason, Duraflex-A is a permanent part of the structure and should be so considered.

This maintenance feature covers not only the wear of traffic and repair of damage from abnormal use, but it is also possible and easy to add to and extend a Duraflex-A floor, or to fill in where a partition is removed, or where a conduit trench is cut in the floor, etc., all absolutely without visible seams or marks of joinings. Resurfaced parts can not be distinguished in color or appearance from the old floor, and patches are guaranteed without reservation, as to bond and invisibility.

Highly ductile—becomes smooth under use. Cuts and marks heal themselves. Durable, not subject to depreciation because surface can be renewed and maintained as worn. Sanitary, resists abrasion, quiet under tread—absorbs sound waves, resilient, water and moisture proof; fire, acid and alkali resisting, and a non-conductor of heat and electricity. Economical.

Specifications for Duraflex-A Flooring

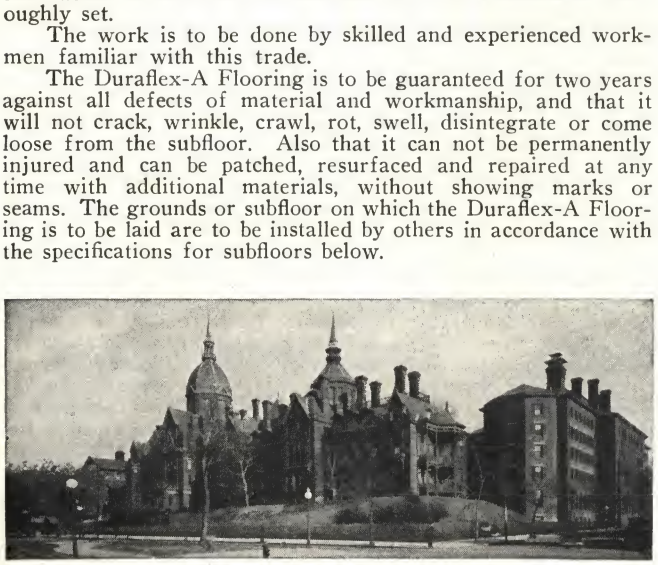
Wherever specified, Duraflex-A Flooring is to be installed in strict accordance with the standard specifications of the manufacturer, THE DURAFLEX COMPANY, Baltimore, Md.

The materials are to be laid in not less than six coats—one bonding coat applied with brush; three body and two finish coats, applied with a trowel, of not more than three gallons per 100 sq. ft. at intervals of not less than twenty-four hours. Body and finish materials to average 60% solid matter per gallon.

The final coat is to be troweled and scraped to give a smooth surface and is not to be covered or washed with any material. When finished the floors are to be kept free from such abuse as will mar the surface until the material is thoroughly set.

The work is to be done by skilled and experienced workmen familiar with this trade.

The Duraflex-A Flooring is to be guaranteed for two years against all defects of material and workmanship, and that it will not crack, wrinkle, crawl, rot, swell, disintegrate or come loose from the subfloor. Also that it can not be permanently injured and can be patched, resurfaced and repaired at any time with additional materials, without showing marks or seams. The grounds or subfloor on which the Duraflex-A Flooring is to be laid are to be installed by others in accordance with the specifications for subfloors below.



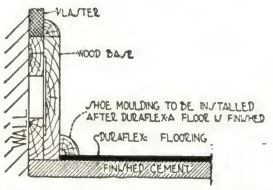
Johns Hopkins Hospital—New Dispensary, Baltimore, Md.
JOSEPH EVANS SPERRY, Architect
Area, 100,000 sq. ft. of Duraflex-A Flooring

Specifications for Subfloor for Duraflex-A Flooring

General—All surfaces to serve as subfloors or grounds for Duraflex are to be in place, structurally sound and solid, bone dry, broom clean, and free from scale, rust, chalky or laitance deposits, grease, paints or other foreign substances. The level or pitch must be obtained in the subfloor and not in the Duraflex covering.

A rigid stop of metal, or shoulder of solid masonry, projecting the thickness of the Duraflex above the subfloor, must be provided wherever the Duraflex floor ends—at open edges, against other floors, at landings, balconies, doorways, etc.

***Type I Duraflex-A Construction over Cement**—For use in Rooms, Corridors, Offices, Auditoriums, Halls, etc.*



Cement Subfloor—Cement subfloors are to be at a true even grade with smooth surface, at, or not more than ⅛ in. below, the finished floor grade.

Cement Base—Cement base grounds must be in place, of first class workmanship, acceptable as finished cement trim without additional smoothing, not over 6 in. high unless otherwise specified. If cove is specified, it must be even and smooth, tangent with the base and subfloors and of 1-in. radius.

Flush Base—Flush base must have the cement surface flush with finished surface of wall and a metal base screed used to form straight line between wall and cement.

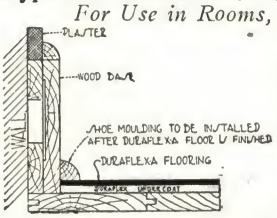
Projecting Base—Projecting base must have the cement base project full amount called for and have rounded top of not less than ½-in. radius.

***Type II Construction over Screeded Concrete with Duraflex Undercoat**—For Use in All Spaces Subject to Traffic, but Not Subject to Point Loads*

Screeded Concrete Subfloor—Screeded concrete subfloors must be screeded or leveled to an even grade not more than ½ in. below the finished floor grade.

Cement Base Grounds—Specifications same as for Type I.

***Type III Construction over New or Old Wood Floors**—For Use in Rooms, Corridors, Offices, Halls, etc.*



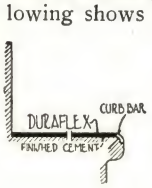
Wood Subfloors—Wood subfloors must be thoroughly seasoned and dry to insure against warping, with all boards securely nailed, rigid, closely spaced and without movement between the boards, not more than ½ in. below the finished floor grade.

Miscellaneous Construction—Base, Stair Treads, Trench Cover

Construction Base—Base to be covered with Duraflex materials will be built by THE DURAFLEX COMPANY against any backing except plaster. A metal plaster screed must be set by the plasterer to form a straight line not over 6 in. above the finished floor grade unless otherwise specified. Any temporary grounds must be removed.

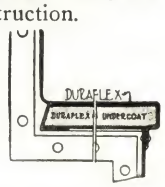
Thickness of the base must be specified for either flush or projecting base and amount of projection given. These two styles of base are shown in diagrams under Type I floor above.

Stair Treads—Must have all grounds in place, structurally sound and solid as specified above for cement, wood, or metal grounds. They must be provided with a suitable strong metal nosing securely anchored and so set that the top of the nosing will be flush with the finished surface of the tread. The following shows details for various types of construction.



Over Cement—Detail as shown on left. Depth of nosing allowing for Duraflex to be ⅛ in.

Steel Pan—Detail as shown on right. Total depth of stair tread must be specified.



DURAFLEX TILE

Description

Duraflex Tile is made of a carefully prepared combination of mineral rubber, asbestos fiber and the very best of color pigments compressed under heavy pressure to tile form.

Sizes—Standard: 6x6, 9x9, 12x12, 9x18, 9x27, 12x24 in.; $\frac{3}{16}$ in. and $\frac{1}{8}$ in. thick.

Colors—Standard: Tan, olive, green, red, brown, black, gray and blue.

Sizes and color required, to be specified.

Properties—The tile form of mastic material retains all of the features of a mastic floor except the seamless property but offsets this by:

(a) Enabling the user to obtain a more ornamental effect by the use of patterns of various colors and

(b) Immediate availability of the space covered.

It is a warm, resilient, quiet floor that is non-slippery even when wet, and is acidproof, alkaliproof and waterproof. The close texture of the material makes it non-absorbent and highly sanitary. It is a non-conductor of electricity and is fire resistant.

When replacements become necessary through damage or wear (through excessive use of a small area) or alterations, they can easily be made by installing new tile only in the area affected, without changing the appearance of the floor or showing signs of the repairs made.

Duraflex Tile can be used as a floor covering for any spaces except those subject to the action of oils or greases. It is particularly adaptable to offices, corridors, waiting rooms, clubrooms, sun-porches, etc., in hospitals, office buildings, schools, clubhouses, and in other uses where an ornamental feature of the floor is requisite in addition to the properties which only a mastic covering possesses.

Specifications for Duraflex Tile Flooring

Wherever specified, Duraflex Tile shall be installed in strict accordance with the standard specifications of the manufacturer, THE DURAFLEX COMPANY, main office, Baltimore, Md. The material must have a rubbery body and surface equal to sample submitted, having the same ductility, elasticity, durability, self-healing and non-absorbing properties, and the same resistance to acids, water, alkalis, weather and fire. A smaller percentage or lower quality of mineral rubber, asbestos fiber or inferior coloring materials will not be acceptable. It must be absolutely free from lumps of unmixed or free coloring matter.

THE DURAFLEX COMPANY shall guarantee the tile to be free from all defects in material and workmanship, and for one year from date of completion of the work, shall furnish without charge, any tile needed to replace any such defective material, provided payments have been made for the work as agreed, and notice of such defectiveness is given to them in writing.

The contractor installing the tile shall guarantee first class workmanship and materials, and that the standard specifications and conditions of THE DURAFLEX COMPANY for proper installation and use of the material, have been followed.

Neither the tile manufacturer nor the installing contractor will be held responsible for defects caused by defective backing or underfloors, or to improper work or materials of other parties, nor for any unevenness or unlevelness in the finished floor, which is due to unevenness or unlevelness of the underfloor not furnished by them.

The grounds or subfloor on which The Duraflex Tile is to be laid shall be in accordance with specifications for subfloors as follows:



Cazenovia Central School, Cazenovia, N. Y.
EARL HALLENBECK, Architect, Syracuse, N. Y.

Specifications for Subfloors for Duraflex Tile

General—All surfaces to serve as grounds on which Duraflex Tile are to be laid shall be structurally sound and solid, bone dry, broom clean, and free from scale, rust, chalky or laitance deposits, grease, paints or other foreign substances. The level or pitch required must be obtained in the subfloor. A rigid stop of metal, or other material, must be provided where the Duraflex Tile floor ends at landings, balconies, doorways, etc. The stop must extend below the finished floor by the thickness of the tile, with the top of the stop at or above the finished floor level.

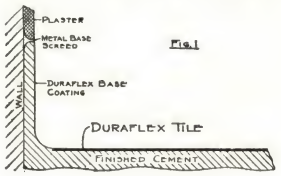


Fig. 1

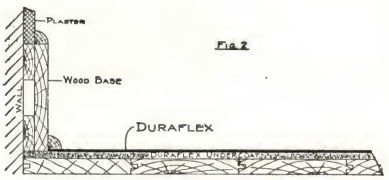


Fig. 2

Cement Subfloor—Where laid over a cement floor, the cement finish shall be hard troweled to a true, smooth and even surface a distance below the finished floor equal to the thickness of the tile to be used ($\frac{3}{16}$ or $\frac{1}{8}$ in.).

Wood Subfloor—Wood subfloors shall be thoroughly seasoned and dry to insure against warping, with all boards securely nailed, rigid, closely spaced and without movement between the boards, and shall be not more than ½ in. below the finished floor grade.

Note: Wood floors can be in single thickness providing the flooring is tongue and groove ⅞ in. or more in thickness, and joists are not over 16 in. on centers. The principal requirement is that the floor be so securely nailed as to be rigid with no movement between the boards. Before the tile is laid, a Duraflex undercoat ⅜ in. thick is installed by first nailing an expanded metal lath to the subfloor and spreading over this the Duraflex undercoat. This undercoat takes out any irregularities in the wood floor and is troweled to a true even surface on which the tile is laid, making a perfect floor.

By this method of construction old wood floors can be converted into new tile floors, but of course the new surface will be ½ in. above the old. This can usually be taken care of.

Stair Treads—Where Duraflex Tile is to be installed on any type of stair construction, grounds for the installation of the tile shall be prepared as under specifications above for subfloors of either cement or wood. If stair construction does not include a nosing this shall be furnished by the (Contractor) and set so that the top of the nosing is level with the finished tile tread.

Base—(a) Where sanitary cove base of same material as Duraflex Tile floor is specified, a smooth cement base of the height as specified shall be constructed flush with the plaster, the cove of the floor line to be made tangent to the finished floor level, leaving at the point of tangency a square shoulder of a height above the subfloor equal to the thickness of the tile specified.

(b) Where projecting cove base of same material as Duraflex Tile floor is specified, a smooth cement base of the height as specified shall be constructed, giving in the cement the full amount of the projection specified and making the cove at the floor tangent to the finished floor level, leaving at the point of tangency a square shoulder of a height above the subfloor equal to the thickness of the tile specified.

The cement base (in case of both (a) and (b) is to be covered with Duraflex Base Coating, in any of the standard colors, according to the specifications of THE DURAFLEX COMPANY.

THE FLINTKOTE COMPANY

BOSTON, MASS.

NEW YORK, N. Y. CHICAGO, ILL. NEW ORLEANS, LA. CINCINNATI, OHIO ATLANTA, GA. DALLAS, TEXAS

For Complete Index of Our Products, see Manufacturers' Index

FLINTKOTE MASTIC FLOORS

Cold Laid Asphalt Mastic Heavy Duty Flooring for Many Special Uses

Composition of Flintkote Asphalt Mastic Flooring

With the development of the various Flintkote Asphalt Emulsions, as described previously in this catalogue, the production of a cold laid asphalt mastic floor was made possible without the use of cut-backs.

The two emulsions used are N-13-F and C-13-HPC. These are used in combination with Portland cement, and other aggregates.

After many years of comprehensive tests it has been demonstrated that these mastics form one of the most effective forms of flooring for heavy duty ever developed and they are *laid cold.*



After the Aggregates Have Been Mixed with Enough Water to Make Workable, Flintkote Asphalt Emulsion Is Added Cold

How the Mastic Is Produced

Flintkote Asphalt Emulsion Mastic Flooring is made by mixing pure asphalt emulsion integrally with Portland cement and aggregate. The resultant mix provides a cold laid mastic which can be installed without expensive or highly trained labor, to a thickness of ½ in., over an old or new concrete, wood, or metal base. The flooring so installed bonds perfectly to the base to which it is applied, is light in weight, resilient and rubbery, non-dusty, and will withstand heavy point loads, even under the extreme heat of summer.

Flintkote Mastic Floors Applied Cold in One Operation for Heaviest Duty

Flintkote Asphalt Emulsion Mastic Floors should not be confused with the so-called mastic floors applied in thin and lightly troweled coats. Floors installed under Flintkote specification are rugged, tough, industrial floors, suitable for continuous and heaviest traffic and applied in one ½-in. thick layer. In many cases floors, bearing loads of many tons on relatively small wheel trucks, are today, after several years' usage, in better condition than when first installed. The resurfacing of piers and loading platforms has shown that even the cutting action of caulks on heavy-shod horses and the carrying of loads on narrow iron-tired wheel trucks have not caused them to break or crumble.

Wide Range of Use—Flintkote Mastic Flooring may be used to advantage as a flooring in:

Industrial plants
Warehouses
Public buildings
Refrigerator floors
Barge decks
Sidewalk and driveway patching
Loading platforms
Trucking aisles
Ship decks
Farm buildings
Ramps
Etc.

The Flintkote Laboratories and Engineers are prepared to co-operate on any special flooring problem and show in actual use, the entire suitability of this material.

Write for information as to specific floor problems or general data required.

Resurfacing and Patching—Flintkote Asphalt Emulsion Floors may be laid to insure a waterproof, long-life, heavy duty, serviceable installation over wood flooring which has failed due to splintering or wearing away.

For patching purposes where other flooring has failed, such as elevator take-offs, ramps, runways, trucking aisles, etc., Flintkote Cold Laid Mastic Floors may be installed with absolute assurance of satisfaction and long life.

Base for Decorative Flooring—Mastic tile, rubber tile, linoleum, wood block, composition flooring, etc., are permanently and successfully laid only when the



A Loading Platform of Flintkote Cold Mastic That Withstands Traffic of 3½-ton Trucks



A Finished Floor Now Giving Satisfactory Service Under Severe Usage

base on which they are installed is prepared properly. Flintkote Cold Mastic Flooring is used for leveling and bringing to desired grade or pitch, rough or otherwise unsuitable surfaces for the application of decorative flooring. A course of Flintkote Asphalt Emulsion Flooring is often used over concrete or wood base as a deadening and resilient cushion coat where hard decorative floors are to be installed.

Skilled Labor Not Required for Installation—Flintkote Cold Laid Mastic Floors may be installed by inexperienced labor or, in many cases, by your own maintenance staff. They may also be contracted for, with reliable flooring, maintenance and application companies.

Predominant Reasons for Using Flintkote Heavy Duty Flooring Mastic

(1) It is applied cold.
(2) It is odorless.
(3) Under average drying conditions it will be ready within 48 hours.
(4) It has a high degree of fire resistance.
(5) It is not necessary to have a dry surface on which to apply it.
(6) It can be applied directly over screeded concrete in place of a finishing cement surface. The concrete itself need not be thoroughly dry for this application.
(7) It can be laid in food storage rooms without danger of contaminating the food due to gases or fumes given off.
(8) No especially trained labor is necessary. The usual cement workers are fully capable of handling and finishing all emulsified heavy duty mastic flooring. The saving of labor cost when applied by a maintenance department is considerable.
(9) Flintkote Mastic Floors improve under traffic. The heaviest commercial loads are borne perfectly.

SPECIFICATIONS FOR HEAVY DUTY ASPHALT MASTIC FLOORS MADE WITH FLINTKOTE ASPHALT FIBRATED EMULSION N-13-F

Specification No. 1—Heavy Duty Floor

This mixture is recommended as most suitable for usual conditions. For priming, from 1 to 1½ gal. of C-13-HPC will be necessary for each 100 sq. ft. of flooring. Prepare this mix by volume:

1 volume of Portland cement
2 volumes of N-13-F Emulsion
2 volumes of sand
3 volumes of gravel or broken stone (¼-in.)

The following quantities will cover 120-130 sq. ft., ½ in. thick:

1 bag of Portland cement (1 cu. ft.)
15 gal. of N-13-F Emulsion
2 cu. ft. of sand
3 cu. ft. of crushed rock or gravel



Metal Lath Used for Reinforcing Flooring Mastic Over Wood Base

Specification No. 2—Heavy Duty Floor

This mixture may be advantageously used where large aggregate is not available, or where material is to be brought to a featheredge as in leveling, etc.

For priming, from 1 to 1½ gal. of C-13-HPC will be necessary for each 100 sq. ft. Mix the following:

1 volume of Portland cement
2 volumes of N-13-F Emulsion
3½ volumes of sand

The following materials will be necessary for each 100 sq. ft. of surface ½ in. thick:

1 bag of Portland cement (1 cu. ft.)
15 gal. of N-13-F Emulsion
3½ cu. ft. of sand

Where Above Specifications Do Not Apply

Where such conditions as the following occur, special formulæ have to be used and the above specifications do not apply:

(1) Areas where complete and thorough drying of the Mastic is questionable, or where traffic will be present before material is in condition to withstand it.
(2) Chemical plants, manufacturing plants, tanneries, rayon plants, dye works, fruit canning plants, where acid solutions come in contact with the floor.
(3) Installing at, or so near freezing temperatures that a normal temperature drop will freeze the mix before setting.
(4) Where subject to sugar or sugar solution, unless base be cleaned free of all sugars and completely dry before sugar in the form of dust or in solution comes in contact with mastic.
(5) All areas where fats, oils or grease will be on the floor. This does not apply to "occasional" fats or oils.



Concrete Floor Brought to Uniform Level for Installation of Wood Block Flooring



Applying Asphalt Tile on Flintkote Mastic Over Wood Floor

HACHMEISTER-LIND COMPANY

Flooring Specialists

FACTORIES

PITTSBURGH, PA. NORTH BERGEN, N. J.

CANADIAN FACTORY AND OFFICE SARNIA, ONTARIO
BRANCH OFFICES IN PRINCIPAL CITIES

HALICO MASTIC TILE

Superior in Service

Halico Mastic Tile, asphaltic tile of remarkable attractiveness and durability combined with a low cost for both installation and maintenance, are no longer an experiment. They have been tried and proved in actual service and have met with complete approval from architect, builder, occupant and owner.

Satisfaction with this flooring is assured by the name of the manufacturer—a name which has stood for many years for rigid adherence to high standards in the production of special floorings.

Where Used

Halico Mastic Tile are especially recommended for use in public buildings, institutions, hotels, theatres, banks, stores, offices, hospitals, churches, schools and residences or for any other building or room in which a good looking, silent, durable and sanitary floor is desired.

Beautiful Floors

A range of twenty-two agreeable colors in plain and marbleized effects, not only result in beautiful floors of themselves, but make it possible to bring the floor into the general color scheme of a room or edifice. In the production of these colors, only the finest pigments are used and they are so incorporated into the tile by our special process that absolute permanency results. These tile have moreover a visible character of substance and texture most agreeable and restful to the eye.

Resilient, Silent, and Slip Resistant

These qualities are imperative in such structures as hospitals, libraries, schools, courtrooms, etc., and of growing importance in every kind of construction. Even when wet this flooring does not become slippery but is always foot sure, comfortable and reassuring.

Sanitary, Non-absorbent, Non-odorous, Non-staining

Non-porous to such an extreme degree as to render them stainless to ordinary acids, alkalis and other chemicals. Dropped matches or burning cigarettes will not mark them. They are installed with such a close bond that no spaces are presented for the lodgement of dust or dirt, and when installed with a sanitary cove base the floor is as easily cleaned as a porcelain dish.

Easy Installation and Replacement

A Halico Mastic Tile floor can be installed over concrete or wood in new construction or for reflooring purposes with equal satisfaction. Alterations and repairs can be readily made as the new material will bond perfectly with the old.

Since the floor is unaffected by moisture, it may be laid over any unwaterproofed cement at or below grade. This feature makes it an especially desirable flooring for basements.

Fireproof

A Halico Mastic Tile floor is fireproof—a factor of immense consequence in every kind of hospital, institution, asylum or other building where the fire hazard unduly threatens the safety of inmates or occupants. Desirable in every type of building and a factor in securing advantageous insurance rates.

Inexpensive

First costs are usually lower than those of other floorings that present only some of the superiorities of Halico Mastic Tile. Maintenance costs are remarkably low.

Sizes

Sizes now available are 6x6, 6x12, 9x9, 9x18, 12x12, and 12x24 ins. Made in three thicknesses, $\frac{1}{8}$, $\frac{3}{16}$ and $\frac{1}{4}$ in. Any floor shape can be fitted and color pattern worked out.

MASTER SPECIFICATIONS

Work Included—List and definitely locate on plans or under this heading:

(1) All floors to be covered with Halico Mastic Tile, mentioning type of subfloors.

(2) All floors where a Halico Mastic Tile Coved Base is to be used.

(3) All floors where a Halicomp Plastic Magnesia Coved Base is to be used.

(4) All stair treads and landings to be covered with Halico Mastic Tile.

Samples—Samples conforming to these specifications must be filed with the architect.

Subsurface—All surfaces to be finished with Halico Mastic Tile must be prepared in accordance with provisions outlined in paragraphs under "Preparation of Subsurface" and made a part of these specifications.

Note: For complete information on "Preparation of Subsurface" consult our representative or send for copy of our Bulletin.

Inspection—The subsurface shall be inspected by the flooring contractor before actual work of laying tile is started and he shall notify the architect in writing if defects are found.

Material—***Flooring and Base***—Mastic floor tile and base shall be Halico Mastic Tile as manufactured and installed by HACHMEISTER-LIND COMPANY, Pittsburgh, Pa., North Bergen, N. J., and Sarnia, Can., or by their authorized representatives, strictly in accordance with manufacturer's specifications.

Thickness of tile shall be.....

Size (s) of tile shall be.....

Color (s) of tile shall be.....

Pattern (s) shall be.....

Cove Base—(Halicomp.) We strongly recommend Halicomp Plastic Magnesia Cove base be used. This is to be applied against screeded backing furnished by general contractor, consisting of 1 part cement and 3 parts sand, applied flush with the plaster line. (See Drawing B on next page.)

Masticomp—Where finished cement cove base is already installed by general contractor, two special color coats of Masticomp are to be applied, to conform as near as possible to the color of border tile used. (See Drawing C on next page.)

Note: If more than one thickness, size or color is to be used, the specification must state clearly the necessary facts pertaining to the location where each is to be used.

Bonding Cement—Only Halico Mastic Tile Cement shall be used in laying tile covered by the specification.

Heat—The building must be heated to 70° at least 24 hours prior to the installation of Halico Mastic Tile and be maintained at this temperature until 24 hours after the completion of work covered by this contract. Heat shall be provided by others.

Installation—All work done on this contract shall be performed by skilled labor under the supervision of the manufacturer or by authorized representatives.

Guarantee—Halico Mastic Tile shall be guaranteed for one year against poor workmanship and faulty material. Defects due to either cause shall be rectified by flooring contractor without charge.

RECENT INSTALLATIONS OF HALICO MASTIC TILE

Building	Location	Architect
Masonic Temple	Steubenville, Ohio	Fred H. Clarke, Steubenville, Ohio
Colestock High School	Titusville, Pa.	W. Holmes Crosby Co., Oil City, Pa.
McCarthy Library, Geneva College	Beaver Falls, Pa.	W. G. Eckles Co., New Castle, Pa.
Jefferson County War Memorial Building	Steubenville, Ohio	Fred H. Clarke, Steubenville, Ohio
Epworth M. E. Church	New Castle, Pa.	W. G. Eckles Co., New Castle, Pa.
B. P. O. E. Building	Sharon, Pa.	Clepper & Clepper, Sharon, Pa.
Science Building and Men's Dormitory, Grove City College	Grove City, Pa.	W. G. Eckles Co., New Castle, Pa.
Church of Christ	Cuyahoga Falls, Ohio	Wilbur Herby, Dayton, Ohio
F. W. Woolworth Store	Utica, N. Y.	Architectural Department, Woolworth Company
Y. M. C. A. Building	Akron, Ohio	Fichter & Brooker, Akron, Ohio
Library Building	Chautauqua, N. Y.	T. J. & W. A. Kidd, Buffalo, N. Y.
C. C. Murphy Stores	Washington, D. C., Harrisburg, Verona and Uniontown, Pa.	H. E. Crosby of G. G. Murphy Co., McKeesport, Pa.
W. T. Grant Store	Louisville, Ky.	P. A. Cunnius of W. T. Grant Co., New York, N. Y.
Grosby Hall, University of Buffalo	Buffalo, N. Y.	Greene & Hopkins, Buffalo, N. Y.
Meharry Medical College Building	Nashville, Tenn.	Gordon & Kaelber, Rochester, N. Y.
Cincinnati & Suburban Building	Cincinnati, Ohio	Harry Lake, Cincinnati, Ohio
Sharon Junior High School	Sharon, Pa.	Clepper & Clepper, Sharon, Pa.
Sing Sing Prison	Ossining, N. Y.	New York State Architect, Albany
Willibrod & Bannantyne Schools	Verdun, Quebec	A. Gravel, Verdun, Quebec
Infantry Battalion Barracks	Fort Wadsworth, N. Y.	Quartermaster Department, U. S. Army
Hollis Public School No. 35	Borough of Queens, N. Y.	Walter C. Martin, New York
Notre Dame University, Dormitories A and B	South Bend, Ind.	Maginnis & Walsh, Boston, Mass.
Mt. Lebanon High School	Mt. Lebanon, Pa.	Ingham & Boyd, Pittsburgh, Pa.
Madison Junior High School	Rochester, N. Y.	F. R. Scherer, Rochester, N. Y.
LaSalle High School	Niagara Falls, N. Y.	Kirkpatrick & Cannon, Niagara Falls, N. Y.
University Club	Detroit, Mich.	Smith, Hinchman & Grylls, Detroit, Mich.
Engineers Building	Hackensack, N. J.	C. V. R. Bogert, Hackensack, N. J.
Louis Kamm Building	Newark, N. J.	Private Plans
Consolidated Film Building	Fort Lee, N. J.	Granville Dexter, Fort Lee, N. J.
Public School No. 6	Clifton, N. J.	Lee and Hewitt, Paterson, N. J.
Franklin School	Saddle River, N. J.	Walter G. Bartels, Hackensack, N. J.

OTHER HALICO PRODUCTS

Halicomp Plastic Magnesia Base

This is a sanitary base of magnesite composition installed in place. We strongly recommend that it be used in conjunction with Halico Mastic Tile. It produces a seamless sanitary cove adjoining the border. It overcomes normal inequalities in wall and cement subfloor.

Halico Industrial Asphalt Tile

Installed in thicknesses of either ¼, ⅜ or ½ in., preferably over smoothly finished cement subfloors, but successfully over wood. Suited for factory, chemical laboratory and battery rooms.

Halicomp

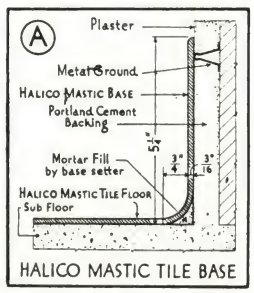
This is a plastic magnesium oxychloride flooring available over wood or concrete subfloors. Monolithic with or without 6-in. cove base. Finished thickness ¾ in. over concrete and ½ in. over wood. Attractive colors, resilient, silent, comfortable, sanitary, low in cost.

Halicomp Terrazzo

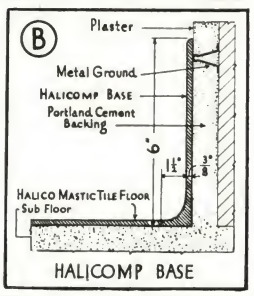
Same general specification as for Halicomp. Installed with brass strips using marble aggregates of selected colors in combination with specified Halicomp binding agent. Characteristics same as Halicomp. Extremely good looking. Finishes ¾ in. thick.

Masticomp

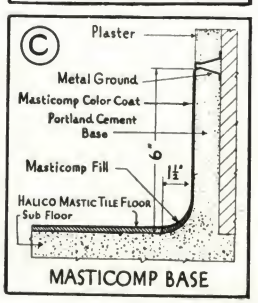
A cold mastic flooring installed from ⅛ to $\frac{3}{16}$ in. in thickness over smoothly finished cement subfloors. Feel to the feet is comparable with that of linoleum. Eliminates jointings, entirely sanitary, fire resisting. Widely used in government work.



HALICO MASTIC TILE BASE



HALICOMP BASE



MASTICOMP BASE

Layr Bilt Masticomp

A heavy black mastic finished with Masticomp. Total thickness ⅜ to 1 in. as required. Installed preferably over cement slabs left roughly screeded uniformly ⅝ to 1 in. below desired finished grade. While monolithic, this floor is independent of underslab, thereby greatly reducing any tendency to crack. Much used in public buildings, schools and hospitals.

Halico Hot Mastic (Regular Type)

Strictly industrial. Laid 1 in. thick or heavier if required, preferably over concrete but successfully over wood.

Halico Hot Mastic (Acidproof Type)

Meets the requirements of chemical plants, battery rooms, laboratories, and wherever acid conditions must be met. Guaranteed absolutely acidproof. Installation conditions exactly as for Halico Hot Mastic (Regular).

Wall Kraft

In consistency Wall Kraft is plastic, yet it is applied with a brush and the texture is produced in the plaster body. Applicable to any surface that can be painted—finished plaster, brown coat, wall board, painted walls, brick or cement. Extremely handsome and authentic effects in period style are attainable, as well as with modernistic application. Within cost range of medium priced construction.

SERVICE, SAMPLES AND LITERATURE

Our flooring experts will, without obligation, be glad to consult with architects, engineers and owners regarding their flooring problems. Architects, engineers and others interested will be furnished with literature fully describing any of our various products upon their request.

Samples will be submitted on request.

ESTABLISHED 1905

ALBERT GRAUER & COMPANY

Grauer-Watkins Red Asphalt, Style-Tile and Graustic Floors

1408 Seventeenth Street
DETROIT, MICH.

REPRESENTATIVES

ATLANTA, GA., S. R. Hewitt, 320 Walton Building
BIRMINGHAM, ALA., John H. Wilkinson, 1735 Fifteenth Avenue, So.
BOSTON, MASS., Merton P. Ellis, 77 Summer Street
BUFFALO, N. Y., Edwin G. Day & Co., Erie County Bank Building
CANTON, OHIO, O. J. Weigand, 1001 Clarendon Avenue, N. W.
CHARLESTON, W. VA., Fireproof Products Co., 216 Professional Building
CHICAGO, ILL., L. A. Watkins & Company, 7303 Oglesby Avenue
CINCINNATI, OHIO, Al Levinson Company, 607 American Druggists Building
CLEVELAND, OHIO, John G. McRae, 2660 East Boulevard
COLUMBUS, OHIO, The B. M. Freeman Co., 42 E. Gay Street
DALLAS, TEX., Congleton Company, Inc., 502-3 Construction Building
DAYTON, OHIO, The John G. Pool Co., 494 Ludlow Arcade
DENVER, COLO., Building Products Corporation, 1435 Welton Street
EL PASO, TEX., Neff-Stiles Company
FORT WAYNE, IND., Arc-Con Specialties Co., 1123 So. Clinton Street
GRAND RAPIDS, MICH., Charles Vandervelde, 757 Hawthorne Street, N.E.
GREEN BAY, WIS., Building Specialties Co. of Wisconsin, 1210 Bond Street
HUNTINGTON, W. VA., E. L. Warnick, P. O. Box 1581
JACKSON, MISS., Clark Building Material Company, Majestic Theatre Building
KANSAS CITY, MO., Day K. Smith, 4884 Main Street
KNOXVILLE, TENN., Chas. M. Allen Co., 712 S. Gay Street
LIMA, OHIO, Building Accessories Company, 311 W. High Street
LOUISVILLE, KY., Equipment & Supply Company, 420 Baxter Avenue
NASHVILLE, TENN., John Williams Company, 808 Independent Life Building
NEW HAVEN, CONN., C. W. Marble, 158 York Street
NEW YORK, N. Y., Co-Wa-Co, Incorporated, 15 Moore Street
OMAHA, NEB., Kraus & Trustin, 636 Paxton Block
PHILADELPHIA, PA., R. C. Kratz, 311 Perry Building
PITTSBURGH, PA., Pittsburgh Building Specialties Co., 402 Jones Law Building
PORTLAND, ME., General Floors Company, 46 Market Street
RICHMOND, VA., Lee O. Miller & Co., 209 Builders Exchange
SAGINAW, MICH., Hugh Lee Iron Works, 312 No. Bond Street
ST. LOUIS, MO., P. M. Bruner Granitoid Co., 425 Frisco Building
ST. PETERSBURG, FLA., E. L. March, 303 Third Avenue, No.
SOUTH BEND, IND., South Bend Building Specialties Co., 232½ So. Michigan Street
TOLEDO, OHIO, Treuhaft Brothers, 1014 Sylvania Avenue
WASHINGTON, D. C., Lally-Rohlader Company, Inc., 1756 M Street, N.W.
YORK, PA., C. H. Strayer, 50 W. Philadelphia, Street

Products

GRAUER-WATKINS RED ASPHALT FLOORS, PREFORMED COVE BASE and TILE, and GRAUER-WATKINS STYLE-TILE and GRAUSTIC FLOORING; ACIDPROOF and INDUSTRIAL HEAVY DUTY ASPHALT FLOORS.

For Sidewalk Lights, Skylights, Floor Lights, and Marquise Lights, see Manufacturers' Index.

GRAUER-WATKINS RED ASPHALT FLOORING

Description and Advantages

GRAUER-WATKINS Red Asphalt FLOORING

A Floor of Highest Quality, Durability, and Long Term Economy—Grauer-Watkins Red Asphalt is a troubleproof, fifty-year floor. In high grade structures where the best of permanent foot traffic floors is desired, Grauer-Watkins Red Asphalt Flooring is recommended as a material attractive in appearance, which will endure for decades without upkeep expense. Its cost by-the-year becomes a fraction of the cost of cheaper floors.

Uses—It was originally manufactured for use in schools, where the foot traffic is heavy and children need a non-slip floor. Its acid-resistant qualities at once made it an ideal floor for chemical, physical, and biological laboratories. Its success was so marked in school buildings that the demand arose for it in hospitals, banks, stores, special areas in public buildings, and other areas where an attractive and durable floor was needed and especially where waterproof or chemical resistant floors were required. This floor not only will lie perfectly over dampness but will prevent that dampness from permeating to the air of the room making it a preferred floor for school basements and other high grade basement areas.

Appearance—Red Asphalt is smooth and clean in appearance and even in color. The dull gloss finish eliminates glare of reflected light.

In case of necessity to cut the floor, repairs do not show as new portions blend perfectly.

It may be extended up on walls to form cove base, forming one continuous sheet.

Color—The beautiful red color blends well with almost any color scheme, making the decorating of rooms quite easy. The color may be varied from clear red through intermediate shades to black

Easy to Work and Walk On—Grauer-Watkins Red Asphalt Flooring is comfortable under foot, quiet, warm and resilient.

Its quietness promotes efficiency. It is never slippery, even when wet.

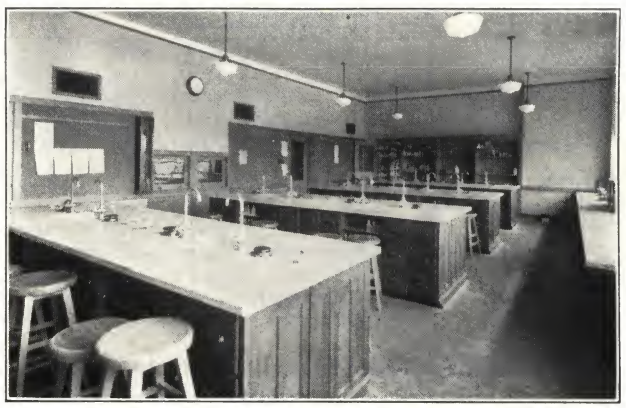
Clean and Sanitary—This floor is easily cleaned by flushing or mopping, dries quickly and is odorless. It is dustless, seamless and may be coved. It never cracks and is absolutely waterproof.

Fire Protection—Grauer-Watkins Red Asphalt meets the requirements of all-fireproof buildings, as the floor will neither aid combustion nor communicate fire. There is absolutely no danger of fire or explosion during laying or when in use. It is also a non-conductor of electricity.

Thickness and Weight—All Grauer-Watkins Asphalt Floors are laid in a uniform thickness of ⅜ in. (thicker, if specified); positively guaranteed and strictly maintained. This provides practically lifelong durability. Weight, approximately, per sq. ft. 8½ lbs.

Foundation—On account of the thickness and plasticity of this floor, either old or new foundation may be used equally well, and either wood or concrete is satisfactory. New foundations must be true to grade and ⅝ in. below the finished floor line, preferably float finished concrete. Old floor, where worn uneven, may be filled in with our special compound.

Speed in Laying—Floors laid one day are ready for full service the following day, or within a few hours if desired. No costly delays due to waiting for floors to harden. Material is laid hot and hardens as it cools.



Chemistry Laboratory, Grosse Pointe High School
GEORGE HAAS, Architect

Corridors—The rich attractive appearance, non-slip, wearproof and sound deadening properties are valuable here.

Swimming Pool Walkways, Gymnasiums, Shower Rooms and Locker Rooms—Sureness, ease and quietness under foot is the requirement that is met most exactingly by Asphalt Floors.

Sanitary Cove Base—Sanitary cove base made of Grauer-Watkins Asphalt is made under pressure on an hydraulic press

¾ in. in thickness for the vertical section. Joints between sections and between the floor and base are fused with heat, making the floor and base jointless and seamless throughout.

Guarantee—We guarantee positive satisfaction, full ⅝-in thickness, and durability. We will replace Red Asphalt Floors, if they do not satisfy, with any floor of equal or lower cost selected by the buyer without cost to him. We could not make such a guarantee if this floor had not proven itself by service, comfort and attractiveness.

Service—Grauer Flooring Service covers the United States. All installations are made by experienced workmen. Where desired, we are prepared to build up the subfloor of wood or concrete to proper grade before applying Grauer-Watkins flooring.

Information—Bulletins illustrated in colors, samples and quotations will be furnished promptly upon request.

Specifications Grauer-Watkins Asphalt Flooring

In the following rooms (.....), etc.) (where indicated on plans), floors and cove base are to have a wearing surface of the Standard Grauer-Watkins Type Asphalt Floors, to be laid by ALBERT GRAUER & COMPANY, 1408 Seventeenth Street, Detroit, Mich., and shall be a decided red in color. This floor shall be laid in a continuous sheet ⅝ in. in thickness, and of such nature and characteristics that any section of floor can be laid completely in one operation and be ready for full service the next day. (No naphtha or other volatile solvent shall have come into contact with the floor or flooring ingredients at any stage of manufacture.) The hardness of the different floor areas is to be regulated according to the traffic requirements of the areas.

The concrete or other base for the above floor shall be finished off true to grade (floated, not troweled) ⅝ in. below the desired finished floor level by contractor for such floor base.

Grauer Industrial Flooring

Grauer Industrial Asphalt Floors are laid under the same rigid specifications that apply where Grauer-Watkins Red Asphalt Floors are laid. The enduring qualities so much prized by factory managers are the result of careful and exacting selection of raw materials and the exceptional workmanship resulting through the use of our exclusive finishing process.

Our installations include general manufacturing areas, trucking aisles, shipping rooms and platforms, plating rooms, acid rooms, laboratories, battery rooms, spray rooms, wash decks, etc.

GRAUER STYLE-TILES

Description

Attractive, colorful design for borders or for complete floors, is the new advantage which Style-Tile brings to users of Grauer-Watkins Red Asphalt Floors. *New beauty* joins *underfoot comfort,* and *fifty-year endurance,* to make this high quality Flooring pre-eminently a leader.

Style-Tiles are made from Grauer-Watkins Red Asphalt, in varied shades, in solid colors or decorated with ceramic tiles in white or any color. The uses of Style-Tiles become more varied with each job to which it is applied. Its most favored use is in borders. Here are shown a few of the multitude of designs which can be formed with ceramics set in the Style-Tile blocks.

Style-Tile in plain colors is used for checkerboard designs for complete floors. Style-Tile combines perfectly with Grauer-Watkins Red Asphalt for cove base and walls as well as for floors. Its combinations are practically unlimited.

Sanitary Features and Advantages—The sanitary quality of Red Asphalt floors (laid hot) is carried by Style-Tile (pressed hot).

Easy under foot, it is an ideal, long wearing floor.

It is warm, dustless, absolutely waterproof, fire-resistant and acid-resistant.

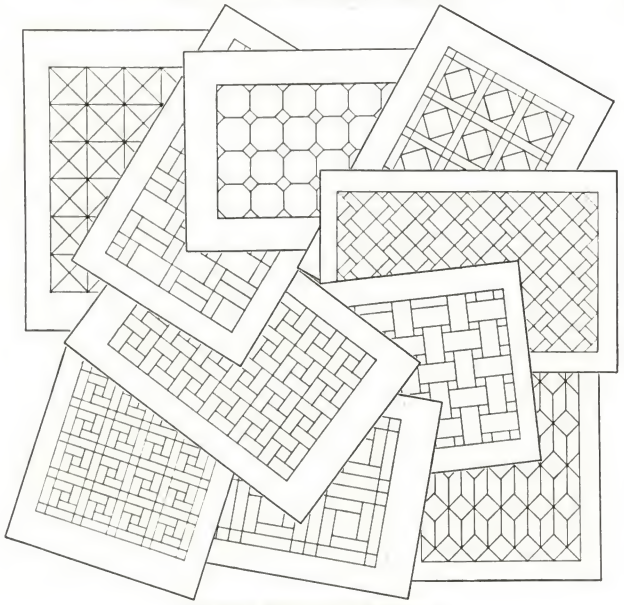
The dull gloss reduces glare. The color may be varied from clear red, through intermediate shades to black.

Style-Tile is ideal for exterior use, on porches, walks, courts, etc.

Its beauty becomes economy as the years pass over it with little or no maintenance expense.



Grauer-Watkins Red Asphalt Style-Tile for Exterior Walks at the Oakland Hills Country Club, Oakland County, Mich.
CYRIL EDWARD SCHLEY, Architect



Granito Style-Tile Patterns

Specifications

In the following rooms (.....), etc.) or (where indicated on plans), floors shall be *Style-Tile Flooring,* as manufactured by ALBERT GRAUER & COMPANY, Detroit, Michigan. Thickness of the tile to be according to size as follows: 6x6x½ in. or 9x9x$\frac{9}{16}$ in. or 12x12x⅝ in. or 12x18x⅝ in. Colors to be Bright Red, Intermediate Shades "A" or "C," or Black, or a pattern design combining two or more colors or shades. Tile shall be solid color throughout or shall be decorated with vitreous or glazed ceramic tile in colors and designs as selected by the architect. Or the field to be plain Red (or Intermediate "A," etc.) or (checkerboard design, alternate Red and Black) border designs (and ribbons between columns) to be formed with Style-Tile decorated with ceramic tile, color and design to be selected by the architect.

All Style-Tile to be manufactured of genuine Grauer-Watkins Red Asphalt Compound and Trinidad Lake Asphalt, coarse sand and crushed red granite to produce tile that will stand up under traffic conditions demanded in the various rooms or areas.

Cove base to be shipped to the job preformed in 2-ft. lengths and set in a suitable mortar backing at least 1 in. in thickness that is thoroughly bonded to the structural walls. All joints in base to be fused in a first class workmanlike manner so as to be invisible and present a finished surface that is jointless and seamless. All base to be given a bond coat of a special asphalt compound made for this purpose.

Style-Tile when set on a true level surface is to be set in waterproof cement that does not add to the thickness of the tile. The thickness allowed from the subbase to the finished floor level is the thickness of the tile (½, $\frac{9}{16}$ or ⅝ in.).

Where Style-Tile is laid over wood floors, old or new, or over float finished concrete, ¾-in. depth should be allowed for tile and bedding of emulsified asphalt cement. Style-Tile can also be set in cement grout if the subbase is 1 in. or more below the finished grade. In this case, Style-Tile is set just as is quarry tile or other clay tile, either with tight joints or with mortar joints of varying widths according to size of tile.

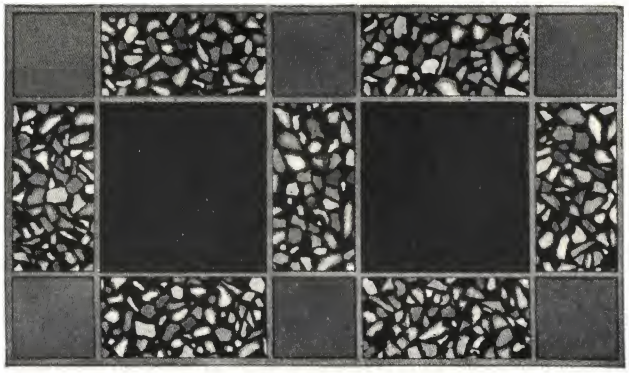
GRANITO STYLE-TILE

Description

Granito Style-Tile is compounded by mixing carefully graded shades of broken marble with Grauer-Watkins Asphalt. The hot asphalt penetrates the surface of one type of marble for a short distance and gives a pleasing graduation of color.

Other types of marble in the mix repel the asphalt stain and remain unaffected. When the asphalt is polished, a soft pleasing pattern is exposed. The pattern illustrated shows a combination using Standard Dark Red Grauer-Watkins Asphalt Style-Tile in the center, bordered by Granito Oblongs and accented by Green Style-Tile. Other colors may be substituted such as gray, tan, brown, blue or red.

Granito is made in sheets at the factory and cut to fit standard patterns and combinations or your own special design.



Granito and Solid Color Style-Tile
Standard tile size 6x6 in., 6x12 in., 12x12 in. Design No. 16

In combination with Style-Tile, either plain or decorated with ceramics, Granito permits the architect to achieve a satisfying result for the owners, in that the floor will be warm, non-slip, easy to walk on, long lasting, and easy to clean as well as decorative.

Specifications

In the following rooms (....., etc.) or (where indicated on plans), floors shall be laid with Grauer Style-Tile pattern No. ..... combining Granito Style-Tile and plain (or marbleized) Style-Tile or ..... (state color or colors). Sizes of tile to be ..... Grauer Granito Style-Tile to be made by the special process developed by ALBERT GRAUER & COMPANY, Detroit, Michigan. The subfloor to be furnished by the (mason contractor) exactly ⅝ in. below the finished floor level.

GRAUSTIC FLOORING

Description

Graustic is a medium priced industrial and general-use floor, of a rubberlike texture, composed of mineral bitumen, asbestos fiber, mineral coloring pigments and mineral oil, selected by careful research, and combined scientifically. It is provided in attractive colors and applied in plastic form to a thickness of ⅛ in. or more. Graustic is fire-resistant, acid-resistant and a non-conductor of electricity.

Graustic TRADE-MARK

Durability—Graustic will endure for years under constant foot traffic. Time and hard usage tend to compact the material and improve the condition of the surface. If damaged in any way, the floor is easy to repair and does not show the difference between the new and old work. The first cost is relatively low.

Appearance—Graustic is manufactured in the following permanent non-fading colors: red, maroon, tan, brown, and green; colors are even throughout the material, giving a rich velvety appearance.

Elasticity—Graustic floor will not crack, check, peel, crawl or wrinkle, but will expand and contract with the base to which it is applied. However, since it is perfectly bonded to the subfloor, cracks in this will also extend through the Graustic. Such cracks may easily be repaired and the new work will not show.

Hardness—Although elastic, Graustic is harder than rubber or cork. If struck with a hammer, Graustic will not chip or break. If the blow is hard enough to form a dent, this will work smooth with use.

Quietness—The yielding surface of Graustic deadens sound, a highly desirable quality in schools, hospitals, offices, churches and theaters.

Sanitation—Graustic is seamless, dustproof, waterproof and dries quickly when washed; is non-absorbent, warm, and has no joints or cracks. Neither liquids nor germs can lodge in or penetrate Graustic.

Graustic Combination Floor

For certain uses a combination floor consisting of colored "Graustic" over a black asphalt base, has become quite popular. This combination makes a crackproof floor even when applied over old worn wood or concrete subfloors. The cost is moderate when compared with other types of flooring due to the smaller amount of colored finish applied. The base is heavy and elastic and takes the place of cement floor finish in concrete buildings or composition scratchcoat over wood floors.

The asphalt is laid ½ to 1 in. in thickness over which the Graustic Flooring makes a perfect bond, both being of asphalt base.

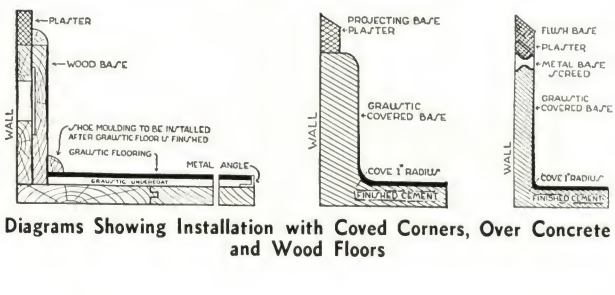
Graustic for Tennis Courts

Graustic over concrete base makes an ideal tennis court. It is now in use on prominent estates and clubs, giving a longer season of play and a perfect court at any time of the year. Faster and more accurate play is also gained—a surface easy to play on and a contrasting color to the ball, net and lines. Graustic courts eliminate the heavy upkeep expense of clay courts. They last for years and are fully guaranteed.

Specifications

In the following rooms (....., etc.) or (where indicated on plans), floors are to be Graustic as manufactured and installed by ALBERT GRAUER & COMPANY, Detroit, Mich., in strict accordance with the manufacturer's specifications. The material is to be laid in not less than 6 coats—2 bonding coats applied with a brush, 2 body coats and 2 finish coats applied with a trowel and not more than 3 gal. per 100 sq. ft. to be applied at one time or at intervals of less than 24 hours. (If over wood, change 6 coats to 7. In addition, a layer of burlap is inserted between the first and second layers of body coats, which are increased from 2 to 3 coats.) The finished flooring over cement is to be not less than ⅛ in. (or over wood not less than $\frac{3}{16}$ in.) in thickness. All work to be done by mechanics thoroughly experienced in this work. The finished floors shall not be abused or used for any purpose that will mar or damage the surface until thoroughly set.

The Graustic flooring is to be guaranteed against defects in workmanship and materials for a period of two years, that it will not come loose from the foundation, and will give satisfactory wear.



Diagrams Showing Installation with Coved Corners, Over Concrete and Wood Floors

JOHNS-MANVILLE

EXECUTIVE OFFICES

292 Madison Avenue, NEW YORK

For Branch Offices, see Section on Asbestos Wainscoting

Products

Asphalt Tile Flooring.

Also Packings; Refractory Cements; Waterproofings and Dampproofings; Asbestos Ebony; Asbestos and Rag-felt Roll Roofings; Special Rotproof Roofs.

For the following—see manufacturer's index: Insulating Board; Wall Tile; Acoustical Treatment; Transite Corrugated Asbestos; Transite Flat; Asbestos Wall Board; Home Insulation; Built-up Roofing; Asbestos Shingles; Asphalt Shingles; Pipe Covering and Insulation.

JOHNS-MANVILLE ASPHALT TILE FLOORING

Johns-Manville Asphalt Tile Flooring is a resilient, decorative, utilitarian floor covering material produced in tile form units of various sizes and colors, applicable over practically any underfloor which is smooth and firm.

The colors available, shown on the following pages, admit considerable freedom of choice in both monotone and polychrome effects. A distinguishing color characteristic is that sympathy which painters denote by the term "quality"—absence of harshness and presence of mellow richness not readily described but occurring in advisable departure from primary color hues. Patterns square or diagonal, simple to relatively complex in the combination of both size and color of individual units, are possible.

This flooring is particularly adapted to the service encountered in office buildings, schools and institutions.

Cost

The cost is well within the range of other resilient floor coverings intended for similar usage. Barring unusual abuse, the only maintenance expense is that of ordinary cleaning. Areas which have become damaged through abnormal service are repairable at a minimum expenditure, leaving practically no evidence of the renewal.

Physical Characteristics

In application, the joints form tightly, remaining so through service. The waterproof cement in which the tiles are laid maintains a permanent bond. The tiles do not wear rough, buckle or curl, or change through oxidation or contact with water and proper cleaning agencies. This material is odorless, non-absorbent, and does not originate dust. It will not bear the stains of burning cigarettes or matches, carelessly dropped. Warm water and any good neutral soap are sufficient for cleaning purposes, dry buffing and foot traffic producing an attractive sheen. Wax treatment may be employed if desired, but polishes containing destructive solvents should not be applied to this flooring.

Johns-Manville Asphalt Tile Flooring has been officially approved for use in fire-proof buildings in many large cities and bears the approval of all Borough Building Departments in New York City, where fire laws are unusually stringent.

Possessing resiliency not present in hard flooring materials, asphalt tile should be protected against sharp point loads of furniture and heavy static loads. Asphalt tile should not be used where subjected to abusive trucking, concentrated heat, and excessive or constant spillage of gasoline, grease or other oils.

Johns-Manville Asphalt Tile Flooring is made of mineral gums, asbestos fibre, mineral pigments and fillers.

Approved Flooring Contractors

As a satisfactory job results only when good materials are correctly laid, Johns-Manville has appointed approved flooring contractors throughout the country, basing these appointments on thoroughness of workmanship and financial responsibility. The name of the approved contractor nearest you will be furnished on request. He will gladly submit an estimate based on your requirements.

Specifications and Representative Installations

Specifications are contained on third following page.

A list of representative installations including jobs in various parts of the United States and Canada is available in a separate printing.

Technical Data

Sizes: *Field Tile*

3" x 3" x 3/16"
3" x 6" x 3/16"
6" x 6" x 3/16" or 1/8"
9" x 9" x 3/16" or 1/8"
12" x 12" x 3/16" or 1/8"
12" x 24" x 3/16" or 1/8"

Border Tile

9" x 27" x 3/16" or 1/8"
18" x 24" x 3/16" or 1/8"
Available in all standard colors.

6" x 12" x 3/16" or 1/8"
9" x 18" x 3/16" or 1/8"
Available in all colors, "special."*

The use of the 1/8" thick material over wood underfloors is not recommended.

Colors: *Plain* (Standard)		*Mottled* (Special)*	
Black	Terra Cotta	Gray on Black*	Black on Red*
Mahogany	Olive Green	Tan on Black*	Black on Tan*
Tan	Ivy Green	Red on Black*	Buff on Mahogany*
Buff	Apple Green	Green on Black*	Black on Verte Blue*
Rose Taupe	Verte Blue		
Red	Gray		

Weight: 3/16" thickness—2 lbs. per sq. ft.
1/8" thickness—1⅓ lbs. per sq. ft.

Hot Mastic Underflooring:

Hot mastic (J-M Industrial Flooring) used as an underflooring material has distinct advantages. Its use permits laying of the tile immediately after the underflooring, without the delay occasioned during the curing and drying period required with other materials.

Sanitary Cove Base:

The materials ordinarily used to form a base, either coved or otherwise, may be used with J-M Tile Flooring. If it is desired that the base be formed of the same material as the floor covering, sanitary cove base units 6" high, 18" long and 3/16" thick are available in all standard colors.

Such units require a smooth under-base as designated in the specification.

* All items identified by an asterisk (*) are "special," requiring two weeks for delivery and a minimum quantity limitation of one thousand square feet.

VERTE BLUE

RED

MAHOGANY



OLIVE GREEN

APPLE GREEN

BUFF

TAN

IVY GREEN

TERRA COTTA

BLACK


GREEN ON BLACK
SPECIAL
GRAY
GRAY ON BLACK
SPECIAL
BLACK ON TAN
SPECIAL
RED ON BLACK
SPECIAL
BLACK ON RED
SPECIAL
TAN ON BLACK
SPECIAL
BUFF ON MAHOGANY
SPECIAL
ROSE TAUPE
BLACK ON VERTE BLUE
SPECIAL

SPECIFICATIONS FOR JOHNS-MANVILLE ASPHALT TILE FLOORING

Work Included

The work contemplated under this specification shall include all materials, labor, equipment and services necessary for and reasonably incidental to the installation of Johns-Manville Asphalt Tile Flooring to (state in detail surfaces to be covered) as shown on drawings or herein specified.

(Omit either or both of the following if not to be used:)

The installation of a hot mastic underfloor shall be included.

A cove base shall be included.

Work Not Included

The following work will be furnished and installed as specified under other divisions of the specification which this contractor shall read so as to ascertain what is called for therein;

(a) (Include if underfloor is to be concrete.)

A concrete underfloor which shall have a top layer thick enough to prevent cracking or separation from the sub-base structure, steel troweled to a smooth finish free from waves and irregularities, and finished to a point below the required floor level equal to the thickness of the tile flooring specified. The underfloor shall not be treated with hardeners, paint or surface coatings of any kind and shall not have lines struck therein. It shall be free from frost or the effects of freezing and shall be left dry and clean.

(b) (Include if underfloor is to be hot mastic.)

A concrete sub-base which shall be finished below the required floor level a distance equal to 1″ plus the thickness of the tile flooring specified. The top surface of the concrete sub-base shall be finished equal to a screed coat not troweled and shall be free from projections or depressions.

(Omit the following if not required.)

The concrete sub-base shall be provided with proper slope to drains.

(c) (Include if underfloor is to be wood.)

A wood underfloor which shall be of dressed, kiln dried, tongued and grooved flooring. The boards shall be not more than 3″ face width and shall be driven up tight and nailed to bearings at not less than 16″ centers. Any irregularities shall be planed down to leave a smooth surface.

(d) (Include if J-M Tile Cove Base is to be used.)

A cove base of cement (or other suitable material) steel troweled and finished smooth and true to conform to and receive the tile cove base.

(e) (Include if stair treads or platforms are involved.)

A metal nosing on stair treads and platforms recesssed the exact thickness of the tile flooring specified so that such flooring will finish to the top of the nosing.

Connecting Work

This contractor shall examine all surfaces on which, or against which, his work is to be applied and he shall notify the Architect in writing of any defects that he may discover, which, in his opinion, he considers detrimental to the installation of his materials.

Schedule

(It is suggested that, particularly on large jobs, the specification contain a schedule indicating the following:) A: Room name or number. B: Size and thickness of tile units. (Over wood underfloors $\frac{3}{16}$″ tile must be used). C: Color and arrangement of field tile. D: Color of border tile. E: Color of cove base, if included. F: Type of underfloor. (Concrete, wood, hot mastic, etc.)

Materials

All Asphalt Tile Flooring, Tile Cement (and where specified, Tile Cove Base and hot mastic underfloor) referred to in these specifications shall be those manufactured by Johns-Manville and shall bear the manufacturer's label. The thickness of the tile, size, colors, etc., shall be as specified.

Installation

(If to be applied over wood underfloor, include the following paragraph:)

The wood underfloor shall be overlaid with one laver of Johns-Manville 15 lb. Asphalt Saturated Asbestos Felt, with the joints butted, (not lapped), secured in place with the tile cement.

(If sub-floor is to be hot mastic, include the following paragraph:)

The sub-base shall be covered with J-M Hot Mastic Flooring installed by a contractor approved by the manufacturer. It shall be 1″ thick and shall be finished smooth and level to a point below the final floor level equal to the thickness of the flooring specified.

The surface of the underfloor (or the under felt) shall be covered with the tile cement, troweled on evenly to an average thickness of $\frac{1}{16}$″. The tiles shall be firmly pressed into the cement with the joints formed closely so that all joints will be tight and even and the finished surface smooth. Upon completion, the surface shall be cleaned of all excess of cement.

(Include if J-M Tile Cove Base is to be used)

The tile cove base shall be installed in a similar manner.

CONDENSED SPECIFICATION

All finished flooring in (state in detail surfaces to be covered) shall be Johns-Manville Asphalt Tile Flooring, applied in strict accordance with the standard specifications of the manufacturer.

The size and thickness of field tile shall be (state. Over wood underfloors $\frac{3}{16}$″ must be used); border tile (state). The color and arrangement of field tile shall be (state); border tile (state). (State color of cove base, if included.)

(Omit either or both of the following if not to be used:)

The installation of a hot mastic underfloor shall be included.

A cove base shall be included.

KOMPOLITE CO., INC.

Flooring Manufacturers and Contractors

SINCE 1900

23-59 Borden Avenue
LONG ISLAND, CITY, N. Y.

Products and Use

The KOMPOLITE CO., INC. offers the architect six flooring products scientifically designed and of proven dependability. Each is modern, complete in its service and performance and is easily adapted to building requirements.

These six Kompolite Flooring products are:

1. KOMPOLITE MAGNESITE COMPOSITION.
2. KOMPOLITE MAGNESITE TERRAZZO.
3. KOMPOLITE PORTLAND CEMENT TERRAZZO.
4. KOMPO-TILE ASPHALT FLOORING.
5. MASTOLITH PLASTIC MASTIC.
6. AMTICO RUBBER TILE.

Any of these Kompolite Floorings can be combined with each other resulting in single-level, integral floors.

Kompolite Floorings Products are adaptable to all classes of new or old buildings as hospitals, schools, office buildings, apartment houses, banks, residences, colleges, churches, monasteries, department stores, libraries, restaurants, hotels and theatres.

Kompolite Magnesite Composition Flooring

A highly developed and improved plastic magnesia floor, resilient, sanitary, fireproof, triple trowel-finished. From ½ to 1 in. thick, depending on conditions and service required. Installed over wood, concrete or steel. One or several colors. Inlays. Applied with or without dividing strips. Brass or white metal.

Formed into a sanitary cove base suitable for integral construction in connection with Rubber Tile, Asphalt Tile or Terrazzo Floors. Also available for stair treads, risers, nosings, plinths, wainscot, etc.

The exclusive use of a *pulverized filler* and of a special *oxide hardener* in all Kompolite Floors results in better colors and appearance, greater density, longer life, lower maintenance costs and high dustproofing properties.

Kompolite Magnesite Terrazzo Flooring

A perfected terrazzo floor ¾ in. thick, known as "Plastic Marble Floor." Light in weight. Installed directly over wood or concrete underfloors. Non-slip, non-glaring, soft and warm to the foot. Highly crack-resisting. Designed with dividers of brass or white metal. Available for base, treads, etc.

Over quarter of a million square feet of this floor in daily use in leading department stores—a convincing proof of durability and excellence of Kompolite Magnesite Terrazzo.


CERTIFICATE of MERIT

To KOMPOLITE CO., INC.

IN RECOGNITION OF THE PART PLAYED IN THE BUILDING OF THE

EQUITABLE TRUST BUILDING

11-25 Broad Street

New York City

Kompolite Portland Cement Terrazzo Flooring

Standard terrazzo installed strictly in accordance with Terrazzo Specifications of the National Terrazzo and Mosaic Association.

Kompo-Tile Asphalt Flooring

The highest type of Asphalt Mastic Tile in a wide range of colors and designs. Thickness: ⅛ or $\frac{3}{16}$ in. Mottled or plain. Laid over cement finish or, in case of wood underfloors, over a Kompolite Magnesite Cushion Coat from ¼ to ¾ in. thick. Installed with Kompolite Composition Sanitary Base.

Mastolith Plastic Mastic Flooring

A plastic bituminous flooring built up of several thin layers to a thickness of ⅛ or $\frac{3}{16}$ in. over cement finish. Furnished in four distinctive colors. Installed to conform with U. S. Bureau of Standards' Specifications.

Amtico Rubber Tile Flooring

The beauty of marble with carpet comfort. A homogeneous, compressed rubber floor in plain or marbleized colors. $\frac{3}{16}$ or ¼ in. thick. A fine floor made finer by the unique Kompolite Method of installation. Laid over cement finish or, where required over a wood subfloor, upon the Kompolite Magnesite Cushion Coat. Long wear makes it economical.

Kompolite Standards

All floors built and installed under the single responsibility of the KOMPOLITE CO., INC. strictly conform with Kompolite standards: Complete and detailed control of the product from mine or mill through all stages of manufacture to the finished floor. "Kompolite Standards" are available to architects and builders.



Kompolite Service

The KOMPOLITE CO., INC. offers its facilities to architects for their individual and specific requirements, and will be pleased to submit suggestions for any special problems, write specifications, furnish drawings or make preliminary estimates.

Guarantee

The Kompolite guarantee insures the architect and builder against all defects of material or workmanship.

Standard Specifications (Short Form) for Kompolite Flooring Products

Where indicated the finished floors shall be KOMPOLITE [Magnesite Composition] [Magnesite Terrazzo] [P. C. Terrazzo] [Mastolith] [Kompo-Tile] [Amtico Rubber Tile] installed in strict accordance with specifications and standard practices and procedures of the KOMPOLITE CO., INC. and by the skilled mechanics regularly in their employ. The finished floors shall equal the sample in architect's office in color, finish, etc. The installation shall be guaranteed by the manufacturer for a period of two years. (If base, treads, wainscot, etc., are required, mention same.)

ESTABLISHED 1899

DAVID E. KENNEDY, INC.

Kennedy Soft Tile Floors

16 E. 52nd Street, NEW YORK, N. Y.

Kennedy Products

KENNEDY ASPHALT TILE FLOORS.
KENNEDY CORK TILE FLOORS.
RUBBER-MARBLE, a decorative rubber tile flooring.
EVERLASTIC TILE FLOORING (Linoleum Tile).
KENCOR BULLETIN BOARDS.

LOCAL REPRESENTATIVES

We maintain our own installation force in the larger cities. Elsewhere we have established competent dealers, stocks and make prompt deliveries. Our salesmen are competent flooring technicians. When our types of flooring are not suitable they will tell you what is. We will prepare estimates from plans, sketches or job.

Kennedy Service

DAVID E. KENNEDY, INC., are the oldest and largest manufacturers and contractors of soft tile floors in the world. The experience gained in the installation of over 50,000,000 sq. ft. of these floorings is at your disposal. Our factories are the most modern and largest making these types of flooring. We carry who are expert in the installation of our floors. Our foremen and mechanics have been trained by us and have been with us for years—some over twenty years. They are highly paid men and they are worth it. Our Service Department is at your service to instruct you how to care for your floors.

KENNEDY ASPHALT TILE FLOORS

Service Details

Kennedy Asphalt Tile can be laid on any smooth backing.

Standard colors: Andorra Tan, India Black, Leather Tan, Morocco Brown, Oak Green, Quarry Red, Stone Gray, Toledo Red, Rustic Browns.

Special colors: Morena Green, Scotch Gray, Valencia Green, Fawn Gray, Sea Green, Antique Tan, Peacock Blue, Channel Blue, Spanish Yellow and all mottled tile.

Standard sizes are 6x6, 9x9 ins. and 12x12 ins. and 18x24-in. border strips.

Standard thicknesses are 3/16 and ⅛ in.

Special sizes and thicknesses will be made to order.

Specifications

All finished floors in (enumerate spaces) are to be of Kennedy Asphalt Tile, manufactured and installed by DAVID E. KENNEDY, INC. Thickness of the asphalt tile shall be 3/16 in. [⅛ in.]. Size of tile shall be 12 x 12 ins. [9 x 9 ins.].

All Asphalt Tile shall have a calendered surface and shall contain no sand, grit or vegetable rubber. It shall be equal in all respects to samples held by the architect, with the same factor of ductility, hardness, non-absorption, resistance to acids, alkalis and water, and shall have the same self-heating properties and density.

The designs of the Asphalt Tile shall be selected by the architect from standard Kennedy colors and sizes, with one strip straight line border. Upon request, the asphalt tile contractor shall submit shop drawings for approval.

Tile shall be set with Kennedy Asphalt Cement. Where laid upon a wood backing, a layer of 24-oz. saturated felt paper with butt joints shall be cemented over the wood floor and the Asphalt Tile shall be cemented to this paper with Asphalt Cement. All tile shall be installed by the manufacturer, who shall guarantee and assume full responsibility for both the material and workmanship of the completed floor.

If Straight or Cove Base Is Desired, Add—Asphalt Tile Sanitary Cove [Straight] Base 6 ins. high shall be furnished and set around the walls of all rooms having Asphalt Tile Floors.

KENNEDY CORK TILE FLOORING

Service Details

Color and design—In color, cork tiles are brown. For convenience of reference the many shades of brown are grouped into three classifications: light, medium and dark. Generally speaking, there are three color motifs fundamental in the technique of design. These are:

(*1*) *Restrained variation*—In this motif, the varying shades of the light, or of the medium, or of the dark, are used indiscriminately throughout the floor. The tone of the floor as a whole is light, medium or dark, but the shades of the tiles vary.

(*2*) *Unrestrained variation*—In this motif varying tones of two, or all, of the shades are used at random.

(*3*) *Distinct shades*—This is the arrangement in set formal design of two or more distinct shades. Here the shades are confined to the light and the dark, so as to present a strong contrast. The shades of neither light nor dark are uniform throughout; nor is it possible or desirable to make them so.

Standard sizes are 9x9, 18x18, 6x18, 9x18, 12x18, 18x36 ins. and random boards.

Standard thicknesses are ¼, 5/16 and ½ ins.

Specifications

In (enumerate rooms and spaces) and on the treads and platforms of (enumerate stairways) there shall be installed 5/16-in. [½ in.] Cork Tile Flooring, manufactured and installed by DAVID E. KENNEDY, INC.

The cork flooring shall be composed only and wholly of clean cork shavings, compressed in closed steel moulds at 1800 lbs. pressure to the square inch and baked for not less than five hours at a temperature of about 650°F. Weight shall not be less than 20 oz. per sq. ft. for all ½-in. tile and 12½-oz. per sq. ft. for all 5/16-in. tile. Cork flooring shall be free from foreign substances and any cement or binder other than the natural cork gum. It shall be made by the single-slab method; that is, compressed in the moulds in individual slabs not exceeding in thickness (before planing) by more than ⅛ in. the flooring made therefrom. No cork flooring will be accepted that is made in thicker slabs and split into multiples thereof. Cork floors shall be sanded to a fine, smooth finish after installation.

The size of tile for field shall be 9 x 9 ins. with one to three strip straight line borders; shades to be selected by the architect.

Cork Flooring shall be set with cement composed only of neutral or basic materials and the base of which shall be a neutral, synthetic resin. This cement shall be waterproof and alkaliproof. When laid on any subfloor other than wood, the cork flooring shall be securely attached to the subfloor by the cement only; nails or brads are to be used for this purpose only when the cork flooring is laid on a wood subfloor.

Cork Flooring shall be of American manufacture and shall be installed by the manufacturer, who shall guarantee and assume full responsibility for both the material and workmanship of the completed floor.

If Straight or Cove Base Is Desired, Add—Cork Tile Cove Base [Straight] (specify height—standard height is 6 ins.) shall be furnished and set around walls of all rooms having cork floors. Cove to have radius of not less than 1 in.

If Cork Wainscoting Is Desired—Specify thickness, height and rooms in which it is to go.

KENNEDY CORK FLOORS IN APARTMENT HOUSES

Within the last seven or eight years the development of "finishes" for cork flooring has made the use of Kennedy Cork Flooring quite general throughout the living rooms and bedrooms of apartments. Some of the notable apartment houses in which Kennedy Cork Floors have been laid are: Cooperative, 900 North Michigan Avenue, Chicago, Jarvis Hunt, Architect; 400 East 57th St., New York, Bullard, Goodwin & Franzheim, Architects; 210 Madison Avenue, New York, Warren & Wetmore, Architects; Beaux Arts Apartments, New York, Raymond Hood & Kenneth Murchison, Architects; the several Alden Park Manor developments in Boston and Philadelphia, amounting to 1,000,000 sq. ft.; the River House, New York, Bottomley, Wagner & White, Architects; 310 Riverside Drive, New York, Harvey Wiley Corbett, Architect.

RUBBER-MARBLE FLOORING

Service Details

Standard colors: Grand Antique, Piastra, Gray Bardiglio, Napoleon Gray, Black Paisley, Red Levanto, Fleecy Cerulian, Bluedale, Tennessee Pink, Verde Antique, Cipolinio, Vert Vert, Portora, Travertine, Egyptian Porphyry, Greek Skyros, Yellow Verona, Alleghany, Veined Carnelian, Gray Piastra, Sienna Buff, Serpentine, Belgian Black, Golden Travis.

Plain colors: White, Red, Dark Gray, Blue, Green, Light Gray, Pink, Walnut, Cream, Ivory, Gold, Tan, Carnelian.

Pastel shades: Chamois, Citronne, Iris, Laurel Pink, Mauve, Sierra Green, Silver Gray, Venetian Coral, Chinese Blue, Peach.

Standard sizes: 12 x 12, 12 x 18, 12 x 36, 24 x 36, 6 x 18, 6 x 36, 9 x 9, 9 x 18, 9 x 36 and 27 x 36 ins.

Standard thicknesses are 3/16 and ¼ ins.

Specifications

All finished floors in (enumerate spaces) and on treads and platforms of (enumerate stairways) shall be of Rubber-Marble furnished and installed by DAVID E. KENNEDY, INC. Thickness of the Rubber-Marble shall be 3/16 in. [¼ in.] All Rubber-Marble shall have a fine, hard, smooth, glossy surface and shall contain no cotton or fibre. Quality and markings shall be equal to samples held by the architect. The designs of floors in various spaces shall be selected by the architect from standard Rubber-Marble styles and sizes, with one to three strip straight line borders. Upon request, the Rubber-Marble contractor shall submit shop drawings for approval. Rubber-Marble shall be set with Rubber-Marble cement. Where laid upon a wood backing, a layer of 24-oz. saturated felt paper with butt joints shall be cemented over the wood floor and Rubber-Marble cemented to same.

If Rubber-Marble Cove Base Is Desired—Add Rubber-Marble Sanitary Cove Base 4 [6] ins. high shall be furnished and set around walls of all rooms having Rubber-Marble floors.

Note: Wainscoting, wainscot capping, door saddles, plinth blocks, moulded outside and inside cove base corners, stair treads moulded with rubber nosing in one piece are also furnished in Rubber-Marble. If any of these are required, include in above specification. Details of these various members will be furnished on request.

If Rubber-Marble Is to Be Used on Stairtreads or Platforms—Add specification covering type of nosing desired.

EVERLASTIC TILE FLOORING

Service Details

Colors: Black, Morocco or Leather Brown, Leaf Green, French Gray, Sumac Red, Slate Gray, Italian Blue, Chinese Blue, Mediterranean Blue, Quaker Gray, Tan, Ivory White.

Standard sizes: 9 x 9 and 12 x 12 ins. Oblongs—6 x 12, 9 x 18, 12 x 24 ins. Special sizes on request. Featured joint strips—⅛, ¼, ⅜ and ½ in. or wider. Sanitary cove base is furnished in any height. Thickness of the finished floor is ¼ in.

Specifications

All finished floors in (enumerate spaces) and on the treads and platforms of (enumerate stairways) are to be of Everlastic Tile, manufactured and installed by DAVID E. KENNEDY, INC. Thickness of the Everlastic Tile Floors shall be ¼ in. Size of tile shall be 12 x 12 ins. [9 x 9 ins.]

Tile shall be set with Everlastic Waterproof Cement; on concrete, directly on concrete; on wood, strong cotton fabric shall be thoroughly tacked to the wood and tile cemented to fabric. All Everlastic Tile shall be installed by the manufacturer, who shall guarantee and assume full responsibility for both the material and workmanship of the completed floor.

If Everlastic Cove or Straight Base Is Desired—Add Everlastic Sanitary Cove [Straight] Base 6 ins. high shall be furnished and set around walls of all rooms having Everlastic Tile floors.

KENCOR CORK BULLETIN BOARDS

Description

Kencor Bulletin Boards are constructed of sheet cork of the best quality, veneered with special waterproof cement to a substantial backing. The total thickness is ½ in. They receive pin or thumb tack readily and hold it securely. When removed the puncture heals.

Kencor Bulletin Boards are made in any size (sizes larger than 4 x 6 ft. are made in sections unless otherwise specified) and they are readily installed by any carpenter.

Specifications

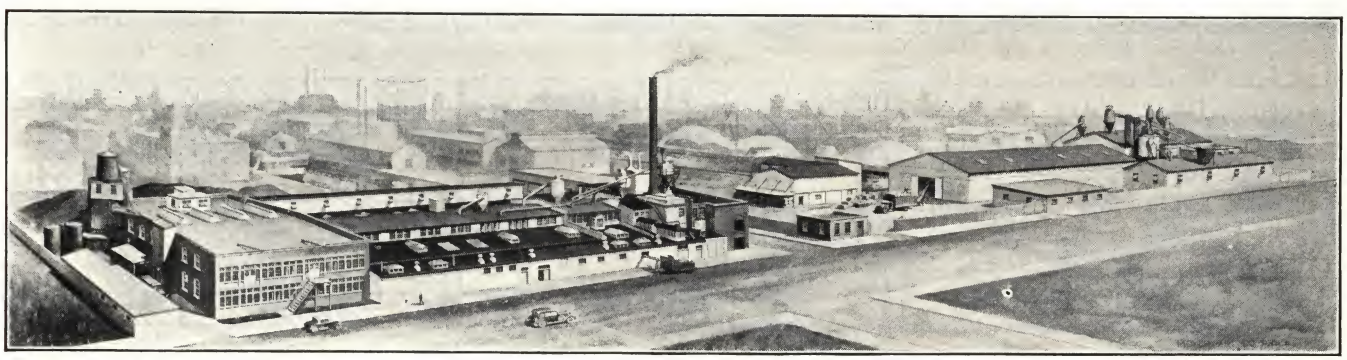
Furnish and install Kencor Bulletin Boards and Tacking Strips. as shown on drawings. All Kencor Bulletin Boards and Strips shall be of the manufacture of DAVID E. KENNEDY, INC., of New York and Chicago. They shall be of uniform ½ in. thickness, consisting of sheet cork of uniform color and resiliency cemented to special composition backing (or three ply fir-wood backing). Composition backing to be made entirely and only of waterproofed fibre compressed into a solid, dense, homogeneous board without layers or laminations. Backing made in whole or in part of paper or cardboard will not be accepted.

THE KENNEDY COMPANY AND ITS PLANT

DAVID E. KENNEDY, INC., is the pioneer in soft tile floorings, having introduced the first soft tile flooring (Cork Tile) in 1899. It has an installation organization surpassing those of all other manufacturers of these types of flooring combined. It is equipped to handle any size job—from a small bathroom to contracts of over one million square feet of flooring. The plant of the Kennedy Company is located on the Gowanus Canal in Brooklyn, N. Y., covering the blocks from Fifth to Ninth Streets.

This plant is devoted exclusively to the manufacture and fabrication of resilient tile floors—Asphalt Tile, Kennedy Cork Tile, Everlastic Tile and Rubber-Marble Flooring.

It has the largest production and capacity of any soft tile flooring plant in the world—over fifteen million square feet per annum.



Plant of David E. Kennedy, Inc., Gowanus Canal, Brooklyn, N. Y.

LEITCH MANUFACTURING COMPANY, INC.

Asphalt Floor Tile

342 Madison Avenue
NEW YORK, N. Y.

PLANT: LINCOLN, N. J.
DISTRIBUTERS IN ALL PRINCIPAL CITIES

Products

LEITCH ASPHALT FLOOR TILE.

Also manufacturers of Waterproof Protective Coverings; Roof Coatings; Bituminous Plastics; Mastics; Asphalt Tile and Mastic Floorings; Paints; and Varnishes.

Leitch Asphalt Floor Tile

Leitch tiles are dense, waterproof, all-mineral unit made from (1) Asbestos—a fibrous rock, resistant to heat, fire and wear; (2) Asphalt—a mineral binding agent for non-rigid pavements and other wearing surfaces; (3) Pigments—non-fading mineral oxides and other rare ores.

No cork, paper, rag, wood or other inflammable fillers of vegetable origin are used in the manufacture of Leitch Asphalt Floor Tile. There can be no decay, rot or disintegration even should the tile be laid where damp conditions exist. Burning cigarettes or lighted matches dropped on Leitch Tile will not mar or scar the surface.

Advantages

Leitch Asphalt Tile Floors are:

Attractive—Pleasing color units of different and convenient size permit a wide selection of patterns with individuality and character of design.

Economical—Low in first cost and upkeep; no expensive waxes or polishes necessary.

Durable—Resist traffic abrasion; colors are non-fading and go entirely through the tile. Not affected by moisture, or by most chemical solutions.

Resilient—Comfortable under foot, easy to work on or walk over, a non-skid and non-resonant flooring.

Sanitary—Non-absorbent, odorless, and vermin-proof. The all-mineral surface is easily cleaned with soap and water and dries at once.

Safe—Rubberlike non-slip surface, will not curl or buckle; fire-resisting; an insulator.

Waterproof—Surface dries off quickly; tile does not absorb moisture.

Quickly Installed—Laid today—used tomorrow.

Permanent—No Leitch Asphalt Tile Floor has ever worn out.

Sizes

3x3 in.	6x 6 in.	9x 9 in.	9x27 in.
3x6 in.	6x12 in.	12x12 in.	12x24 in.

$\frac{1}{8}$-in. thickness, standard. Heavy duty $\frac{3}{16}$ in.

Note: $\frac{3}{16}$-in. thickness is always recommended for use over wood.

Colors

Congo Black	Gypsy Tan	Olive Green
Brazil Mahogany	Covert Tan	Celtic Green
Royal Maroon	Quaker Gray	Gulf Blue
Brittany Red	Steel Gray	

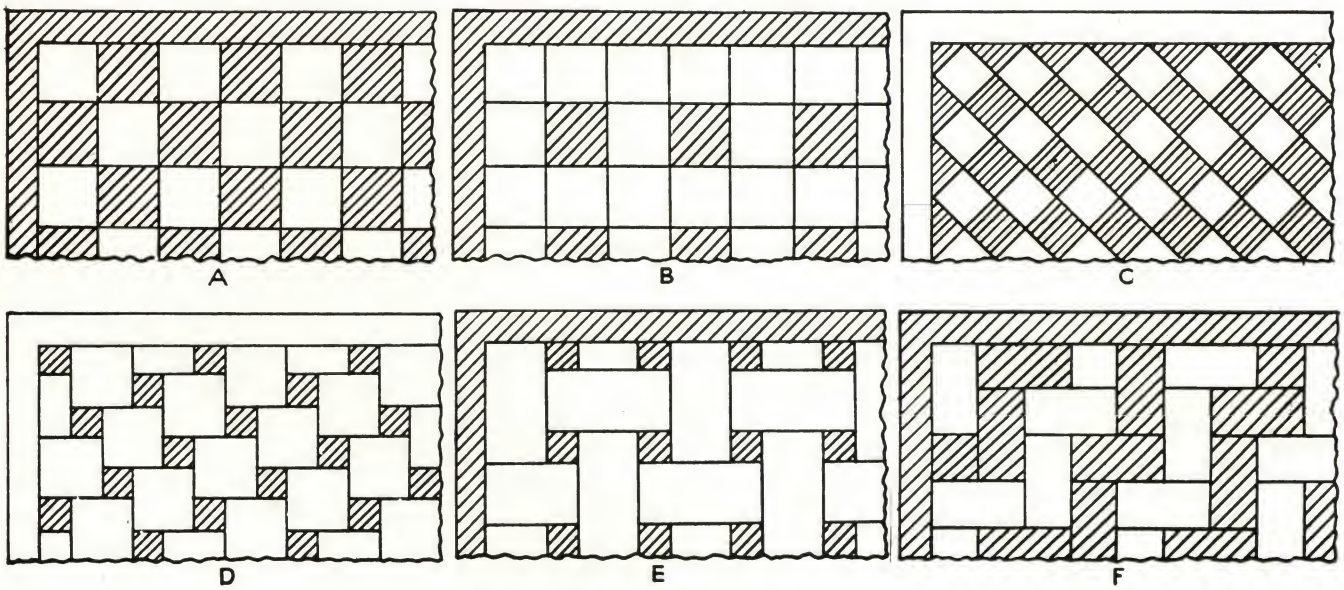
How Shipped

Packed in cases as follows:

$\frac{1}{8}$-in. thickness—75 sq. ft. per case.

$\frac{3}{16}$-in. thickness—50 sq. ft. per case.

Weight, approximately 100 lbs. per case.



A Few Suggested Standard Patterns

SPECIFICATIONS—LEITCH ASPHALT TILE FLOORING

In all rooms designated in the following schedule or marked on plans there is to be installed Leitch Asphalt Floor Tile in colors, sizes and thicknesses called for in schedule, in accordance with the direction and specifications of the manufacturer as noted below and guaranteed for one year against defective materials and workmanship.

Intent—The intent of these specifications is to provide for a wearing surface of Leitch Asphalt Floor Tile which will be laid true, even and to proper grade without waviness or irregularities.

Preparation of Base—The subfloor will be prepared ready to receive the Asphalt Floor Tile by other contractors (see details below) and delivered to this contractor in a clean, dry condition, free from projections or depressions. The grade of the finished subflooring shall be the required distance below and parallel to the final finished floor grade (allow ⅛ or 3/16 in.) as may be specified in the schedule.

Materials—Shall be Leitch Asphalt Floor Tile laid in Leitch Asphalt Tile Cement. Tile shall be of true shape and size, uniform in thickness; like colors of similar shade, tone and finish; edges smooth to permit tight joinings; and equal in every respect to samples filed with the architect.

Schedule—The following should be noted in a schedule on plans or in specifications:

(a) Room or area name and number.
(b) Size, thickness and patterns of tile (field and border).
(c) Color and finish on cove base at walls.
(d) Type of underfloor (concrete, wood, etc.).

Application—Shall be by the manufacturer or his approved representative. The contractor shall examine all surfaces which are to receive tile and not proceed with application until such surfaces have been properly prepared by others to receive his work. Tile shall be stored in a comparatively warm space and not laid in rooms where the temperature is less than 65° F. No flooring shall be laid until painters, carpenters, plasterers and electricians have completed their work. Leitch Asphalt Tile Cement shall be troweled down to an even thickness. While the tile cement is still tacky the Leitch Asphalt Floor Tile shall be firmly pressed into place with close, even joints. Any excess cement shall be completely removed from the finished surface. The entire surface shall be rolled within 24 hours after completion of laying and examined for any loose tile, which shall be properly relaid or replaced.

Stair Treads and Platforms—A metal nosing shall be installed by the Stair Contractor (as shown on plans and described elsewhere in the specifications). This contractor shall examine before proceeding with this work, and see that the nosing is rigidly secured at the proper elevation before laying any tile.

Cove Base Finish—Where shown on the plans and in specifications, this contractor shall apply two or three coats of Leitch Plastic Base Finish (of selected color).

Note: Usually to match tile borders.

General Note—In applying Leitch Asphalt Floor Tile over wood it is customary for the Tile Contractor to apply one layer of 1 lb. deadening felt secured to the wood before laying the tile.



Bard Hall, Columbia University Medical Center, New York, N. Y.
JAMES GAMBLE ROGERS, Architect
MARC EIDLITZ & SON, Builders

Notes on Preparation of Base

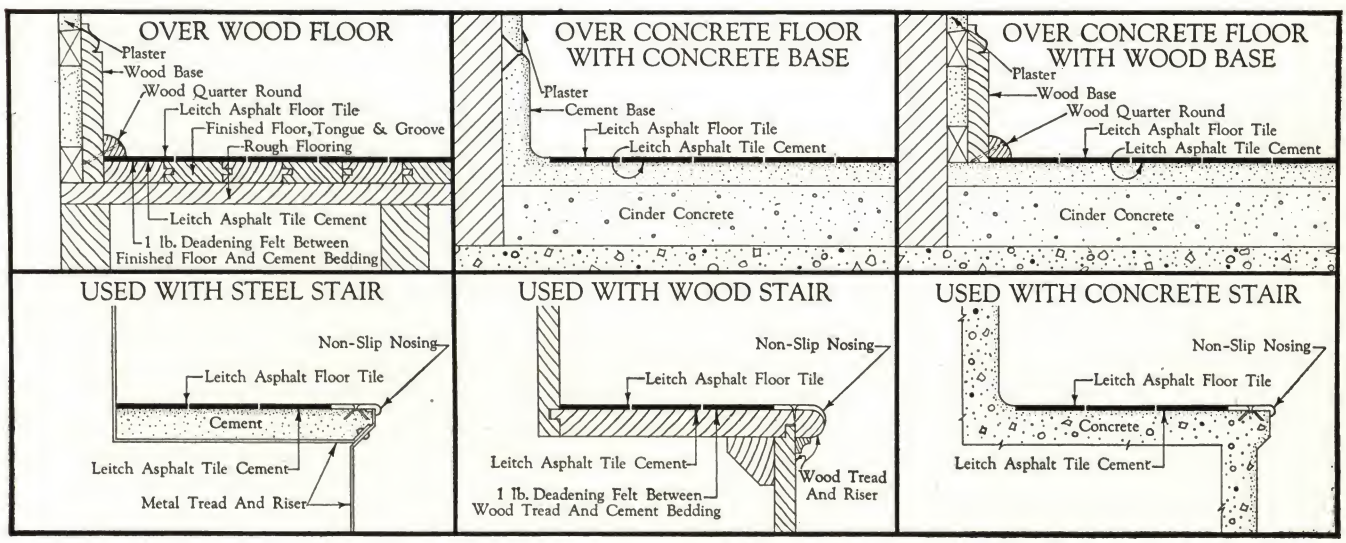
(To be included in work by other contractors.)

Concrete Subfloor—Contractor will lay portland cement flooring to a true even grade and with a smooth, steel-troweled finish at a distance below the established grade of the finished floor equal to the thickness of Leitch Asphalt Floor Tile specified (⅛ or 3/16 in.). The concrete shall not be finished with hardeners, paints or other surface coatings. No lines or scorings shall be struck on the surface.

Wood Subfloors—All wood subfloors to receive Leitch Asphalt Floor Tile shall be of double construction and structurally sound. They shall be of well-seasoned lumber; the upper floor of kiln dried, finished tongue and grooved flooring, not more than 3-in. face width, laid with tight joints and securely nailed. There shall be no loose springy boards or butts. (The surface shall be planed, scraped or sandpapered, to produce a smooth finish 3/16 in. below the established grade for the Tile Flooring.) Do not expect the 1 lb. deadening felt and cement to function as a leveling course.

Note: In alteration work in old buildings it is often required to lay Leitch Asphalt Floor Tile over existing floors which may be of wood, tile, badly finished concrete or composition flooring, metal and other materials—each condition may require special treatment to prepare in a manner suitable to receive Leitch Asphalt Floor Tile but an actual inspection of the conditions by an expert is desirable. We invite inquiry.

Where recesses occur on account of tile flooring finishing flush and level with other types of flooring, it is customary to provide a metal edging firmly secured in place before the Asphalt Tile Contractor begins his installation. This is usually supplied and set in place by others. A metal edging is also desirable to doorways and where Asphalt Tile abuts on other types of floor covering, such as carpets, etc., and specification should clearly state who is to furnish and set these accessories, if required.



THE MARBLELOID COMPANY

Flooring Specialists Since 1905

Manufacturers of and Contractors for Marbleloid Floorings

Empire State Building, Fifth Avenue at 34th Street
NEW YORK, N. Y.

FACTORY: NEW DURHAM, N. J.

BRANCH OFFICES

PITTSBURGH, PA. PHILADELPHIA, PA. ROCHESTER, N. Y. BOSTON, MASS. BALTIMORE, MD.

Products

MARBLELOID "PLASTIC MAGNESIA."
MARBLELOID "MAGNESITE TERRAZZO."
MARBLELOID "TRAVERTINE TERRAZZO."

MARBLELOID FLOORINGS
REG U.S. PAT. OFF.
TRADE-MARK

MARBLELOID "RUBBER TILING."
"PORTLAND CEMENT TERRAZZO."
"MARCO ASPHALT" INDUSTRIAL FLOORING.

MARBLELOID "PLASTIC MAGNESIA"

A magnesite composition with ingredients scientifically selected to produce a flooring which is clean; of pleasing appearance; of any color; quiet; non-abrasive; resilient; non-slipping; dampproof; plastic; of low thermal conductivity; durable; fireproof; acid and alkali resisting; elastic; strong; light, and relatively inexpensive.

Marbleloid "Plastic Magnesia" is a standardized product for floors, cove sanitary base, wainscot, trim, stair treads, risers, platforms, etc. It bonds perfectly to wood, concrete or steel, and is adaptable to both new construction and alteration work.

Installed in a plastic state, ½ in. thick in 2 coats, and sets in a few hours. The undercoat, $\frac{3}{16}$ in. thick, contains coarse fibrous fillers which take up inequalities in the foundation. The top coat, $\frac{5}{16}$ in. thick, is of a finer grained texture giving a smooth finish.

Physical Properties of Marbleloid "Plastic Magnesia"—Marbleloid "Plastic Magnesia" weighs approximately 3 lb. per sq. ft.; its compressive strength is over 5000 lb. per sq. in.; it has an average tensile strength of 750 lb. per sq. in.; it will withstand a heat of 1700° F. without cracking or disintegrating.

Attractive Colors and Color Combinations—Marbleloid "Plastic Magnesia" is made in practically all colors, including red, brown, buff, French and light gray.

Uses—Thousands of Marbleloid "Plastic Magnesia" installations of large area have been made in plants and factories of many of the leading corporations, in office buildings, schools, hospitals, association buildings, churches, hotels, railroad stations, libraries, theaters, banks, steamships, amusement halls, public buildings, stores, restaurants, powerhouses, garages, etc.

Specification and Specification Data for Marbleloid "Plastic Magnesia"

(1) General

(a) Wherever indicated on the drawings or herein specified, the floors, borders, cove bases and wainscoting of the heights shown shall be Marbleloid "Plastic Magnesia," as manufactured by THE MARBLELOID COMPANY, Empire State Building, New York, N. Y., and shall be installed by mechanics regularly in their employ and in accordance with their standard process and procedure.

(b) The fields of floors shall be Marbleloid "Plastic Magnesia" color No. ..... The cove bases and borders shall be color No. ..... The wainscoting shall be color No. .....

(2) Scope of Work

(a) This Contractor shall include in his work the furnishing and installation of all Marbleloid "Plastic Magnesia" floors, borders, bases and wainscoting complete on the foundation and surfaces provided by others.

(3) Work Not Included

(a) Heat, light, electric power, and hoisting of materials, also the preparation of all foundations and surfaces to receive Marbleloid.

Note: The Architect should include the following installation requirements in the specifications for the proper trades.

Essential Conditions at Time of Installation

Marbleloid must be installed after all other work is finished, such as plastering, trim, glazing and all possible fittings. Whenever Marbleloid is to be used in connection with flooring, border or base of a different material, such material must be in place before Marbleloid is installed.

The temperature of the rooms or inclosure must be maintained at 65° to 75° F. as Marbleloid will not set when cold. THE MARBLELOID COMPANY will not undertake to supply heat, nor install work where salamanders, fire pots, etc. are the only means used to provide heat.

All necessary light, electric power, including temporary wiring, sockets and bulbs, labor and maintenance (to deliver power to THE MARBLELOID COMPANY'S machines) must be provided by the Owner or General Contractor without charge.

The Owner or General Contractor must provide for the hoisting of all materials used by THE MARBLELOID COMPANY without charge.

(4) Foundations

(a) All foundations for Marbleloid "Plastic Magnesia" will be furnished and installed by other contractors and shall conform to the requirements and be subject to the approval of THE MARBLELOID COMPANY.

Note: The Architect should include the following foundations and surface requirements in the specifications for the proper trades.

Floors and Treads

Concrete—Concrete foundations for Marbleloid must be composed of one part portland cement, two parts clean, sharp sand and not more than four parts broken stone, gravel or cinders. This foundation must be not less than 3 in. thick, and installed at one operation and brought up to within ½ in. of the finished floor level. The surface of the concrete must be given a raked or broomed finish.

Smooth Cement Floors—The surface of existing cement floors must be roughened by chipping with chisels to a depth of at least ⅛ in. every 2 in. (The roughening of existing finished cement floors will be done by THE MARBLELOID COMPANY if so specified.)

Caution: Marbleloid cannot and must not be applied over concrete foundations upon which has been placed a thin "screed coat" of sand and cement; neither should Marbleloid be applied directly over wooden sleepers embedded in concrete. Where these conditions occur, the matter should be taken up directly with THE MARBLELOID COMPANY.

Wood—Wood foundations for Marbleloid floors must be well-seasoned lumber not over 6 in. wide nor less than ⅞ in. thick, securely nailed to the joists. The surface of this flooring must be brought up to within ½ in. of the finished floor level.

Pitch or Slope—Wherever slope or pitch in the finished floor is desired or indicated on the drawings, this pitch must be provided for in the foundation.

Treatment of Pipes, Conduits, etc.—Wherever pipes or electric conduits are embedded in the concrete foundations, they must be securely tied down with expanded metal lath and be covered with at least 2 in. of concrete. Pipes passing vertically through concrete foundations must be protected with suitable sleeves. At all points where excessive heat is apt to be localized (e.g., where heating pipes pass close to the underflooring over which Marbleloid is installed), same must be suitably insulated.

Cleaning—All foundations for Marbleloid flooring must be thor-

oughly cleaned, care being taken to remove all lime or plaster from the surface, before Marbleloid is applied.

Iron or Steel—The proper preparation of iron or steel foundations should be taken up directly with THE MARBLELOID COMPANY in each instance. Such foundations must be rough-finished and unpainted and, in most instances, suitable keys or anchors must be provided.

Sanitary Base or Wainscot

Cement Backing—A backing composed of one part portland cement and two parts clean, sharp sand, and not less than ¾ in. thick must be furnished and installed by others against all walls and partitions where Marbleloid base or wainscot occurs. The surface of this backing must be given a scratched finish and brought to within ½ in. of the finished Marbleloid base or wainscot line.

Alternate Backing for Base or Wainscot—If it is not desirable to use portland cement and sand backing, rough boards not over 6 in. wide or less than ¾ in. thick can be nailed to the studding of walls and partitions, allowing ½ in. for Marbleloid material.

Where Marbleloid cove base or wainscot is to project beyond the finished wall line, backing for same must be finished flush with the finished wall line.

Where Marbleloid cove base or wainscot is to be flush with the finished wall line, a galvanized metal ground must be furnished and installed by others to separate the plaster from the Marbleloid material.

Caution: Marbleloid cannot be installed directly over plaster, plaster board, patent plaster, Keene's cement, brick, gypsum or terra cotta tile blocks; nor can it be installed over cement or concrete containing lime or compounds thereof.

(5) Installation

(a) All foundations shall be thoroughly dry and broom cleaned before applying Marbleloid flooring.

(b) All plaster work shall be thoroughly dry before installing Marbleloid base or wainscot.

(c) All floors, borders, bases and wainscoting shall be installed in strict accordance with the manufacturer's instructions and supervision.

Note: The Architect should insert here, specification clauses covering the design, colors, type of jointing, etc.

(6) Protection of Finished Work

(a) When the surface of the Marbleloid has set sufficiently, the General Contractor shall cover the surface with heavy paper or sawdust, and shall maintain same until the surface has fully hardened.

Note: Marbleloid requires the same care to prevent damage caused by other contractors that is exercised in the case of finished wood flooring. Tobacco juice, plaster, lime, cement, nails, screws, planks, etc., must be kept off the finished floor, as they might seriously damage the floor. (The Architect should specify that the General Contractor shall assume the responsibility of the protection of the flooring after the work is entirely completed by THE MARBLELOID COMPANY).

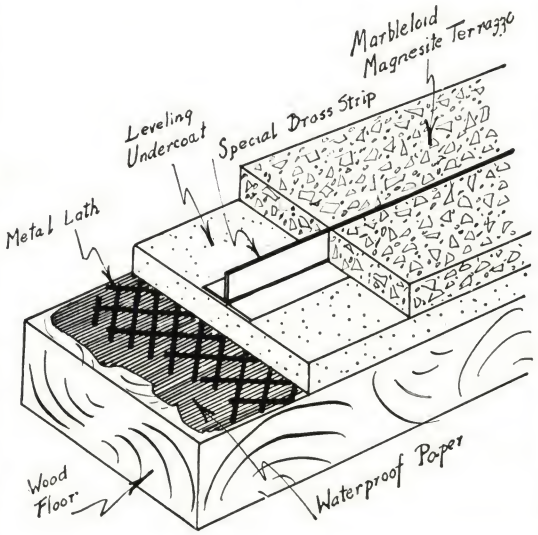
(7) Guarantee

(a) All Marbleloid "Plastic Magnesia" work shall be guaranteed against all defects in materials and workmanship such as pitting, disintegrating, or coming loose from the underfoundation for a period of two years from date of installation and acceptance by the Architect.

MARBLELOID "MAGNESITE TERRAZZO" FLOORING

Marbleloid "Magnesite Terrazzo" Flooring is the only type of terrazzo flooring which can be installed directly over worn wood as well as concrete, in new or alteration work.

This product is installed ⅝ to ¾ in. in thickness and weighs only 6 lb. per sq. ft. Floors can be walked on within twelve hours. Marbleloid "Magnesite Terrazzo" contains plastic magnesia and marble chips harmonizing or contrasting with the cementing material. The surface is ground by machine, producing an attractive and durable floor.



Design and Adaptability—Border designs contrasting with the larger areas can be produced; brass strips shaped into various designs can be incorporated; sanitary cove and wainscot can be formed.

There is ample opportunity to give individual taste full play, because there are unlimited colors and combinations of marble chips to choose from.

Durability — Marbleloid "Magnesite Terrazzo" Flooring wears like true marble. Because of the nature of the cementing material used, Marbleloid "Magnesite Terrazzo" is not slippery, furthermore, it has a surprising degree of foot-comfort, particularly when installed over wood foundations.

Economical — Taking into consideration ultimate cost due to its wonderful wearing qualities, Marbleloid "Magnesite Terrazzo" Flooring is economical, and the upkeep expense practically nil outside of ordinary washing and cleaning.

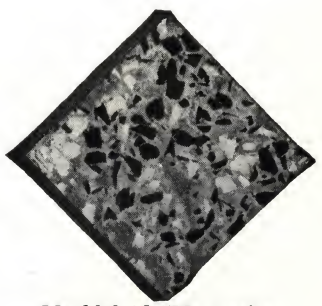
Installations—Marbleloid "Magnesite Terrazzo" installations are now in satisfactory use in department stores, retail shops, churches, public buildings, schools, showrooms, etc.



Marbleloid "Magnesite Terrazzo" Floor in Three-color Design

Brass Strips — All Marbleloid "Magnesite Terrazzo" Floors are laid with a patented double brass strip which is designed to compensate for any expansion or contraction which may occur, thereby preventing unsightly cracking.

Note: Wherever desired, regular Marbleloid "Plastic Magnesia" base and border can be used in place of terrazzo base and border, at considerable saving.



Marbleloid "Magnesite Terrazzo"

Specification and Specification Data for Marbleloid "Magnesite Terrazzo"

Note: This specification can be easily adapted to Marbleloid "Travertine Terrazzo," see descriptive matter under heading of Marbleloid "Travertine Terrazzo."

(1) General

(a) Wherever indicated on the drawings or herein specified, the floors and cove bases and borders of the sizes shown shall be Marbleloid "Magnesite Terrazzo" as manufactured by THE MARBLELOID COMPANY, Empire State Building, New York, N. Y., and shall be installed by mechanics regularly in their employ and in accordance with their standard process and procedure.

(b) The fields of floors shall be Marbleloid "Magnesite Terrazzo" color No. ..... The cove bases and borders shall be color .....

(2) Scope of Work

(a) This Contractor shall include in his work the furnishing and installation of all Marbleloid "Magnesite Terrazzo" floors, brass dividing strips, borders and bases complete on the foundations and surfaces provided by others.

(3) Work Not Included

(a) Heat, light, electric power, and hoisting of materials, also the preparation of all foundations and surfaces to receive Marbleloid "Magnesite Terrazzo."

Note: The Architect should include the following installation requirements in the specifications for the proper trades.

Essential Conditions at Time of Installation

Note: *See similar heading in previous Specification for "Plastic Magnesia" for conditions at time of installation.*

(4) Foundations

(a) All foundations for Marbleloid "Magnesite Terrazzo" will be furnished and installed by other contractors and should conform to the requirements and be subject to the approval of THE MARBLELOID COMPANY.

Note: The Architect should include the following foundation and surface requirements in the specifications for the proper trades.

See specifications for Foundations in preceding Specification for Marbleloid "Plastic Magnesia." The only differences are that concrete foundations for Marbleloid "Magnesite Terrazzo" are brought to ¾ in. below finished floor level and wood foundations are to be ⅝ in. below finished floor level.

(5) Installation

Note: See preceding Specification for "Plastic Magnesia."

(6) Brass Dividing Strips

(a) THE MARBLELOID COMPANY'S special brass dividing strips shall be used to divide the field of the floor in tile effect as indicated on the drawings, and brass dividing strip shall be used between the field and border.

(7) Surfacing Finish

(a) All Marbleloid "Magnesite Terrazzo" shall be electric machine ground to a surface equal in texture, color and finish to approved samples.

(8) Protection of Finished Work

Note: See preceding Specification for "Plastic Magnesia."

(9) Guarantee

(a) All Marbleloid "Magnesite Terrazzo" work shall be guaranteed against all defects in materials and workmanship such as pitting, disintegrating, or coming loose from the underfoundation for a period of two years from date of installation and acceptance by the Architect.

Special Note: If desired regular Marbleloid "Plastic Magnesia" base and border can be used in place of Marbleloid "Terrazzo" base and border at a considerable saving.

A Few of the Prominent Users of Marbleloid "Magnesite Terrazzo" Flooring

Frank G. Shattuck Co. (Schrafft's Stores)
Eastman Kodak Co. (Fifth Avenue Store)
Bank of Manhattan Trust Co. (over twenty Branches)
New York Telephone Company (new Brooklyn Building)
Pennsylvania Drug Co., New York, N. Y. (Five Stores)
Frederick Loeser & Co., Brooklyn, N. Y.
Fordham University, Bronx, N. Y.
Sage, Allen Co., Hartford, Conn.
Central Railroad of New Jersey.
W. T. Grant Stores
Duquesne Light Co., Pittsburgh
Chase National Bank

MARBLELOID "TRAVERTINE TERRAZZO"

Patented March 29, 1927

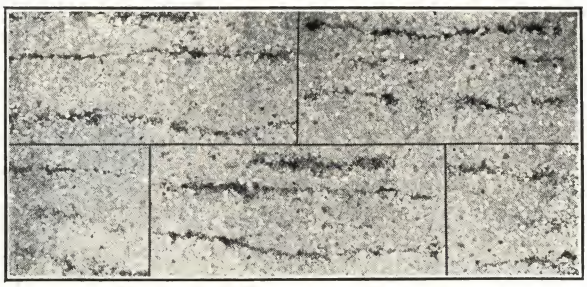
This product is an adaptation of Marbleloid "Terrazzo," but differs from anything else on the market in the fact that by a special process of our own, veinings of a contrasting color are introduced into the material, obtaining a replica of genuine travertine marble.

The highest type of imported travertine marble chips is used in the product, and the effect of individual blocks of travertine is obtained by blocking off the floor with brass strips laid ashlar pattern.

Unlike travertine marble, there are no holes or indentations in Marbleloid "Travertine Terrazzo" to catch dirt.

This type of flooring is particularly adapted to department stores, hotel lobbies, theaters, etc.

Specification—The specification and specification data for Marbleloid "Magnesite Terrazzo" can be easily adapted.



Marbleloid "Travertine Terrazzo"

MARBLELOID "PORTLAND CEMENT TERRAZZO"

We install, under standard specifications, the finest type of "Portland Cement Terrazzo" Floors, laid off with brass dividers to form squares or in pattern and design in one, two or more colors as desired. Cove base, wainscoting, stair treads and risers can also be installed. Our wide experience insures satisfactory completion of contracts of any size.

A Few of Our Numerous Contracts in "Portland Cement Terrazzo"

New Cities Service Building, New York, N. Y.
Nurses' Home, Kingston Avenue Hospital, Brooklyn, N. Y.
Monastery, Franciscan Poor Clares, Bronx, N. Y.
Ice Skating Rink, N. Y. Coliseum, Bronx, N. Y.
Senior and Junior High School, Rye, N. Y.
Municipal and Magistrate's Court Building, Catalpa Avenue, Queens, N. Y.
Brunswick Home, Amityville, L. I., N. Y.
Railroad Y. M. C. A., New York, N. Y.
South New England Telephone Co. Building, Hartford, Conn.
Brooklyn Hebrew Home for the Aged, Brooklyn, N. Y.

MARBLELOID "RUBBER TILING"

The highest type of marbleized rubber tiling, obtainable in over 30 different shades and color combinations, installed in new construction or alteration work, over wood and cement flooring, in $\frac{3}{16}$ and ¼-in. thickness.

This product is non-absorbent, resilient and elastic, and yet tough enough to withstand the hardest type of traffic in hospitals, hotels, theaters, stores, residences, libraries, etc.

Marbleloid "Rubber Tiling" is installed in alternating squares, slabs of one or more colors laid ashlar pattern; or in designs worked out in consultation with the architect.

"Marco" Asphalt Industrial Flooring and Asphalt Emulsions

An inexpensive heavy duty floor for industrial use. A mixture of asphalt, portland cement and aggregate. Installed ½ to ¾ in. thick over wood, metal or concrete. Laid cold. Watertight mastic, ductile, resilient and light in weight. Will not soften or buckle and non-dusting. Recommended for trucking aisles, runways, garages, loading platforms, etc. Can be furnished with special acidproof and weatherproof finish.

We furnish you a floor completely installed and assume all responsibility.

Asphalt Emulsions—Asphalt Emulsions for all purposes.

MARBLELOID SERVICE, SAMPLES AND GUARANTEE

Our Engineering Department will gladly consult with you regarding flooring problems.

Definite proposals for the work completely installed furnished on request.

Architect's and engineer's sample case and color card with complete data, will be gladly mailed on request.

All Marbleloid Products are installed by the Company's trained mechanics. All Marbleloid installations are rigidly guaranteed against defects in material or workmanship.

REZILITE MANUFACTURING COMPANY

Manufacturers of Mastic and Composition Flooring

6610 South Menard Avenue
CHICAGO, ILL.

BRANCHES IN ALL PRINCIPAL CITIES



Installation of Rez-Il-Tile in Hotel Lobby Proving Its Durability and Economy

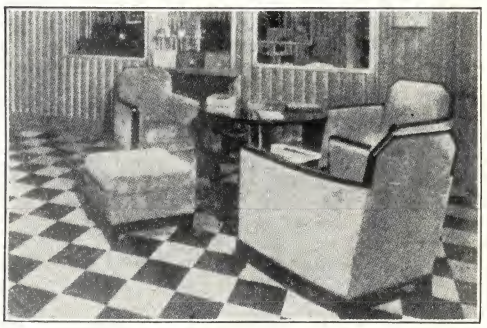
REZILITE

TRADE-MARK
Reg. U. S. Pat. Off.

Products

REZILITE MASTIC FLOORING; REZ-IL-TILE MASTIC TILE FLOORING.

Also manufacturers of Rubber Tile Flooring.



Rez-Il-Tile—A Comfortable and Wear-resisting Flooring in a Club

Rezilite Mastic Flooring

Rezilite comes in semiliquid form and is laid from ⅛ to ¼ in. thick over the entire floor. If desired it can be extended up over cove, base or wainscot forming one continuous sheet, which is waterproof, acidproof, wearproof, dustproof, germproof and fire resisting.

Rezilite will not crack, crumble nor peel; retains its elasticity. Deadens sound, and expands and contracts with the base to which it is applied. It is a most economical and permanent floor.

Rezilite is made in rich mahogany, battleship tan, and deep green. Packed in barrels.

Wearproof—Rezilite floors are very durable and will last as long as the building; are quiet to walk upon, resilient, noiseless, and easy on the feet; eliminate fatigue.

Waterproof—Water cannot injure Rezilite floors, neither will water make Rezilite slippery.

It is therefore adaptable for stair treads, stair landings, elevator landings, etc.

Acidproof and Slipproof—Rezilite floors are acidproof and alkaliproof and can be used to advantage in chemical laboratories, operating rooms, nickelplating rooms, and other places where a good acidproof floor is necessary.

Rezilite floors are non-conductors of electricity; and are especially indicated for power stations, dynamo and generator rooms, battery rooms, etc.

Rez-Il-Tile Flooring

Rez-Il-Tile, as its name implies, is a resilient tile flooring, made in various sizes and colors. Most any pattern or scheme can be worked out with these attractive tiles.

Rez-Il-Tile floors are practically indestructible; they are tough, durable, non-fatiguing, quiet, stainproof, acidproof. They are color-fast and will not fade, bleach or stain, the colors going all the way through.

Rez-Il-Tile is not subject to deterioration, hardening, drying out, injury from alkalis, soaps, cleaning fluids, or other agencies often fatal to resilient floors.

Fire Retardant—Rez-Il-Tile flooring is fire retardant, it does not support combustion. In a serious fire this material will simply soften and carbonize; it will not spread or carry flames. Another important feature of Rez-Il-Tile is the fact that burning cigarettes, cigars and matches accidentally dropped will not mar or injure the tile in recreation halls, bowling halls, billiard rooms, clubs, or offices.

Approved—This type of floor has been officially approved in many large cities for use in fireproof buildings, and carries the approval of all Borough Building Departments in New York, N. Y., where fire laws are unusually stringent.

Patterns

Any conceivable pattern or arrangement can be worked out with Rez-Il-Tile and Rezilite Plastic.



Rezilite in School Installation

A Few Installations

U. S. Treasury Building, Top Floor, Washington, D. C.
Arlington Building, U. S. Government, Washington, D. C.
New Jersey Zinc Co., Palmerton, Pa.
Vanderbilt University, Nashville, Tenn.
Chemistry Building, University of Illinois, Urbana, Ill.
Pittsburgh Plate Glass Research Laboratory, Milwaukee, Wis.
Richard Memorial Building, Bacone College, Bacone, Okla.
Claypool High School, Claypool, Ind.
Rose Avenue School, Toronto, Ont.
High School, Isabel, Kan.
Tuberculosis Hospital, N. H. D. V. S., Sawtelle, Cal.
Garden Road School, Wellesley Hills, Mass.
Sewage Disposal Station, Milwaukee, Wis.
New Baker Laboratory, Cornell University, Ithaca, N. Y.
Animal Research Building and Robinson Laboratory, Ohio State "U", Columbus, Ohio
Mt. St. Joseph Academy, St. Joseph, Ky.



Salvation Army Building, Pittsburgh, Pa.

UNITED STATES EUBOEOLITH COMPANY, INC.

Engineers, Flooring Contractors, Waterproofing Specialists

LANCASTER, PENNSYLVANIA

REPRESENTATIVES IN PRINCIPAL CITIES

Euboeolith Industrial Flooring

For factories, mills, warehouses, machine shops, etc. A compressed jointless magnesia fibre floor applied in a thickness of ½ in. over concrete, wood or steel. Can safely be laid on concrete slab on the ground. This floor is fireproof, heat and sound insulating, quiet, non-slippery, dustless, resilient and sanitary. It will not chip, and wears evenly. Is suitable for heavy traffic and rough service. Oils will not affect it. Euboeolith can be waterproofed.

EUBOEOLITH
Reg. U. S. Pat. Off.

PILOKOLLAN
Patented

Euboeolith Commercial Flooring

For hospitals, offices, hotels, residences, etc. An attractive and decorative floor furnished in any standard solid color, or in two and three-color combinations with granited or marbled effect. Installed with cove base, border and brass strips. Applied ½ in. thick over wood, concrete or steel.

Euboeolith Terrazzo

For hotel lobbies, entrance halls, corridors, etc. Applied ½ in. thick over wood or concrete. A combination of colored Euboeolith and stone chips. Brass stripping.

Pilokollan

A new material providing a unique method of fastening machinery to Euboeolith or concrete floors without screws or bolts. A speedy and economical process which obviates the drilling of holes, thus permitting the floor slab to remain intact. No expensive footings necessary. By absorbing vibrations and shocks, it insures smoother running and prolongs life of machinery.

Euboeolith Subfloor

Corkfill or woodfill, installed over wood, concrete or steel in a thickness of ½ in. to 2 in., or even thicker if electric conduits are to be embedded therein. Very light in weight. An ideal low cost jointless base for linoleum, linotile, cork tile, asphalt tile, rubber tile, Euboeolith, etc. This sub-floor is sound and heat insulating, as well as fire resisting. Its elasticity is many times greater than that of concrete.

Useco

A mastic flooring material sold direct for patching and resurfacing industrial floors.

Waterproofing

Dampproofing and waterproofing of all kinds, especially difficult work under water pressure.

Guarantee

Our work is guaranteed.

Some Prominent Users of Euboeolith Floorings

Armstrong Cork Company, Lancaster, Pa.
N. W. Ayer & Son, Philadelphia, Pa.
Cincinnati Milling Machine Co., Cincinnati, Ohio.
D. L. Clarke Candy Co., Pittsburgh, Pa.
American Enka Corp., Enka, N. C.
Ertle Baking Co., Pittsburgh, Pa.
H. J. Heinz Co., Pittsburgh, Pa.
International Shoe Co., St. Louis, Mo.
Stix, Baer & Fuller Dept. Store, St. Louis, Mo.
Union Electric Light & Power Co., St. Louis, Mo.
Vaucanson Silk Mills, Port Jervis, N. Y.
Brown Instrument Co., Philadelphia, Pa.
Conestogo Cotton Mills, Lancaster, Pa.
Schwarzenbach-Huber Co., Union City, N. J.
Westinghouse Electric & Mfg. Co., Trafford, Pa.
Tabor Home for Orphans, Doylestown, Pa.
Richmond, Fredericksburg & Potomac R. R. Co., Richmond, Va.
Clifton Yarn Mills, Clifton Heights, Pa.
Roberts & Mander Stove Co., Hatboro, Pa.

Some Prominent Users of Pilokollan

American Lead Pencil Co., Jersey City, N. J.
Conestogo Cotton Mills, Lancaster, Pa.
Columbia Silk Mills, Columbia, Pa.
Schwarzenbach-Huber Co., Union City, N. J.
Scintilla Magneto Co., Sydney, N. Y.
Duquesne Light Co., Pittsburgh, Pa.
Hockanum Mills, Rockville, Conn.
Tennessee Eastman Corp., Kingsport, Tenn.

THE TILE-TEX COMPANY

Manufacturers of Resilient Floor and Wall Tile

CHICAGO HEIGHTS, ILL.

EASTERN SALES OFFICE: Grand Central Terminal, NEW YORK, N. Y.

Products

TILE-TEX RESILIENT FLOOR TILE and TILE-TEX WALL TILE and SANITARY COVE BASE (asphalt-asbestos composition).

The Company

A corporation which for years has been engaged solely in the manufacture of asphalt floor tile. The Personnel represents many years of successful experience in blending and adapting asphalts.

The company enjoys a strong financial position and offers back of their products and the finished floor or wall a responsibility upon which the architect and his client can confidently depend. References, R. G. Dun & Company, Bradstreet, Central Republic Bank and Trust Co., Chicago, Ill.

Manufacturing and Installation Facilities

A well equipped factory, to meet demand and maintain adequate stocks with reserve production facilities for emergency periods, insures avoidance of shipping delays and prompt installation service.

Tile-Tex is installed by competent, approved resilient floor and wall contractors located at strategic points throughout the country, aided by the supervision of experienced factory representatives. Responsibility for the finished floor rests with the Tile-Tex Company whose guarantee covers each installation. Factory representatives are available for localized architectural service.

Description—Technical Data

Composition—Tile-Tex is composed entirely of inert materials. The major ingredients are natural asphalt of high melt point and quality, asbestos fibre and pure mineral pigments; these are combined with the necessary blending agents.

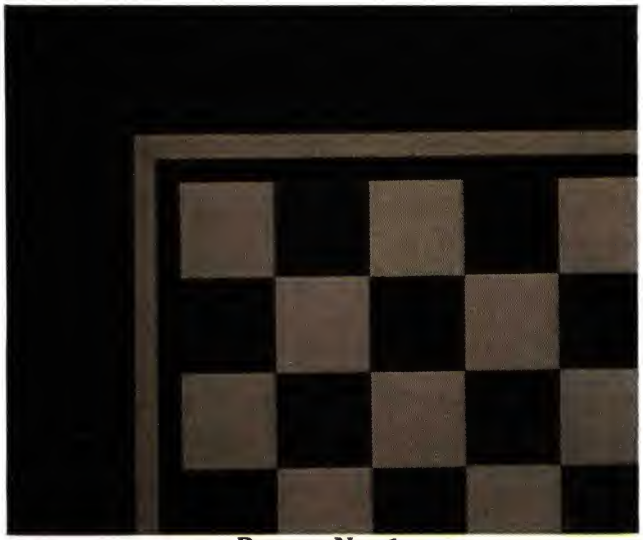
Manufacturing Process—The ingredients are thoroughly amalgamated through the medium of heat and pressure and in sheet form are hot calendered to a uniform thickness. These sheets are cut cold by a special process to accurate, rectangular tile with perfect arrises.

Tile Thickness—Tile-Tex is made in three standard thicknesses, 1/8, 3/16 and 3/8 in.

Tile Sizes—Tile-Tex floor tile is furnished in the following shapes and sizes: Standard rectangular sizes, 3x3, 6x6, 6x12, 9x9, 12x12, 12x24, 18x24 in. Special shapes—Long Hexagonal (surface area 87 sq. in.). Feature strips in the following widths—1/4, 1/2, 3/4, 1, 1 1/2, and 2 in. Tile-Tex Wall Tile manufactured in 4 1/4x4 1/4 in. and 3x6 in. sizes.

Surface Finishes—Tile-Tex Floor Tile and Tile-Tex Wall Tile are produced in smooth and tapestry surfaces in plain and marbleized colors.

Colors—Pure mineral pigments of uniform intensity, accurately proportioned and blended with the other ingredients, assure permanent colors which can always be depended upon to match existing installa-



Pattern No. 1



Pattern No. 4



Pattern No. 15

tions where, due to alterations or accident, repairs are required. See color charts on following pages.

Uniformity

Rigid laboratory control supplemented by careful tests of each run and rigid inspection insure uniform excellence of product.

Special Features

Resilient—The resiliency of Tile-Tex is guaranteed permanently. No oxidation is possible. Comfort and quiet are assured.

Durable—All materials used in Tile-Tex are compressible, non-abrasive and inert. Foot traffic, even under severe conditions, has practically no effect upon it. Tile-Tex never curls or comes loose from the subfloor. It becomes an integral part of the building construction.

Moistureproof—Tile-Tex is an asphalt tile and the tile are bonded to the subfloor with asphalt. Both tile and bonding agent are impervious to moisture. Tile-Tex can be laid on cement subfloors in contact with the ground, at or below grade, without waterproofing for dampness. The company's guarantee covers such installations.

Stainless—Nothing is known that will permanently stain Tile-Tex. Iodine, ink, etc., are easily removed with a damp cloth. Burning matches and lighted cigarettes leave no scar.

Sanitary—The joints seal producing a seamless, continuous covering of uniform thickness. No dirt or foreign matter can penetrate or lodge below the exposed cleanable surface.

Odorless—Tile-Tex gives off no odor under any circumstances.

Non-Slip—Even when wet Tile-Tex is non-slip. A valuable factor in schools, hospitals and similar public buildings.

Fire-Resistant—Tile-Tex is substantially incombustible. Test and report by Columbia University, New York City.

An Electrical Insulator—It has a high dielectric strength. Tests by Commonwealth Edison Testing Co., Chicago, Ill.

Acid and Alkali Proof—Acids in ordinary commercial strengths do not injure Tile-Tex. The floor is ideal for chemical laboratories. Tests and reports by Robert W. Hunt & Co., Chicago, Ill.

Low Cost—Tile-Tex is installed at a price comparable with other resilient floors of merit and much lower than many.

Low Maintenance—Since Tile-Tex requires no wax or other surface treatment to maintain its appearance or make it impervious, it can be kept clean by the simplest, most inexpensive method—damp mopping. It acquires its sheen and polish by traffic and use.

Excellent Appearance—The variety of color and size combinations offer a wide range of attractive design possibilities. The appearance improves with use. Traffic adds surface lustre and brilliancy.

Easy to Repair—In case of alterations, partition changes or accidents, Tile-Tex floors can easily be repaired at minimum cost and inconvenience, leaving no visible evidence of the replacement.

ADAPTABILITY AND SUBSURFACE PROVISIONS

Note: *That the finished Tile-Tex floors may be installed with the greatest degree of economy, permanence and satisfaction as to appearance, we recommend that the following provisions, over which the flooring contractor has no control, be included under the various specification headings where and when they apply.*

Where Adapted—In all types of building where a resilient non-slip easily maintained floor of excellent appearance is desired. Well adapted for churches, schools, universities, chemical laboratories, hospitals, public buildings, offices, stores, restaurants, etc. Not affected by moisture and can be laid over an unwaterproofed concrete slab at or below grade.

Where Not Adapted—Oils and deposits of heavy grease are practically the only agents that injure Tile-Tex. Avoid installations in locations subject to oil drippings from machines, cooking, etc.

Do not lay Tile-Tex over wood floors attached to sleepers set in concrete fill at or below grade. Such wood floors, when the surface is sealed with an impervious material, dry rot.

Subsurfaces — General — A clean, sound, smooth subfloor surface without depressions or projections should always be provided. Depressions and projections in the subfloor will be apparent in the finished floor since Tile-Tex is of uniform thickness and follows the subfloor contour. Chalky, flaky surfaces or surfaces covered with foreign substances will affect the bond. Allow the tile thickness from subfloor to finished floor level, unless difference in floor level is compensated for by thresholds.

Concrete Subfloors—Concrete subfloors to receive Tile-Tex should be structurally sound, hard and apparently dry, free from scale, laitance or foreign deposits and without surface imperfections.

Note: *The specification for concrete floors prepared by the Portland Cement Association as given in Sweet's Architectural Catalogues is recommended.*

Where tile is set in a sinkage with finished concrete or magnesite terrazo borders or cove base, or finished against adjacent areas of these materials at doors, etc., without thresholds, we recommend that the fragile edges of the sinkage be finished against a brass finishing bar.

Wood Subfloors—New—Over wood joist always provide a double floor. New finished wood floors to receive Tile-Tex should be of good quality, not less than 25/32 in. thick nor greater than 3¼ in. face. Floor stock should be kiln dried, sound, matched flooring, laid close and thoroughly blind and face nailed. Surface should be machine sanded smooth.

Old—Unless smooth, old floors should be sanded. Badly cupped or worn, we recommend that they be leveled with a ¼" to ⅜" coat of Tile-Tex Floor-cote or with a ¼" to ⅜" scratch coat of magnesite reinforced with wire mesh (if magnesite) over waterproof paper, troweled to a true, smooth plane.

Specify only $\frac{5}{16}$" tile for application direct to wood.

Stair Treads—The subfloor provisions outlined for floors apply likewise to stair treads. Always specify a rigid metal stair nosing set to accommodate the Tile-Tex thickness.

Specify nosing that abuts Tile-Tex. Avoid nosing that projects under tile.

MASTER SPECIFICATIONS

Work Included—

Note: *List and locate either in schedules on plans or under this heading: (1) all floor areas to be covered with Tile-Tex and state type of subfloor; (2) all Tile-Tex sanitary cove bases; (3) all stair treads and landing.*

Samples—File with the architect samples conforming with these specifications.

Subsurface Provisions—Provision has been made under other specification headings that all surfaces to receive finished flooring under this contract shall be constructed as set forth under "Adaptability and Sub-surface Provisions," of the Tile-Tex Company's catalogue in Sweet's Architectural Catalogues.

Inspection—Before installing the finished flooring this contractor shall thoroughly inspect the surfaces to be covered and shall notify the architect, promptly, in writing of any defects.

Material—Finished Flooring and Sanitary Cove Base—Asphalt floor tile and cove base shall be Tile-Tex as manufactured by the Tile-Tex Company, Chicago Heights, Ill., or equivalent, meeting fully this manufacturer's standard of quality as set forth in their catalogue published in Sweet's Architectural Catalogues.

Floor tile thickness shall be.....; sizes shall be .....; color(s) shall be .....; design shall be .....

Note: *If more than one thickness or size is used, designate here where each is to be installed. If a variety of colors are used, specify those selected and their locations and specify the design or pattern characteristics.*

Cove base shall be preformed base of standard size; color(s) shall be .....

Note: *If a variety of colors are used, specify those selected and their locations.*

Bonding Cement—Cement for laying asphalt composition tiles shall be Tile-Tex asphalt cement.

Heat—Heat will be provided by others. The building shall be heated for a period not less than 24 hours prior to the installation of Tile-Tex and a uniform temperature of not less than 70° maintained until completion of work under this contract.

Installation—All Tile-Tex floors and base shall be installed by approved Tile-Tex contractors.

Accurately miter-cut all cove bases to fit at reentrant angles and corners. Provide mortar fill to support cove. Cement all bases to backing.

Each tile shall be set in Tile-Tex Asphalt Cement. Tile shall be laid true to line and pattern specified. All joints shall be close and even and all surfaces shall be in a true plane.

Cove Base

Tile-Tex Sanitary Cove Base is preformed 5⅜ in. high and $\frac{3}{16}$ in. thick against the wall. Sanitary Cove has a ¾ in. radius. Made to abut ⅛ and $\frac{3}{16}$ in. floor tile.

Backing

On new work where a coved Tile-Tex base is specified, provide a smooth Portland cement backing flush with the plaster and forming a clean, true angle of 90° with the floor. If metal bead plaster ground is used, it shall be set level and true ¼ in. below top of base and both plaster and Portland cement backing brought flush to it. If wood plaster ground is used, remove same before installing cement backing. See detail drawing.



Pattern No. 6

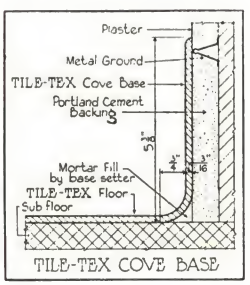


Pattern No. 3

TILE-TEX COVE BASE

A practical, economical, sanitary base that can be used with linoleum. Comes in units 12 inches long by 5⅜ inches high, ready to set in place.







No. 201



No. 102



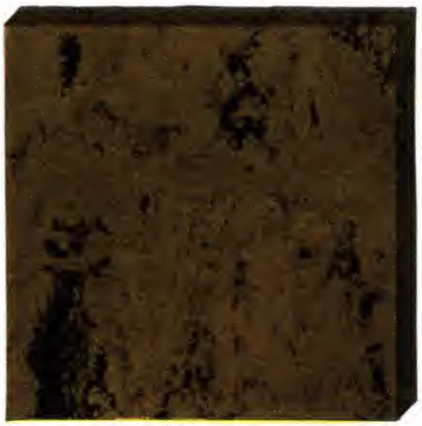
No. 901



No. 804



No. 807



No. 109



No. 121001



No. 801



No. 103



No. 108



No. 305



No. 301



Green No. 4



Grey No. 6



Silver Grey No. 8



Rose No. 11



Tan No. 3



Nublue No. 10



Olive No. 7



Red No. 2



Old Gold No. 9



Mahogany No. 5



Jade No. 12



Black No. 1



Pale Green No. 723
(Tapestry Finish)

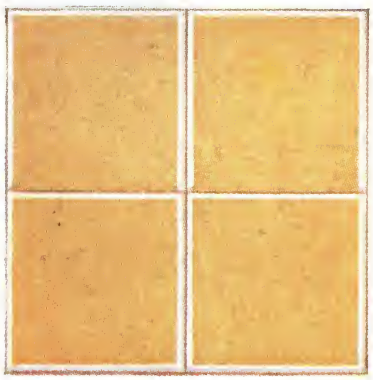
TILE-TEX WALL TILE

Tile-Tex Wall Tile is an asphalt-asbestos composition, suitable for homes, public buildings, corridors and stores.

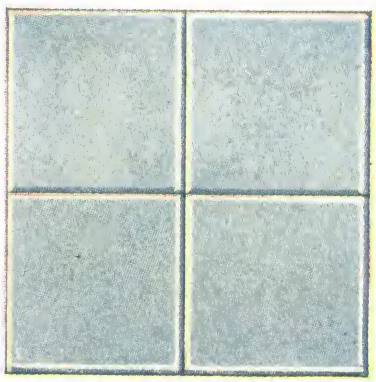
Ready Assembled — Tile-Tex Wall Tile comes in two sizes and all colors and is ready-assembled by the manufacturer for quick and economical application. Four units each 4¼″ x 4¼″ are mounted upon a flexible, asphalt base forming a complete square 8½″ x 8½″. The 6″ x 3″ tile are mounted in strips 3″ x 24″ as a unit. The units are $\frac{3}{16}$″ thick and are laid in waterproof cement.

Advantages — Its use assures satisfaction as long as the building stands. It has been developed to meet the need of a genuine, individual tile that an be installed at a low cost. Permits utmost flexibility of design. The manufacturer will assemble any specified arrangement of colors on each unit. Tile-Tex Wall Tile colors are permanently secured by means of pure mineral pigments. It is non-abrasive, stainless, fire-resistant, moisture-proof and has sound-deadening properties. Requires no special care, merely an occasional wiping with a damp cloth to restore its attractive sheen.

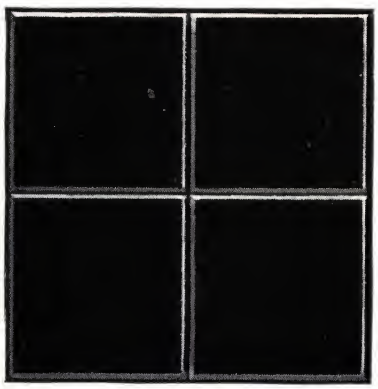
All inside and outside corners are finished with special rustproof metal mouldings of the same color as the tile. Ordinary plaster, cement plaster or Gypsum Board are satisfactory bases on which to apply Tile-Tex Wall Tiles.



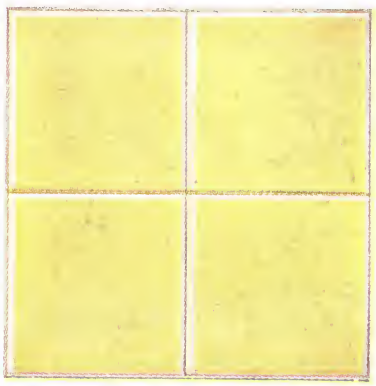
Buff No. 721
(Tapestry Finish, same as Green above)



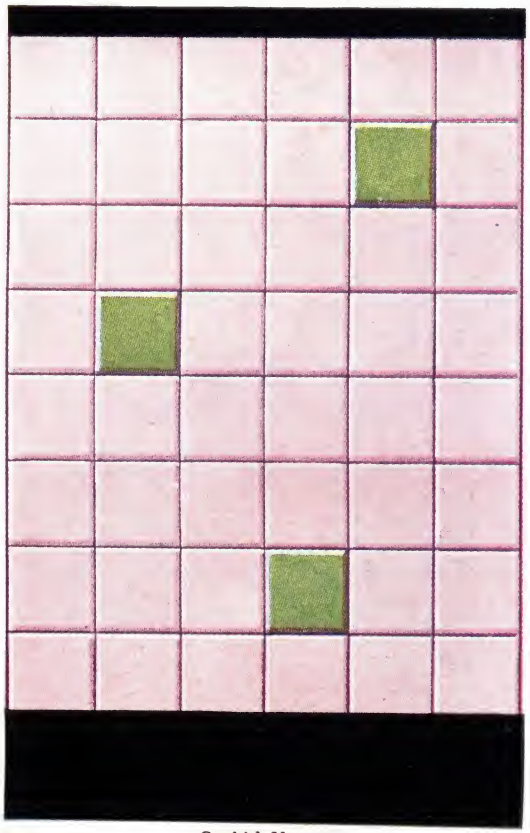
Pale Blue No. 720
(Tapestry Finish, same as Green above)



Jet Black No. 701
(Tapestry Finish, same as Green above)



Yellow No. 724
(Tapestry Finish, same as Green above)



Orchid No. 722
(Tapestry Finish, same as Green above)

UNITED STATES RUBBER COMPANY

FLOORING DIVISION

PROVIDENCE, R. I.

DISTRIBUTORS IN ALL PRINCIPAL CITIES

— DURITE —

The Asphalt Floor Reinforced with Rubber

DURITE is similar to, and has all the advantages of, the ordinary Asphalt Tile, but by the addition of rubber to the ordinarily used ingredients, Asphaltum, Asbestos and Color Pigments, the homogeneity and density are increased.

DURITE

The result is an impervious, absolutely non-porous tile that has a fine, smooth, wear-resisting surface, a tile that is resilient, easy to look upon, easy to walk upon, easy to maintain.



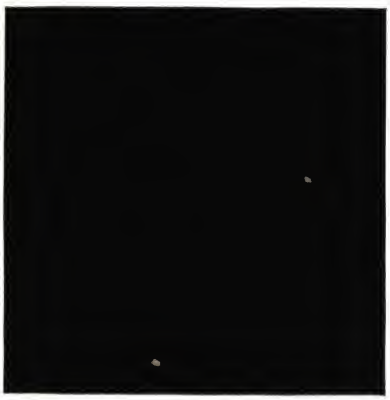
LIBRARY BUILDING

A & M College

College Station, Texas

15,000 Sq. Ft. Green and Tan DURITE

Installed July, 1930



D-201—Black



D-203—Mahogany



D-205—Maroon



D-209—Dusky Olive



D-211—Chestnut



D-208—Garnet



D-220—Smoke Grey



D-216—Bottle Green



D-214—Oak Tan



DURITE

Durite Molded Cove Base



Border: Mahogany—D-203
Field: Mahogany—D-203
Oak Tan—D-214



Border: Chestnut—D-211
Field: Spot Chestnut—D-211
Bottle Green—D-216
Garnet—D-208



Border: Black—D-201
Field: Black—D-201
Smoke Grey—D-220



Border: Mahogany—D-203
Field: Spot Maroon—D-205
Octagons—Dusky Olive—D-209

STANDARD COLORS

DURITE

Group 1
- Black—D-201
- Mahogany—D-203
- Maroon—D-205

Group 2
- Dusky Olive—D-209
- Garnet Red—D-208
- Bottle Green—D-216
- Chestnut—D-211
- Oak Tan—D-214
- Smoke Grey—D-220

Group 3
- Roman Green—D-217
- Rose Beige—D-221
- Morocco Red—D-207
- Delft Blue—D-225
- Tan—D-213
- Old Gold—D-223
- Ivy Green—D-215
- Mouse Grey—D-219

STANDARD SIZES

1/8″ Tile	Case Lot	
4″ x 4″	324 pcs. 36 sq. ft.	Average weight 1⅓ lbs. per sq. ft.
6″ x 6″	300 pcs. 75 sq. ft.	
9″ x 9″	134 pcs. 75 sq. ft.	
12″ x 12″	75 pcs. 75 sq. ft.	
9″ x 27″	45 pcs. 76 sq. ft.	
12″ x 24″	37 pcs. 74 sq. ft.	
12″ Hexagon	76 pcs. 66 72/144 sq. ft.	
9.625″ Octagon	135 pcs. 72 27/144 sq. ft.	
Rectangular Hexagon	76 pcs. 45 128/144 sq. ft.	

3/16″ Tile		
4″ x 4″	216 pcs. 24 sq. ft.	Average weight 2 lbs. per sq. ft.
6″ x 6″	200 pcs. 50 sq. ft.	
9″ x 9″	90 pcs. 50 sq. ft.	
12″ x 12″	50 pcs. 50 sq. ft.	
9″ x 27″	30 pcs. 50 sq. ft.	
12″ x 24″	25 pcs. 50 sq. ft.	
12″ Hexagon	50 pcs. 43 118/144 sq. ft.	
9.625″ Octagon	90 pcs. 48 18/144 sq. ft.	
Rectangular Hexagon	50 pcs. 30 3/144 sq. ft.	

SPECIFICATIONS

Durite Tile should be laid over concrete, magnesite or composition floors which are smooth, solid and free from waves and irregularity. The surface of this base shall be ⅛" or 3/16" below the finished floor level and shall be structurally sound, free from scale, foreign deposits, and surface imperfections, and troweled smooth and even; the concrete to be dry before receiving the Durite Tile. (Of standard design, with a suitable border in any combination of standard sizes and colors.)

Another contractor shall furnish the necessary heat to maintain a uniform temperature of 70 degrees for 24 hours before actual installation, and maintain this temperature until the work has been completed.

Durite Tile is not recommended for use over a wooden sub-floor except in such cases where the wooden floor is perfect. This means that it must be absolutely level and kiln-dried, seasoned lumber, tongued and grooved, top-nailed and toe-nailed in such manner that it would be impossible for the floors to shrink, curl or warp in any way. There should be no vibration in any wooden floor which is used as a base for Durite Tile.

ADVANTAGES

1. Low cost of material and installation.
2. Waterproofing qualities and ability to be laid on or below grade, directly to concrete slab.
3. Long life and resistance to abrasion caused by foot traffic.
4. Durite Tile is very resilient, due to its rubber content.
5. A smooth surface which is easy to keep clean.
6. Available in many beautiful colors.
7. Non-slippery. Durite Tile does not become slippery when wet, and is, therefore, a safe type of walk-way for public buildings of all kinds.
8. Fire-resisting. Durite will not sustain combustion. Tobacco of any form, when dropped on a Durite floor, cannot burn or scar the floor.
9. Forms a good electrical insulator.
10. Practically acid-proof and, therefore, highly adoptable as a laboratory floor for industrial use, as well as schools, colleges and universities.

MAINTENANCE

Durite Tile may be dented by severe point load and, as in the case of linoleum, it is necessary to protect this type of resilient floor from the sharp edges of furniture, casters, and from concentrating too much load on a small surface. Furniture and other equipment that rests on Durite Tile must have bearing surfaces in proportion to the weight of the equipment. These varying surfaces should be selected so that a load of not more than 25 to 30 lbs. per square inch is concentrated on the surface of the tile.

Remove all "domes of silence." If the legs of the chairs are less than one inch square, a flat glider about one inch in diameter should be used.

Swivel chairs requiring roller casters should be equipped with wide rubber, ball-bearing casters with rounded edges. These casters should be not less than 1 inch wide or 2 inches in diameter. If roller casters are not required, flat gliders at least 2 inches in diameter should be used. For the average-sized desk, heavy cabinets, or tables, flat gliders having a diameter of at least 2½ inches are recommended. For pianos or other heavy furniture, shoes at least 4 inches in diameter are recommended.

DURITE

ARMSTRONG CORK COMPANY

Member of the Producers' Council
FLOOR DIVISION

Manufacturers of Linoleum and Allied Floor Products

EXECUTIVE OFFICES
LANCASTER, PA.

BRANCH OFFICES

ATLANTA, GA., 432 Candler Building
BOSTON, MASS., 286 Congress Street
BUFFALO, N. Y., 1325 Liberty Bank Building
CHICAGO, ILL., 1917 Daily News Building
CINCINNATI, OHIO, 232 W. Seventh Street
CLEVELAND, OHIO, 603-605 Hanna Building
DALLAS, TEX., 708 Santa Fe Building
DENVER, COLO., 720-21 Symes Building
DETROIT, MICH., 1232 Book Building
KANSAS CITY, MO., 114 W. 10th Street Building
LOS ANGELES, CAL., 1206 Santee Street
MEMPHIS, TENN., 1818 First National Bank Building
MINNEAPOLIS, MINN., 912 Plymouth Building
NEW YORK, N. Y., 295 Fifth Avenue
ST. LOUIS, MO., 705 Ambassador Building
SAN FRANCISCO, CAL., 180 New Montgomery Street
SEATTLE, WASH., 803 Terminal Sales Building

ARMSTRONG'S LINOLEUM AND ALLIED FLOOR PRODUCTS

The Armstrong Line

ARMSTRONG'S LINOLEUM: Battleship and Plain; Jaspé (two-tone effect); Embossed Inlaid; Straight Line Inlaid; Handmade Marble Inlaid; Parquetry Inlaid; Embosstex Granite; Moulded Inlaid; Craftone Inlaid; Printed Linoleum; Armstrong's Quaker Rugs and Floor Covering.

ARMSTRONG'S LINOFLOR.
ARMSTRONG'S CORK TILE.
ARMSTRONG'S ASPHALT TILE.
ARMSTRONG'S CORK CARPET.
ARMSTRONG'S LINING FELT.
ARMSTRONG'S LINOLEUM WAX.
ARMSTRONG'S LINOLEUM LACQUER.
ARMSTRONG'S WATERPROOF CEMENT.
ARMSTRONG'S LINOLEUM PASTE.
ARMSTRONG'S LINOTILE.

Armstrong's (A) *Product*

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What Linoleum Is

Linoleum takes its name from one of its principal ingredients, linseed oil (*linum*, flax, and *oleum*, oil). The oil is oxidized by exposing it to the air until it hardens into a tough, rubberlike substance, and is then thoroughly mixed with powdered cork, wood flour, various gums, and suitable color pigments. The resulting plastic mass is pressed on burlap by means of heavy calenders, the exact process varying with different kinds of linoleum. The "green" linoleum then passes into drying buildings called "stoves" where it is cured and seasoned from two to six weeks, depending on thickness of material. After this, every yard of Armstrong's Linoleum undergoes a final rigid inspection before it is packed and shipped.

Standards of the Armstrong Line

General Characteristics—Every product in the Armstrong Line is fully guaranteed against defect by the ARMSTRONG CORK COMPANY. This Company maintains, for the manufacture of linoleum and allied floor products, a plant at Lancaster, Pa., strictly modern in both equipment and manufacturing methods.

Only the best obtainable ingredients are used in the manufacture of Armstrong's Floors. Most of the cork comes from the Company's own plants here and abroad. The cork used in linoleum is ground to a fineness of 50-mesh to the inch, which results in a finished surface of almost plate glass smoothness. Every car of linseed oil and all color pigments are tested in the laboratory. The whole manufacturing process is under physical and chemical control.

Armstrong's Linoleum is finished by the Accolac Process—which protects the surface, greatly simplifies cleaning, and preserves and intensifies the colors of the pattern.

The ARMSTRONG CORK COMPANY possesses an organization thoroughly experienced in the manufacture of linoleum. Many of the men in this organization were trained abroad where linoleum traditions were founded and developed. Exceptional attention is paid to the designing of the patterns and the selection of the colorings.

Tests—Armstrong's Floors are carefully tested at every step of the making. Final inspections are especially rigid.

The guiding principle in the Armstrong factories is "quality" not "quantity"; not "how much" but "how good" can linoleum be made. Armstrong's Battleship Linoleum more than meets the "United States Government Master Specification for Battleship Linoleum" promulgated by the Federal Specification Board on July 30, 1924, as Specification No. 209.

Grades of Armstrong's Linoleum—Armstrong's Linoflor—Armstrong's Laying Sundries

Plain Linoleum—Solid colors without pattern—the three heavier gauges of which are known as Heavy (6 mm.), Medium (3/16-in.), and Light Battleship (A Gauge, 0.142-in.). What is commonly spoken of as plain linoleum is of the same quality as battleship linoleum, only lighter in gauge.

Altogether there are 6 thicknesses of plain linoleum and 18 colors. See colorplates following these specifications.

Jaspé Linoleum—A species of inlaid linoleum. The colors, which run clear through to the back, present a striated appearance with a two-tone effect. It is made in 11 colors and 5 gauges: 6 m.m., 3/16-in., Light Battleship (A Gauge, 0.142-in.), B, and C. See colorplates.

Embossed Inlaid Linoleum—A distinctive, patented type of Armstrong's Linoleum made in several gauges and many patterns. The interliners between the blocks of the pattern and frequently certain other portions of the design are slightly

depressed, giving the design an embossed effect. New in this type of linoleum are shaded effects which reproduce for the first time all the soft color interest and texture of old hand-set ceramic tiles. See colorplates.

Straight Line Inlaid Linoleum—In making Straight Line Inlaids, the individual parts of the pattern are die-cut, laid in position and finally keyed on the burlap under enormous pressure. The entire operation is performed by machine. See colorplates.

Handmade Marble Inlaid Linoleum—A Straight Line Inlaid Linoleum in which the design, which is laid by hand, is made up of large marbleized blocks of varied designs and colorings. Armstrong has produced a new graining which has the sharp, natural veining and intense coloring of genuine marble. Made in AA (0.142-in.) and A (0.118-in.) Gauges. See colorplates.

Linosets—To further individualize floors, the ARMSTRONG CORK COMPANY also furnishes custom-cut floor ensembles called "Linosets" of any design required. These floors are cut at Lancaster, Pa., and shipped to the merchant, ready for installation. Particularly adapted to kindergarten rooms, game rooms, children's wards, nurseries, department stores, and barber shops, are these individually designed floors, for they present the opportunity to inlay the necessary layouts for many juvenile games.

Linostrips—As an aid in producing special floor effects, with double and triple borders, etc., machine cut strips of all Plain, Jaspé, allover Marble, and Marble Border Linoleum, either ⅝ in. or 1½ in. wide and 45 ft. in length, are offered in individual packages.

Armstrong's Linoflor

A brand-new kind of floor covering consisting of a linoleum "mix" keyed to a foundation of asphalt-saturated felt instead of burlap. It is highly moisture resistant, durable, and resilient. Made in two types: Battleship Linoflor, plain brown in color and 3/16 in. thick overall; and Inlaid Linoflor, medium and light weight, made in 13 colorful designs.

Armstrong's Cork Carpet

Cork carpet is made of relatively large granules of cork by a process which preserves the natural elasticity to a high degree. Cork carpet, therefore, not only softens footsteps, but helps absorb other noises as well. For auditoriums and other rooms in churches, lodges, libraries, museums, etc., where excessive dirt is not tracked in and where heavy traffic is not an everyday occurrence, cork carpet is admirably adapted.

Armstrong's Lining Felt

A high grade rag felt, about ⅛-in. thick and weighing 1½ lbs. per sq. yd., for use under linoleum. It is tough and flexible, has high vertical strength and low water absorption, and is loosely enough compacted to shear with the movements of floors. It should not be confused with rosin-sized paper.

Armstrong's Waterproof Cement

This is guaranteed to make a waterproof joint at seams and edges, when properly applied. It has high adhesive power, possesses ample covering capacity, and is free from sodium silicate (water glass) and other ingredients harmful to linoleum.

Armstrong's Linoleum Paste

A high grade water-resistant (not waterproof) adhesive intended for use in fastening felt to the floor and centers of the linoleum strips to felt. It is free from all harmful ingredients.

HOW TO GET ARMSTRONG'S LINOLEUM

Distribution—Armstrong's Linoleum is sold through retailers of home furnishings and floor coverings, as well as linoleum contractors throughout the United States. The names of reliable handlers in any locality may be had by writing the home office of the Floor Division of the ARMSTRONG CORK COMPANY, Lancaster, Pa., or the nearest branch office. These distributors will furnish quotations and other information desired on any job.

Protection of Customer—For the protection of the purchaser the gauge mark is printed on the back of every yard of Armstrong's Battleship Linoleum, and where there are slight imperfections which cause the goods to be sold at a discount, the word "Seconds" is plainly marked on the burlap back.

Contract Department—Architects contemplating the installation of any Armstrong Floor are invited to use the services of the Contract Department, which is prepared to work with owners, architects, or contractors in preparing estimates from blue prints; to make recommendations of gauges and patterns for specific purposes, and supply technical information on laying and care of floors. All service is rendered free of charge.

Bureau of Interior Decoration—For the benefit of architects, decorators, owners, and others interested in the use of linoleum as a decorative floor material, a Bureau of Interior Decoration, in charge of an experienced interior decorator, is maintained by the Company. This Bureau will gladly send samples of linoleum patterns and suggestions as to designs and color schemes that will be suitable for any particular problem. Information and recommendations as to suitable floors for rest rooms, private offices, shops, and the various rooms of the home, especially, may be obtained at no cost or obligation whatever.

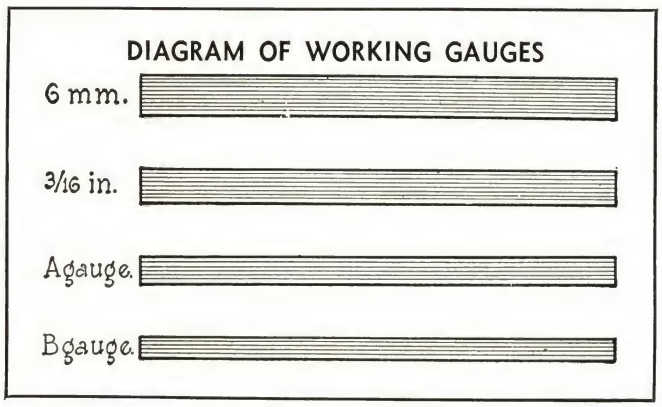


TABLE OF WEIGHTS AND GAUGES

Kind of Linoleum	Width in ft.	Approximate thickness, in.	Finished gauge, in.	Average net weight per sq. ft., lb.
Plain Linoleum—				
Heavy Battleship 6 mm	6	1/4	.235	1.59
Med. Battleship 3/16-in.	6	5/16	.187	1.29
Light Battleship (A Gauge) (0.142 in.)	6	5/32	.142	.97
B Gauge	6	1/8	.119	.83
C Gauge	6	5/32	.095	.68
Jaspé Linoleum—				
Heavy Battleship 6 mm	6	1/4	.235	1.51
Medium Battleship 3/16-in.	6	5/16	.187	1.21
Light Battleship (A Gauge) (0.142 in.)	6	5/32	.142	.93
B Gauge	6	1/8	.119	.82
C Gauge	6	5/32	.095	.67
Straight Line Inlaid—A Gauge	6	1/8	.118	.97
Handmade Marble Inlaid—				
AA (0.142 in.)	6	5/32	.142	1.18
A Gauge	6	1/8	.118	1.00
Embossed Inlaid—				
Embossed—A Gauge	6	1/8	.118	.93
Embossed—B Gauge	6	5/32	.095	.76
Cork Carpet (unpolished)	6	1/4	.250	.83
Linoflor				
Battleship—3/16-in.	6	3/16	.187	1.29
Inlaid Medium Weight	6	1/8	.105	.82
Inlaid Light Weight	6	1/16	.075	.61

The weights and gauges given in this table are the manufacturing standards for the various kinds of linoleum. Slight variations will occur, but, for practical purposes, these figures are substantially correct.

Samples and Literature—Samples of any coloring or pattern or thickness of Armstrong's Linoleum and allied floor products will be sent to any architect, contractor, or builder on request.

The following literature is also offered:

(a) "Armstrong's Floors," prepared in the form recommended by the American Institute of Architects. In addition to a description of linoleum, Linotile, asphalt tile, and cork tile, and their uses, this handbook contains essential information needed in the selection of Armstrong's resilient floors for any particular purpose, and information regarding the laying of floors over wood or concrete, including architects' detailed specifications. 8½x11 ins. in size.

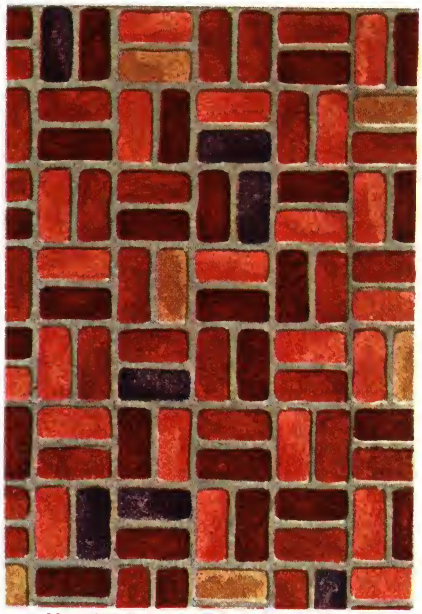
(b) "Pattern Book," showing all the patterns in Armstrong's Linoleum reproduced in full color.

(c) "Linoleum Layer's Handbook," a 36-page book containing detailed directions for laying and caring for permanent linoleum floors. Illustrated. 5½x8 ins. in size.

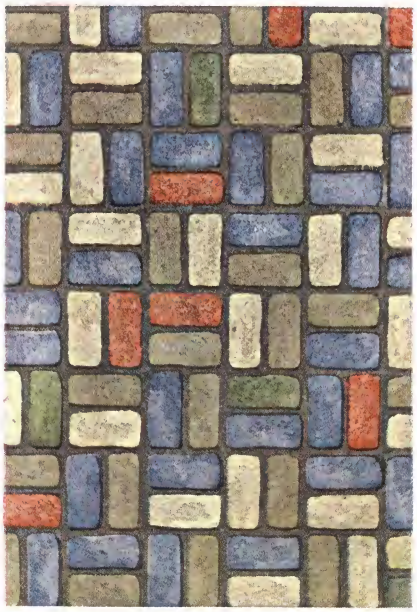
(d) "Public Floors of Enduring Beauty," a 32-page book telling how linoleum is used in stores, offices, etc.

(e) "Home Decorator's Idea Book," telling how linoleum is used in residences.

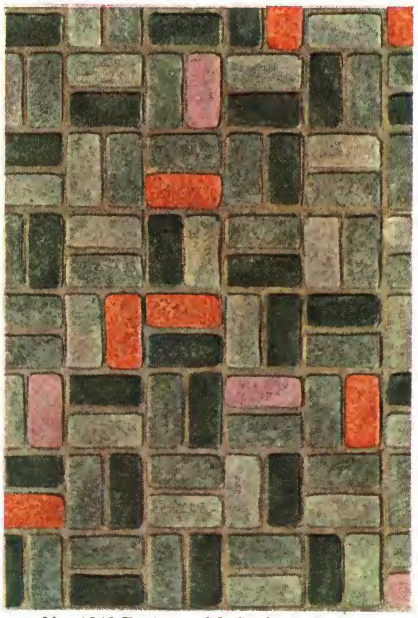
Shaded Effects Offered in Armstrong's Embossed Inlaid Linoleum



No. 6240 Embossed Inlaid—A Gauge
(Plate shows 11½″x17″ section) 2 yards wide only



No. 6241 Embossed Inlaid—A Gauge
(Plate shows 11½″x17″ section) 2 yards wide only



No. 6242 Embossed Inlaid—A Gauge
(Plate shows 11½″x17″ section) 2 yards wide only



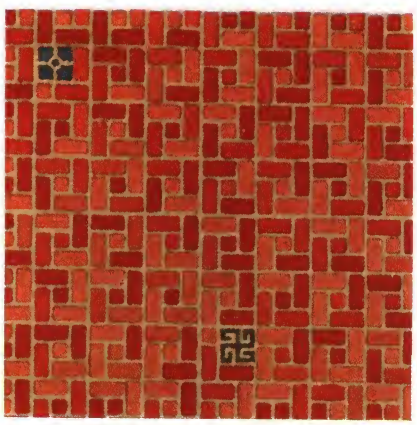
No. 6250 Embossed Inlaid—A Gauge
(Plate shows 11½″x17″ section) 2 yards wide only



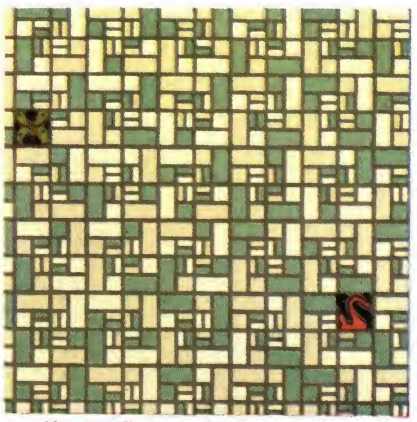
No. 6251 Embossed Inlaid—A Gauge
(Plate shows 11½″x17″ section) 2 yards wide only



No. 6260 Embossed Inlaid—A Gauge
(Plate shows 11½″x17″ section) 2 yards wide only



No. 6028 Embossed Inlaid—A Gauge
(Plate shows 34″x34″ section) 2 yards wide only



No. 6034 Embossed Inlaid—A Gauge
(Plate shows 34″x34″ section) 2 yards wide only



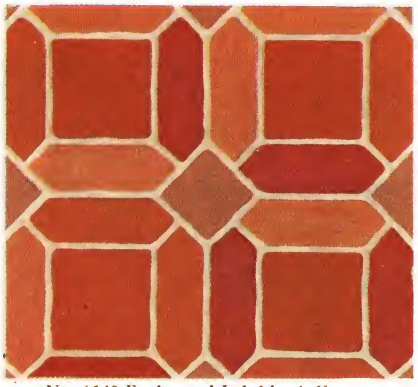
No. 6051 Embossed Inlaid—A Gauge
(Plate shows 34″x34″ section) 2 yards wide only



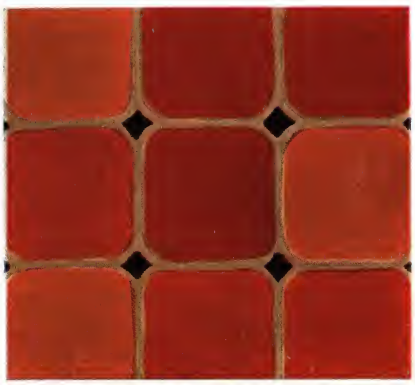
No. 6061 Embossed Inlaid—A Gauge
(Plate shows 31″x34″ section) 2 yards wide only



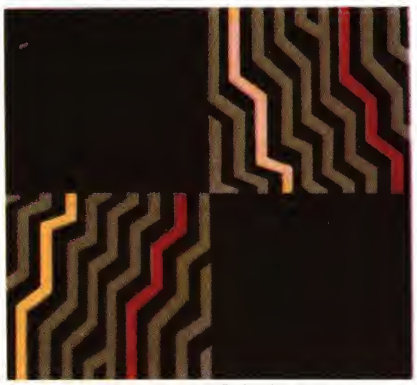
No. 6120 Embossed Inlaid—A Gauge
(Plate shows 31″x34″ section) 2 yards wide only



No. 6140 Embossed Inlaid—A Gauge
(Plate shows 15½″x17″ section) 2 yards wide only



No. 6161 Embossed Inlaid—A Gauge
(Plate shows 15½″x17″ section) 2 yards wide only



No. 6210 Embossed Inlaid—A Gauge
(Plate shows 15½″x17″ section) 2 yards wide only



No. 6220 Embossed Inlaid—A Gauge
(Plate shows 15½″x17″ section) 2 yards wide only

Eight of the Eleven Pleasing Colors Available in Jaspé Linoleum



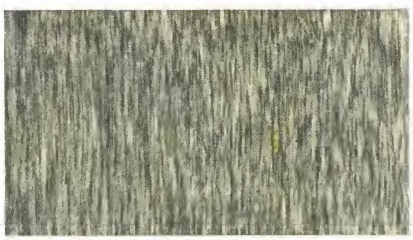
No. 16 Light Brown Jaspé Linoleum
2 yards wide only. Heavy (6mm.), Medium (3/16″) Lt. B/S (A Gauge—.142″), B, and C Gauges

IN addition to the eight colorings of Jaspé shown on this page are available Orchid No. 010, Heather No. 012, and Blue No. 18; all manufactured in Light Battleship (A Gauge—.142″), B, and C Gauges.

In business houses, as well as in residences, there has been an increasing use of Jaspé linoleum during the past few years. Its subdued, two-tone graining forms an inconspicuous, yet quietly dignified background for rugs and furnishings.



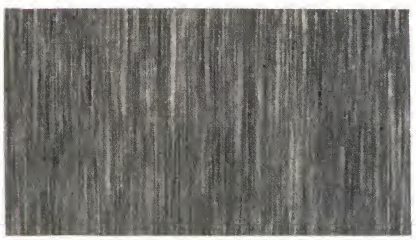
No. 17 Dark Brown Jaspé Linoleum
2 yards wide only. Medium (3/16″), Lt. B/S (A Gauge—.142″), B, and C Gauges



No. 13 Light Gray Jaspé Linoleum
2 yards wide only. Medium (3/16″), Lt. B/S (A Gauge—.142″), B, and C Gauges



No. 12 Taupe Jaspé Linoleum
2 yards wide only. Heavy (6mm.), Medium (3/16″) Lt. B/S (A Gauge—.142″), B, and C Gauges



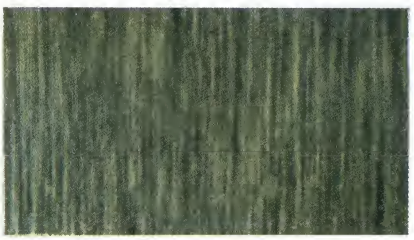
No. 15 Dark Gray Jaspé Linoleum
2 yards wide only. Heavy (6mm.), Medium (3/16″) Lt. B/S (A Gauge—.142″), B, and C Gauges



No. 011 Light Green Jaspé Linoleum
2 yards wide only. Lt. B/S (A Gauge—.142″) B, and C Gauges

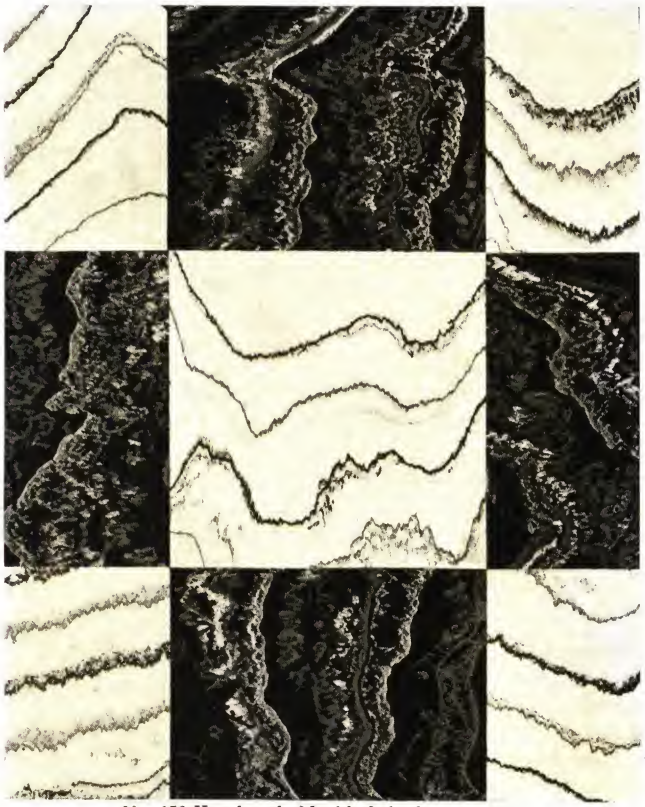


No. 14 Rose Jaspé Linoleum
2 yards wide only. Lt. B/S (A Gauge—.142″) B, and C Gauges



No. 19 Green Jaspé Linoleum
2 yards wide only. Medium (3/16″), Lt. B/S (A Gauge—.142″), B, and C Gauges

New Designs in Handmade Marble and Straight Line Inlaid Linoleum



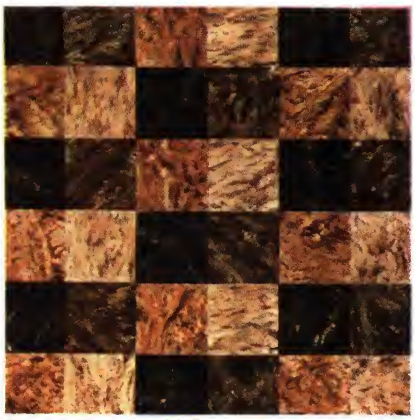
No. 153 Handmade Marble Inlaid—A Gauge
(Size of blocks 9″ x 9″) 2 yards wide only



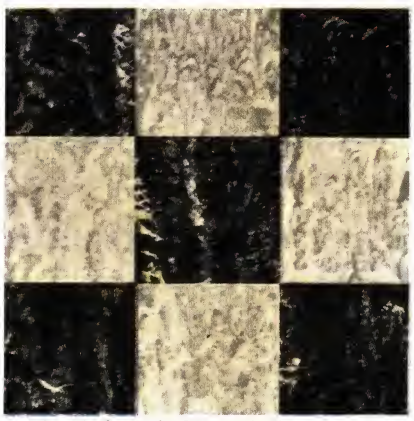
No. 154 Handmade Marble Inlaid—A Gauge
(Size of blocks 9″ x 9″) 2 yards wide only



No. 89 Handmade Marble Inlaid—A Gauge
(Size of blocks 12″x12″) 2 yards wide only



No. 181 Handmade Marble Inlaid—A Gauge
(Plate shows 34″x34″ section) 2 yards wide only



No. 246 Straight Line Inlaid—A Gauge
(Size of blocks 6″x6″) 2 yards wide only



No. 550 Straight Line Inlaid—A Gauge
(Plate shows 17″x17″ section) 2 yards wide only



No. 590 Straight Line Inlaid—A Gauge
(Size of blocks 9″x9″) 2 yards wide only



No. 13138 Straight Line Inlaid—A Gauge
(Size of blocks 9″x9″) 2 yards wide only

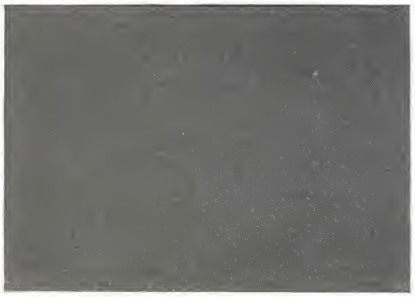
Rich Effects Possible in Wide Range of Plain Linoleum Colors



No. 20 Plain Brown Linoleum
2 yards wide only. Heavy (6mm.), Medium (3/16") Lt. B/S (A Gauge—.142"), B, C, and D Gauges



No. 21 Plain Green Linoleum
2 yards wide only. Heavy (6mm.), Medium (3/16") Lt. B/S (A Gauge—.142"), B, C, and D Gauges



No. 22 Plain Dark Gray Linoleum
2 yards wide only. Heavy (6mm.), Medium (3/16") Lt. B/S (A Gauge—.142"), B, C, and D Gauges



No. 23 Plain White Linoleum
2 yards wide only. Lt. B/S (A Gauge—.142") and B Gauges



No. 25 Plain Terra Cotta Linoleum
2 yards wide only. Heavy (6mm.), Medium (3/16") Lt. B/S (A Gauge—.142"), and B Gauges



No. 26 Plain Light Gray Linoleum
2 yards wide only. Lt. B/S (A Gauge—.142") and B Gauges



No. 27 Plain Black Linoleum
2 yards wide only. Heavy (6mm.), Medium (3/16") Lt. B/S (A Gauge—.142"), B, C, and D Gauges



No. 28 Plain Tan Linoleum
2 yards wide only. Lt. B/S (A Gauge—.142") and B Gauges



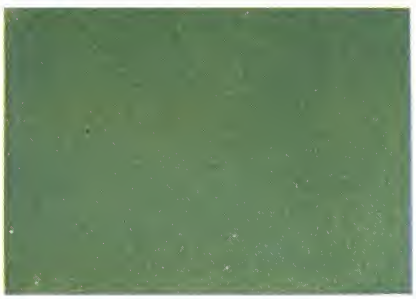
No. 29 Plain Blue Linoleum
2 yards wide only. Lt. B/S (A Gauge—.142") and B Gauges



No. 40 Plain Red Linoleum
2 yards wide only. Lt. B/S (A Gauge—.142") and B Gauges



No. 41 Plain Orange Linoleum
2 yards wide only. Lt. B/S (A Gauge—.142") and B Gauges



No. 42 Plain Jade Linoleum
2 yards wide only. Lt. B/S (A Gauge—.142") and B Gauges



No. 43 Plain Light Blue Linoleum
2 yards wide only. Lt. B/S (A Gauge—.142") and B Gauges



No. 47 Plain Eggplant Linoleum
2 yards wide only. Lt. B/S (A Gauge—.142") and B Gauges



No. 48 Plain Yellow Linoleum
2 yards wide only. Lt. B/S (A Gauge—.142") and B Gauges

SPECIFICATIONS AND GENERAL NOTES FOR LAYING LINOLEUM FLOORS

Brief Specifications

When the architect wishes to specify linoleum floors for all or any part of a building, the following paragraphs may be copied directly into his specifications:

"Armstrong's Linoleum, in the patterns, colorings, and gauges herein specified, shall be furnished and installed on the floor areas listed below:

Note: Here list the floor areas to be covered with linoleum and the pattern, coloring, and gauge to be installed on each area.

"All linoleum floors covered by these specifications are to be installed in accordance with the manufacturer's Specification No. 1 given on Armstrong's Page 7 of SWEET'S ARCHITECTURAL CATALOGUES, Twenty-sixth Edition, 1931-1932, and the linoleum contractor's bid on linoleum shall include all the labor and materials—felt, paste, cement, etc.—required to install the linoleum in accordance with these specifications."

General Notes and Provisions for Work of Related Trades

The following provisions observed in the architect's specifications for concrete work, carpentry, etc., in combination with the above paragraphs, will insure satisfactory installation of Armstrong's Linoleum Floors over either wood or concrete base.

(1) *Linoleum floors should not be installed in basements or on any cement floor in direct contact with the ground, unless the base, floors, and walls below grade have been thoroughly dampproofed and are absolutely dry before the floor is laid.* (Specifications will be furnished on request.)

(2) Wood floors to which linoleum is to be applied should preferably be double floors with the top floor on the diagonal. Underfloors may be of rough sheathing, well seasoned, the ends of all boards to come directly over bearings and all to be nailed to each and every bearing with 8d nails.

(3) Top floors to which linoleum floors are to be applied (whether single or double floors) should be of kiln dried, ⅞-in. tongued-and-grooved boards, free from large or loose knots, not more than 3-in. face and thoroughly blind nailed and face nailed (if single floors) to each and every bearing, and, if double floors, blind nailed to the underfloor and floor joists with 8d nails.

(4) The surface of the top wood floor to which linoleum is to be applied should be true, even, level, clean, and dry, and should be ⅛-in. plus the thickness of the gauge of linoleum selected (see Table of Working Gauges on page 2) below the desired finished linoleum floor level. It is sometimes cheaper and more practical, however, to continue wood floors on which linoleum is to be laid at the same general level with other floors, and then protect the edge of the linoleum at doorways with a wood or metal binder.

(5) Where a wood base is used in connection with linoleum floors, the carpenter work specifications should provide for a quarter-round or suitable shoe nosing to cover the junction of baseboard and linoleum, to be installed by the carpenter contractor after the linoleum is laid.

(6) Concrete floors must be brought to a true, even, and level surface, ⅛-in. plus the thickness of the gauge of linoleum selected below the desired finished linoleum floor level.

(7) A chalky or dusty surface on concrete floors should be corrected by the application of a good concrete hardener.

(8) When single strips of linoleum are laid as runners in corridors, hallways, church aisles, etc., the edges of the linoleum must be protected with a binder of wood or metal. Similar protection must always be given linoleum at doorways, where the underfloor is not countersunk or there is no threshold against which to butt the linoleum.

(9) The general contractor (or owner) must make provision for maintaining a temperature of 70° F. in all rooms where linoleum floors are to be laid.

(10) For filling cracks and seams in concrete underfloors, plaster of paris may be used. Wide cracks in wood underfloors should be filled with strips of wood. This work should be done by the general contractor before the linoleum contractor takes charge.

(11) *When the floor is steel, tile, terrazzo, or any other smooth dense surfaced floor,* a layer of Armstrong's Lining Felt, weighing 1½ lb. to the yard, shall first of all be laid with Armstrong's Waterproof Cement, carefully butting the edges and fitting it neatly to the room. After allowing the cement to dry for at least six hours, the linoleum can be laid in accordance with paragraph 5b of Specification I.

(12) *When the floor is painted or varnished,* the floor must be sanded to remove the paint or varnish, or paint and varnish remover may be used.

(13) *When the floor is oiled,* the floor must be thoroughly scrubbed with a strong lye solution and then with tepid water and mild soap. This process must be repeated every 24 hours until there is no further darkening of the surface of the floor by the oil.

(14) *When the floor is waxed,* remove the wax with gasoline or a strong alkaline solution and then wash with tepid water and mild soap.

Linoleum Specifications

Sentences and phrases in parenthesis ( ) should be used only as applicable to any particular job. Material in brackets [ ] is explanatory only

Specification I. Laying Linoleum

(1) Scope of Work—The linoleum contractor shall furnish and install the material hereinafter specified on the floor areas (listed below or indicated on the blue prints).

(2) Areas to Be Covered—[List rooms and areas].

(3) Materials—The linoleum used shall be Armstrong's [Thickness—color—or pattern number]. No seconds or remnants shall be allowed. The linoleum shall be delivered on the job in full rolls. Every roll must be marked with the maker's name and the grade of the linoleum. The linoleum should be subjected to a temperature of 70° F. for at least 24 hours before it is applied.

Exceptions—[Here list any rooms where other patterns are to be used].

Paste and cement shall be Armstrong's Linoleum Paste and Armstrong's Waterproof Cement. [Spreading capacity: paste, about 100 sq. ft. per gal.; cement, 1 gal. for seams and edges of each 40 sq. yds.]

(Felt shall be Armstrong's 1½-lb. Lining Felt.)

(4) Condition of Floors—The linoleum contractor shall inspect the floors before he starts work. He shall accept them only if they are thoroughly seasoned and dry, smooth, and clean, and without cracks or holes. (Concrete floors should be without expansion joints; if they exist the linoleum contractor shall fill them with plaster of paris so that no mark will show through the linoleum. The linoleum contractor shall test concrete floors for moisture in the following way: Place pieces of linoleum, 18x18 ins. or larger, face down on the floor —one at each corner of the room and one near the center— sealing the edges with linoleum cement to prevent evaporation and leave for 24 hours. If the floor is not entirely dry, the face of the linoleum and the floor itself will appear damp. *Laying of linoleum must not proceed until concrete has been thoroughly dried out.*)

(5) Method of Installation—

[Always use the following paragraph when wood floors are to be covered, and in other cases when felt is used.]

(a) Laying Felt—Armstrong's Lining Felt shall be cut to fit the room accurately and edges butted carefully. Armstrong's Linoleum Paste shall be used to fasten the felt to the floor, and the felt shall be rolled thoroughly with a 150-lb. roller to roll out any air bubbles and to insure complete adhesion to the floor.

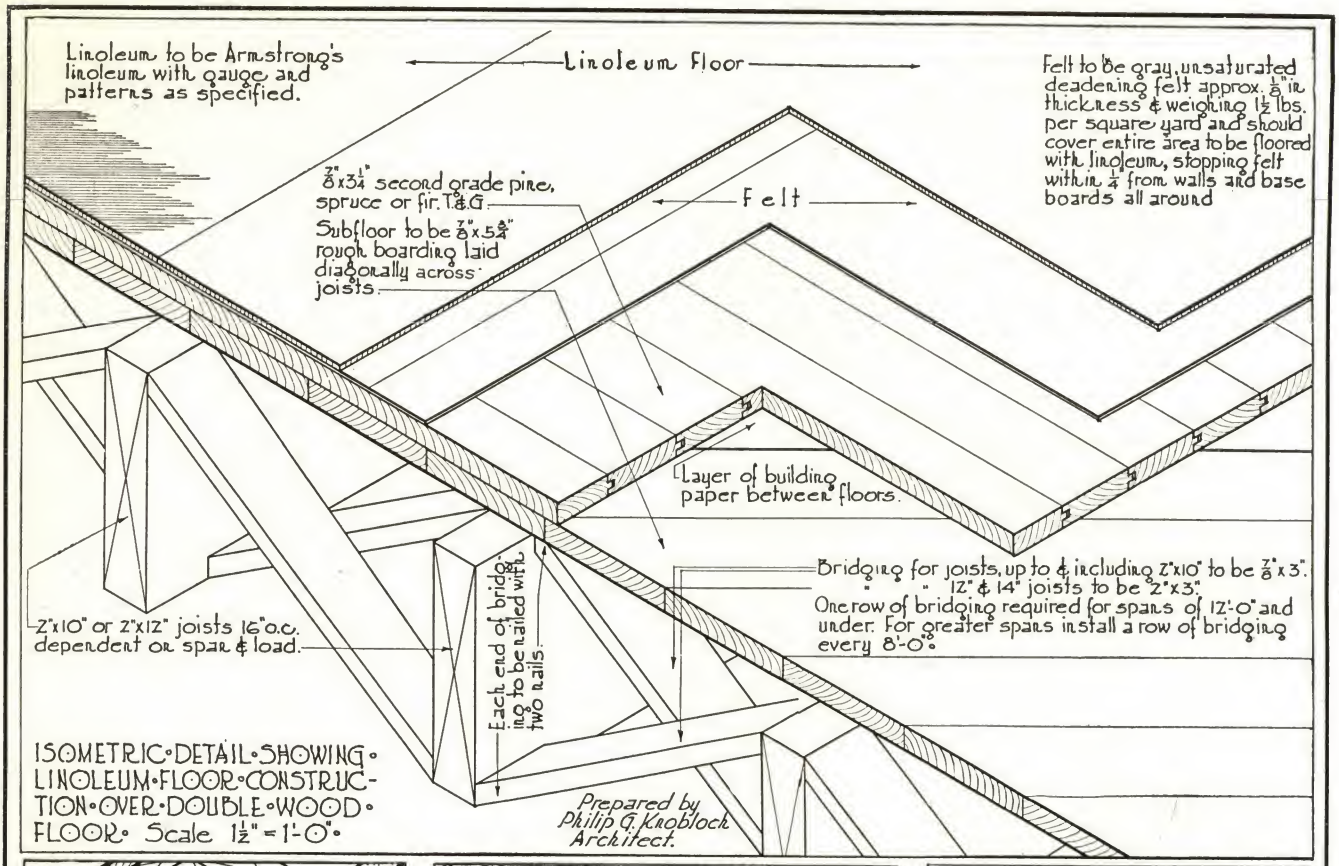
[Use the following paragraph alone where felt is not used and immediately following "a" when felt is used.]

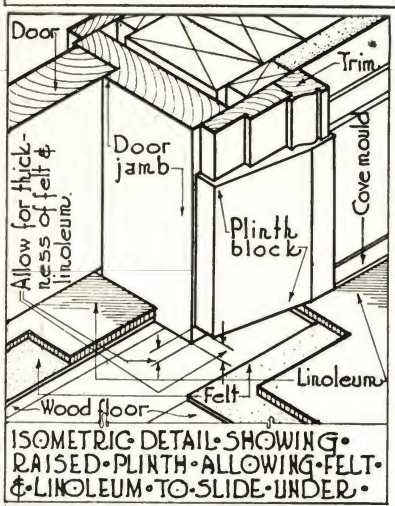
(b) Laying Linoleum—The linoleum shall be cut to fit the room accurately and neatly and shall be laid so as to have the minimum number of seams. No piecing of short ends will be allowed. The body of the goods shall be fastened to the floor to within 5 or 6 ins. of the edges, with Armstrong's Linoleum Paste. All seams and edges shall be waterproofed with Armstrong's Waterproof Cement.

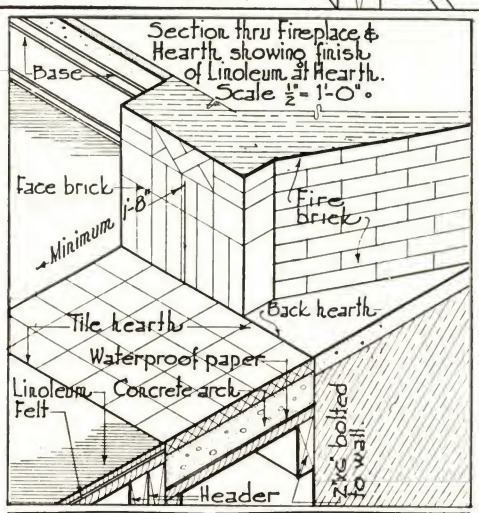
(In laying strips of plain or Jaspé linoleum the edges must be lapped ½-in. and when trimmed both pieces shall be cut through simultaneously by hand or with a seam cutting tool to insure a perfectly tight seam.)

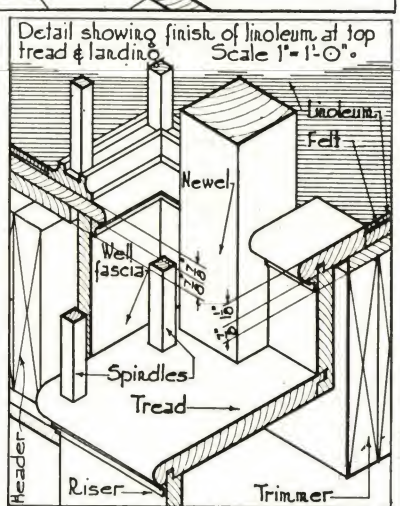
(In laying patterned linoleum, the edges shall be carefully butted and the pattern matched.)

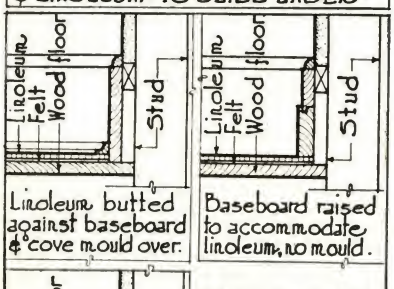
As soon as the linoleum has been pasted down, it shall be thoroughly rolled from the center out to insure complete adhesion and to remove all air bubbles. (At least two hours shall be

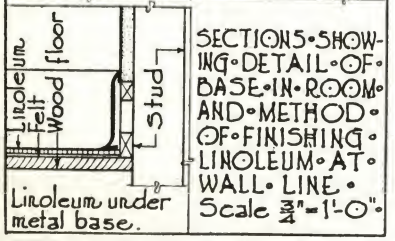

Linoleum to be Armstrong's linoleum with gauge and patterns as specified.
Linoleum Floor
Felt to be gray, unsaturated deadening felt approx. 1/8" in thickness & weighing 1½ lbs. per square yard and should cover entire area to be floored with linoleum, stopping felt within ¼ from walls and base boards all around
Felt
8"x3¼" second grade pine, spruce or fir T&G
Subfloor to be 7/8"x5¼" rough boarding laid diagonally across joists
Layer of building paper between floors.
Bridging for joists, up to & including 2"x10" to be 7/8"x3".
" 12" & 14" joists to be 2"x3".
One row of bridging required for spans of 12'-0" and under. For greater spans install a row of bridging every 8'-0".
2"x10" or 2"x12" joists 16" o.c. dependent on span & load.
Each end of bridging to be nailed with two nails
ISOMETRIC·DETAIL·SHOWING· LINOLEUM·FLOOR·CONSTRUCTION·OVER·DOUBLE·WOOD· FLOOR· Scale 1½" = 1'-0"·
Prepared by Philip G. Knobloch Architect.


Door
Trim
Door jamb
Allow for thickness of felt & linoleum.
Plinth block
Cove mould
Linoleum
Felt
Wood floor
ISOMETRIC·DETAIL·SHOWING· RAISED·PLINTH·ALLOWING·FELT· &·LINOLEUM·TO·SLIDE·UNDER·

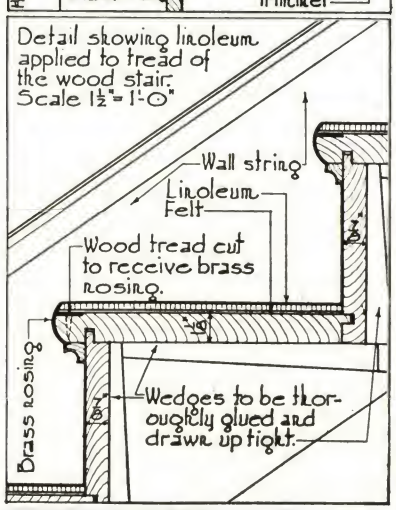

Section thru Fireplace & Hearth showing finish of Linoleum at Hearth. Scale ½" = 1'-0"·
Base
Face brick
Minimum 1-8"
Fire brick
Tile hearth
Back hearth
Waterproof paper
Concrete arch
Linoleum
Felt
Header
Tie bolted to wall

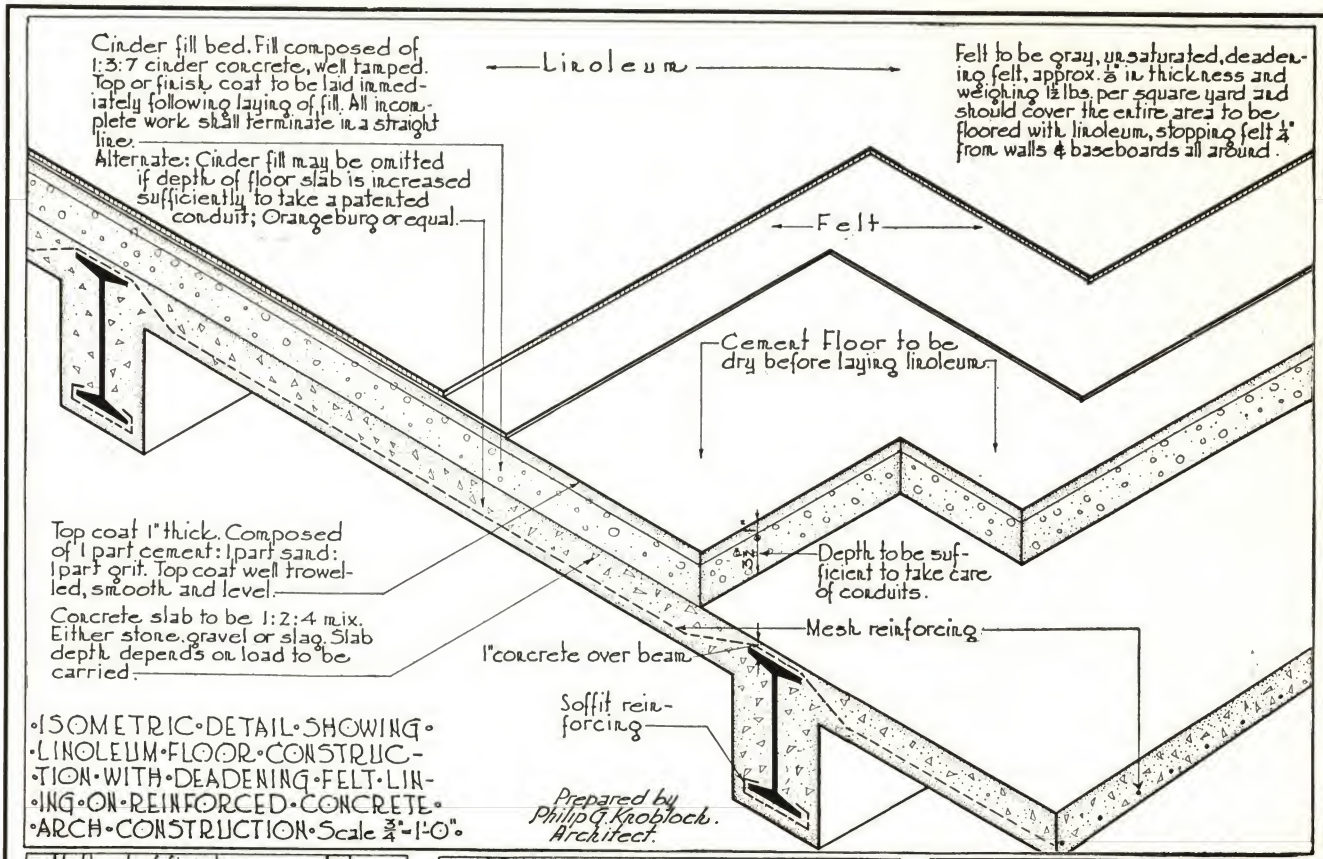

Detail showing finish of linoleum at top tread & landing Scale 1"=1'-0"·
Linoleum
Felt
Newel
Well fascia
Spindles
Tread
Header
Riser
Trimmer


Linoleum
Felt
Wood floor
Stud
Linoleum butted against baseboard & cove mould over.
Baseboard raised to accommodate linoleum, no mould.

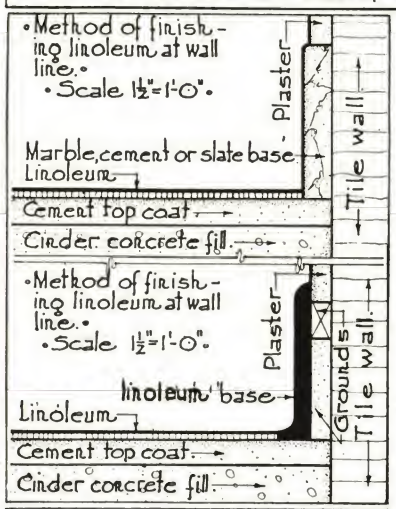

Linoleum
Felt
Wood floor
Stud
Linoleum under metal base.
SECTIONS·SHOWING·DETAIL·OF· BASE·IN·ROOM· AND·METHOD· OF·FINISHING· LINOLEUM·AT· WALL· LINE· Scale ¾"=1'-0"·

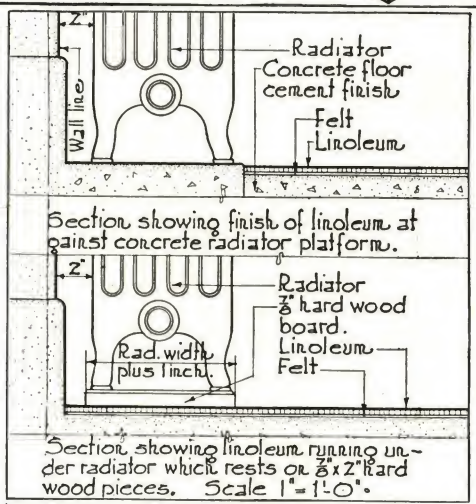

Sliding shoe, to be used on furniture as protection to linoleum, made by Onward Mfg. Co., Menasha, Wis., and available through office furnishing retailers in practically any city

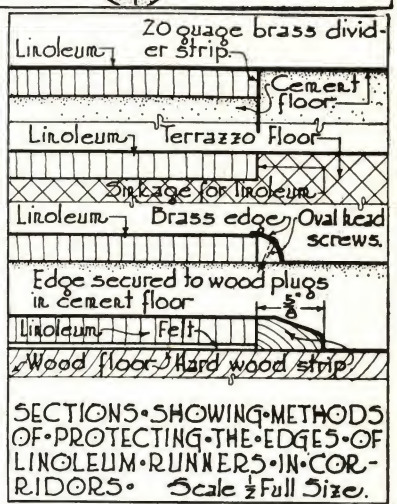

Detail showing linoleum applied to tread of the wood stair. Scale 1½"=1'-0"
Wall string
Linoleum
Felt
Wood tread cut to receive brass nosing.
Brass nosing
Wedges to be thoroughly glued and drawn up tight.

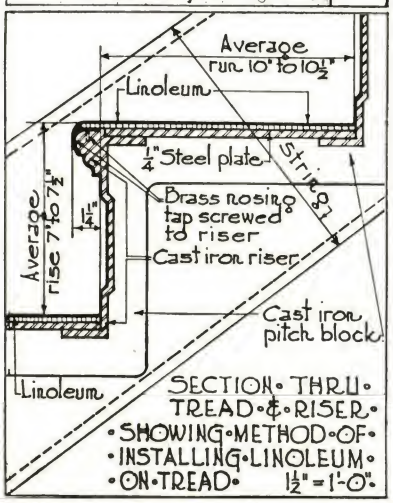


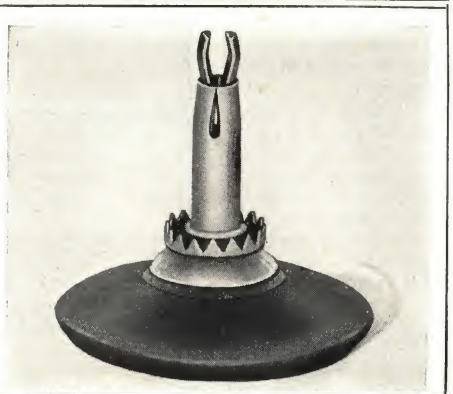
•ISOMETRIC•DETAIL•SHOWING• •LINOLEUM•FLOOR•CONSTRUC- •TION•WITH•DEADENING•FELT•LIN- •ING•ON•REINFORCED•CONCRETE• •ARCH•CONSTRUCTION•Scale ¾"-1'-0"



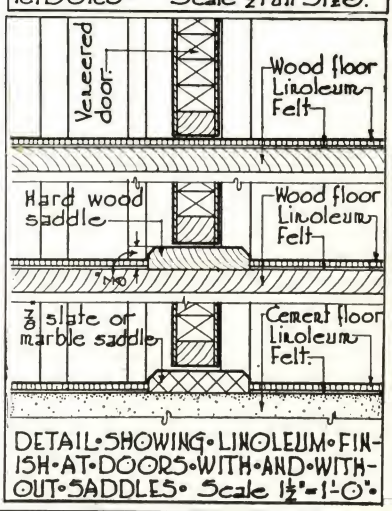








This improved furniture glider, called No-Mar Furniture Rest, is sold by the Bassick Co., Bridgeport, Conn. Made in several sizes. Finished in dark brown. Sold by furniture dealers



allowed after rolling for the paste to set; then seams of plain or Jaspé shall be cut.) Unpasted edges of linoleum strips shall be lifted and each seam sealed with waterproof cement. Edges of linoleum strips shall be put back in place and all seams and edges rolled and weighted until firm adhesion has been made.

(6) Cleaning—The linoleum contractor shall take off all spots of cement with a 2% solution of sodium hydroxide, and shall remove all scraps and other material from the building, leaving the floor broom clean and in good condition.

(7) Inspection—As soon as the linoleum floors have been completely installed (waxed and polished) the linoleum contractor shall notify the architect (or owner) to give him an opportunity to inspect the completed job.

(8) Protection—After the linoleum floors have been inspected and approved, the general contractor shall cover with heavy paper the linoleum in those rooms where painting or other further work is to be done, as protection until the building is ready for occupancy.

(9) Lighting, Heating, Hoisting, and Power—Without cost to the linoleum contractor, the owner or general contractor shall maintain a temperature of at least 70° F. during the time the linoleum work is being done; he shall light the rooms sufficiently for efficient work; he shall furnish hoisting service (he shall furnish whatever power is necessary to scrub and polish the floor).

(10) Guarantee—The linoleum contractor shall guarantee the floor against all defects in material and workmanship for one year from date of completion of the job.

Other Types of Linoleum Installations

For specifications covering other types of linoleum installations and the dampproofing of concrete floors, write the ARMSTRONG CORK COMPANY, Floor Division, Lancaster, Pa.

Method of Maintaining Linoleum Floors

The care of linoleum has for years been given much attention and study by the Armstrong Research Department, both in its laboratories and in the field. The development of the Accolac Process is one of the results of this research work. By this process which seals the pores of the material, the surface of Armstrong's Linoleum is rendered practically dirtproof and stainproof. The result is a satin-smooth surface.

Armstrong's Linoleum takes a beautiful wax finish, and on large areas, where traffic is heavy, waxing and polishing is the recommended treatment. As the surface of the linoleum is effectively sealed by the Accolac Process, only a small quantity of wax is required.

On small areas, where traffic is not severe, as in residences, small offices, shops, etc., this Accolac Process surface can be easily and beautifully maintained with a simple daily dust brushing or dry mopping. As appearance requires, the linoleum may be washed with clear warm water, or suds made with a mild soap like Ivory. The surface should then be polished about every six months, as appearance requires and traffic makes necessary, with Armstrong's Linoleum Wax.

Floors on which things are spilled, as in kitchens and bathrooms, should be given an occasional coat of Armstrong's Linoleum Lacquer. *Never attempt to relacquer waxed linoleum without first removing all the wax.*

Also, where dirt and mud are tracked in from the street, a thorough washing with an occasional application of Armstrong's Linoleum Lacquer is recommended. But even on these restricted areas a properly developed wax finish forms a lustrous film, which takes the wear and also prevents the grime from being pounded down into the surface.

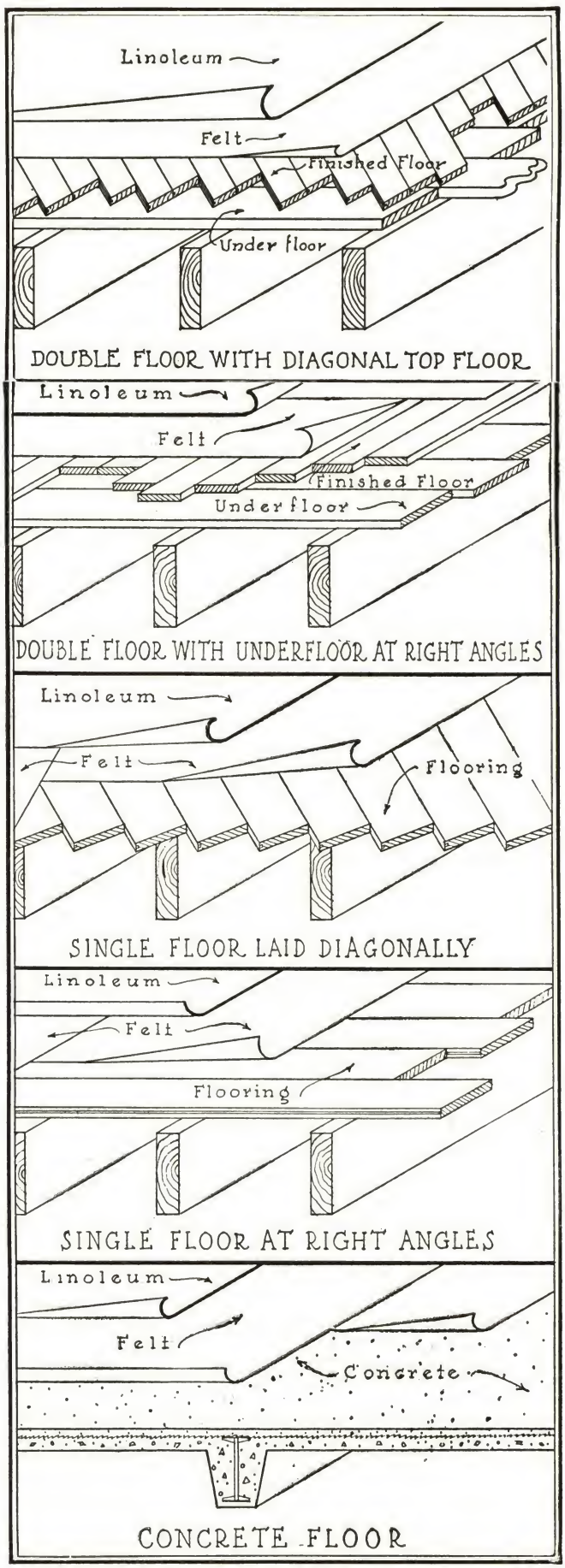
Daily or occasional polishings with an electric floor machine will help maintain the fine finish, with judicious applications of liquid wax wherever appearance demands. A complete rewaxing of the linoleum should prove necessary only a few times a year, depending on the severity of the usage of the floor.

Neither alkaline soaps nor scrubbing powders should be used on linoleum. Automobile and mild household soaps, such as Ivory, are recommended. A complete list of soaps that have been tested and found safe for linoleum will be sent on request.

Linoleum and the Fire Hazard

Scientific fire tests performed under exactly similar conditions on both linoleum and maple floors have shown that linoleum does not burn so readily nor hold fire so long as wood.

Linoleum is given a credit of 7% over wood floors in fireproof buildings by the Western Actuarial Bureau. This rating places linoleum in the same classification as concrete, terrazzo, and ceramic tile.



Method of Laying Linoleum and Felt Over Various Types of Floor Construction

Armstrong's Linotile, Armstrong's Cork Tile, and Armstrong's Asphalt Tile

Armstrong's Resilient Tile Floors—Available in a wide variety of colors and sizes, Armstrong's Linotile, Cork Tile, and Asphalt Tile afford ample opportunity for the selection of individual designs and color schemes. They are sold and installed by flooring contractors handling Armstrong products.

Guarantee—Armstrong's Linotile, Cork Tile, and Asphalt Tile are guaranteed by the ARMSTRONG CORK COMPANY, Floor Division, against defect in manufacture. The installation of floors will be guaranteed by local contractors who sell and lay the floors.

Short Specification—Floors of Armstrong's (Linotile, Cork Tile, Asphalt Tile) of thickness, color, and design to be approved by the architect (owner) shall be furnished and installed in accordance with the standard Armstrong Specifications, by a qualified handler of Armstrong's (Linotile, Cork Tile, or Asphalt Tile) whose work has been approved by the ARMSTRONG CORK COMPANY. (Detailed specifications are available on request.)

Samples and Literature—The book, "Custom-Built Floors of Cork," containing full information on Armstrong's Linotile and Cork Tile, with designs illustrated in full color, will be sent on request, with sample tiles. An illustrated folder on Armstrong's Asphalt Tile is also available.

Armstrong's Linotile

Linotile is a composition of powdered cork, oxidized linseed oil, gums, and pigments, thoroughly mixed and calendered into sheets ¼- and 3/16-inch thick. After being subjected to a seasoning process, these are cut into square or oblong tiles of various sizes and into narrow strips used for interlining between the tiles.

Advantages—Because of the elasticity of the ingredients, Linotile is resilient and restful underfoot, non-slippery, and practically noiseless. It is sanitary, soilproof, and easy to clean.

Linotile can be laid over any smooth, dry, suspended base—wood, concrete, or metal. Over a wood base it is essential that lining felt be used to take up seasonal expansion and contraction. The use of lining felt is optional on metal or concrete. Special dampproofing is required when Linotile is installed over a concrete base which rests directly on the ground.

Because of its wide range of colors and sizes, Linotile can be laid in a great variety of designs and lends itself readily to individual treatment.

Durability—Linotile will not splinter; neither will it crumble nor "dust" like hard, brittle materials.

Its resistance to abrasion is such that, when properly laid and cared for, Linotile will last for years under heavy traffic.

As Linotile does not appreciably expand or contract, it does not buckle or warp on the floor.

Sizes and Shapes—Linotile is made in thirteen plain and seventeen marble colors and in the following standard sizes:

SQUARES—2, 3, 4, 6, 8, 9, 10, 12, 16, 18, 24, and 30 inches.

OBLONGS—2x4 in.; 2x6 in.; 2x8 in.; 3x6 in.; 3x12 in.; 4x8 in.; 4x16 in.; 6x9 in.; 6x9½ in.; 6x12 in.; 6x18 in.; 6x36 in.; 8x16 in.; 9x18 in.; 9x36 in.; 12x18 in.; 12x24 in.; and 12, 18, 21, 24, 27, and 30x36 in.

INTERLINING STRIPS—For use between tiles, ¼, 3/8, ½, ¾, and 1 in. wide.

BORDER FEATURE STRIPS—In any width from one inch to four inches and of any length between 18 and 36 inches.

Special Designs—Linotile Linosets, feature inset figures, in any combination of two colors, as well as any special designs, can be cut to order.

Cove and Base—Seven plain and six marble colors, 4 inches and 6 inches high. Comes in 20-inch lengths.

Beveled Linotile Edging—One inch by 36 inches in all plain and marble colors.

Armstrong's Cork Tile

Armstrong's Cork Tile is made from a select grade of granulated corkwood carefully cleaned, compressed in molds, and baked. The effect of the heat is to drive off any moisture and to liquefy the natural gums in the cork which act as a binder and cement the separate particles together. By varying the time of baking the three cork tile shades—light, medium, and dark brown—are produced.

After removal from the molds, the sheets are cut into tiles, 5/16- and ½-inch in thickness, of the desired sizes and colors.

Advantages—Armstrong's Cork Tile can be laid over any smooth, dry, suspended base—wood, concrete, or metal. Over a wood base it is essential that lining felt be used to take up seasonal expansion and contraction. The use of lining felt is optional on metal or concrete. Special dampproofing is required when cork tile is installed over a concrete base which rests directly on the ground.

Armstrong's Cork Tile is yielding and practically noiseless underfoot. Due to the frictional quality of cork, it affords a firm and sure foothold even when laid on a sharp incline.

Cork is a nonconductor of heat; hence, a floor of cork tile is always comfortable. In cold weather it does not permit the heat to be drawn away from the feet, as is the case with a hard tile or concrete floor.

While not fireproof, Armstrong's Cork Tile is fire-retarding. It will not burn or support combustion without the application of heat from some external source.

Durability—Armstrong's Cork Tile will meet the most exacting demands on the score of durability. The toughness and resilience of the cork and the tenacious binding quality of the natural gum give it a high power of resistance to wear, abrasion, and shock. It will not "dust" or crumble.

Durability has a most important bearing on the question of price. The first cost of Armstrong's Cork Tile, while slightly higher than that of some other materials, is not excessive when considered in relation to the length of service rendered and the many advantages afforded.

Colors, Shapes, and Sizes—Armstrong's Cork Tile is made in three shades—light, medium, and dark brown—and in the following shapes and sizes:

SQUARES—2, 3, 4, 6, 9, and 12 inches.

OBLONGS—2x6 in.; 2x9 in.; 3x9 in.; 3x12 in.; 4x12 in.; 6x9 in.; 6x12 in.; 6x18 in.; 6x36 in.; 9x18 in.; 9x36 in.; 12x18 in.; 12x24 in.; and 12x36 in.

BORDER FEATURE STRIPS—In any width from one inch to four inches and of any length between 18 and 36 inches.

Cove and Base—Sanitary cove and base in the standard 6-inch height are furnished in all three shades.

Armstrong's Asphalt Tile

Armstrong's Asphalt Tile is a new resilient floor designed especially for areas where linoleum, Linotile, or cork tile cannot be used satisfactorily. It is made of inert raw materials—asphalt, asbestos fibre, and mineral coloring pigments.

Advantages—Armstrong's Asphalt Tile is not affected by moisture. It can be installed at or below grade level in basements and on other floors that are in direct contact with the ground but which are not subject to hydrostatic water pressure.

It is inexpensive both in first cost and in maintenance.

Permanently resilient, comfortable, and quiet because the tiles do not harden with age or lose their life.

Easily cleaned with soap and water (approved list of soaps will be sent on request). The structural strength is not impaired by alkaline or acid substances.

It is comfortable, quiet, non-slippery, fire-resisting, and forms a good electrical insulator.

Durability—Armstrong's Asphalt Tile will render unusually long service, even under heavy traffic and severe conditions. It is tough, resists abrasion and shock, and does not disintegrate or crumble.

The only floors for which asphalt tile is not recommended are those on which large amounts of oil or grease are spilled. Such conditions cause bleeding and discoloration.

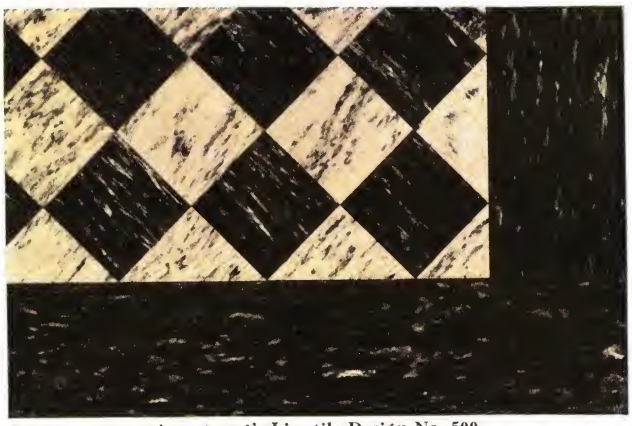
Sizes and Shapes—Armstrong's Asphalt Tile is made in nine plain colors and in the following regular sizes:

SQUARES—6x6 in.; 9x9 in.; and 12x12 in.

OBLONGS—6x24 in.; 9x18 in.; 12x24 in.; and 18x24 in.

BORDER FEATURE STRIPS—Supplied in 1-inch and 2-inch widths and 24 inches long.

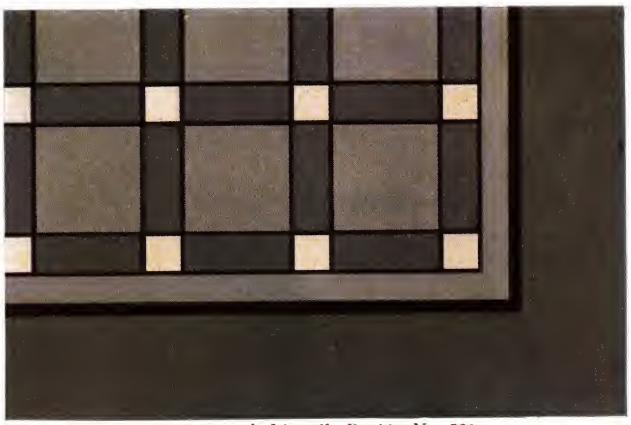
COVE AND BASE—Six inches high, available in all colors.



Armstrong's Linotile Design No. 500
Consists of: Tourmaline No. 100 and Matrix No. 110



Armstrong's Linotile Design No. 513
Consists of: Ivory No. 20, Light Gray No. 52, and Jade No. 70



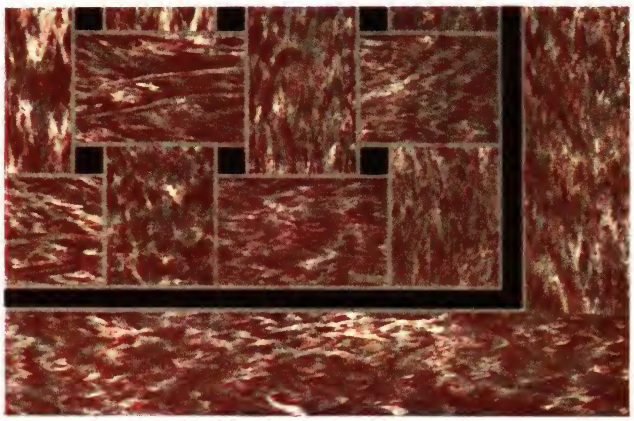
Armstrong's Linotile Design No. 531
Consists of: Ivory No. 20, Black No. 30, Light Gray No. 52 and Dark Gray No. 54



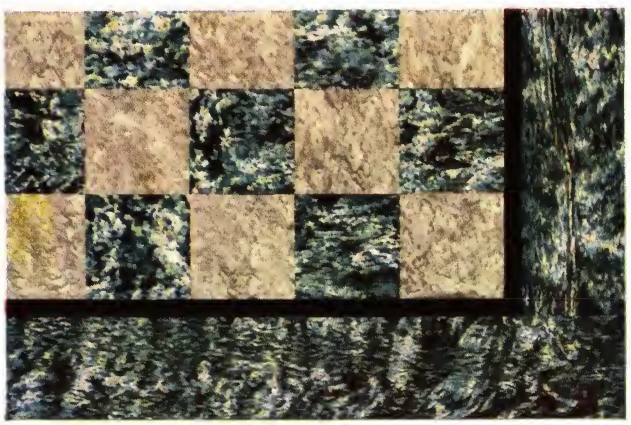
Armstrong's Linotile Design No. 650
Consists of: Tourmaline No. 100 and Pearl No. 140



Armstrong's Linotile Design No. 551
Consists of: Black No. 30 and Sienna No. 150



Armstrong's Linotile Design No. 563
Consists of: Black No. 30, Light Gray No. 52, and Sicilian No. 181

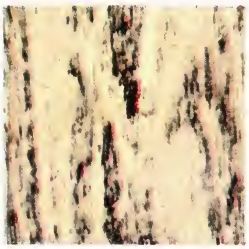


Armstrong's Linotile Design No. 523
Consists of: Black No. 30, Alabaster No. 112, and Ocean Green No. 131

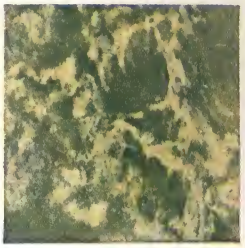


Armstrong's Linotile Design No. 651
Consists of: Agate No. 102 and Algerian No. 124

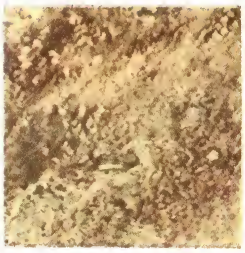

Tourmaline No. 100

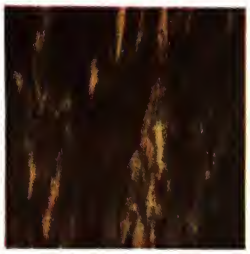

Matrix No. 110

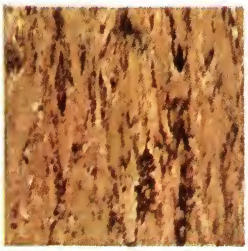

Ocean Green No. 131

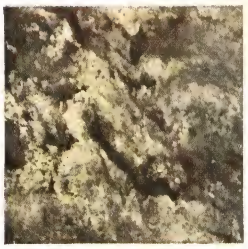

Zircon No. 134


Italian No. 141

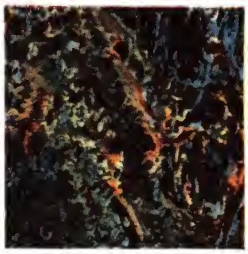

Alabaster No. 112


Agate No. 102


Algerian No. 124

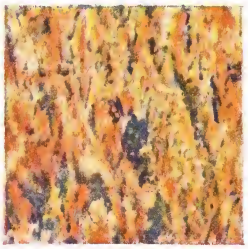

Pearl No. 140


Sienna No. 150


Barite No. 103


Autumn No. 122


Delft No. 161


Celestite No. 162


Sicilian No. 181


Cornelian No. 151


Onyx No. 120


Red No. 10


Ruby No. 11


Ivory No. 20


Black No. 30


Sky No. 41


Navy No. 46


Light Gray No. 52


Dark Gray No. 54


Light Brown No. 62


Dark Brown No. 64


Jade No. 70


Emerald No. 75


Orange No. 80



Armstrong's Cork Tile—Light



Armstrong's Cork Tile—Medium



Armstrong's Cork Tile—Dark



Armstrong's Cork Tile Design No. 700
Consists of: Medium Shade and Dark Shade Cork Tiles



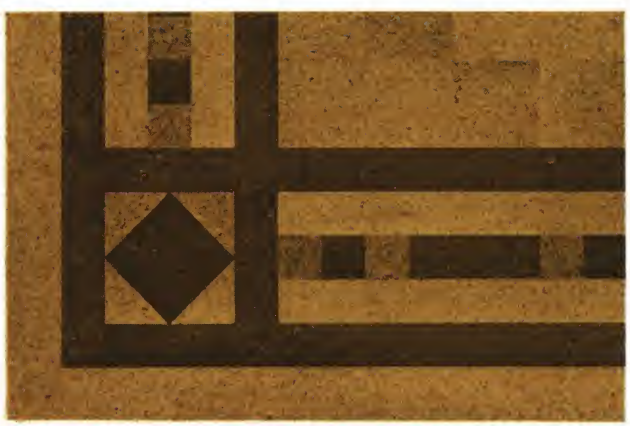
Armstrong's Cork Tile Design No. 710
Consists of: Medium Shade and Dark Shade Cork Tiles



Armstrong's Cork Tile Design No. 720
Consists of: Light Shade and Dark Shade Cork Tiles



Armstrong's Cork Tile Design No. 730
Consists of: Light Shade, Medium Shade, and Dark Shade Cork Tiles



Armstrong's Cork Tile Design No. 740
Consists of: Light Shade, Medium Shade, and Dark Shade Cork Tiles



Armstrong's Cork Tile Design No. 750
Consists of: Medium Shade and Dark Shade Cork Tiles

CATALOGUE

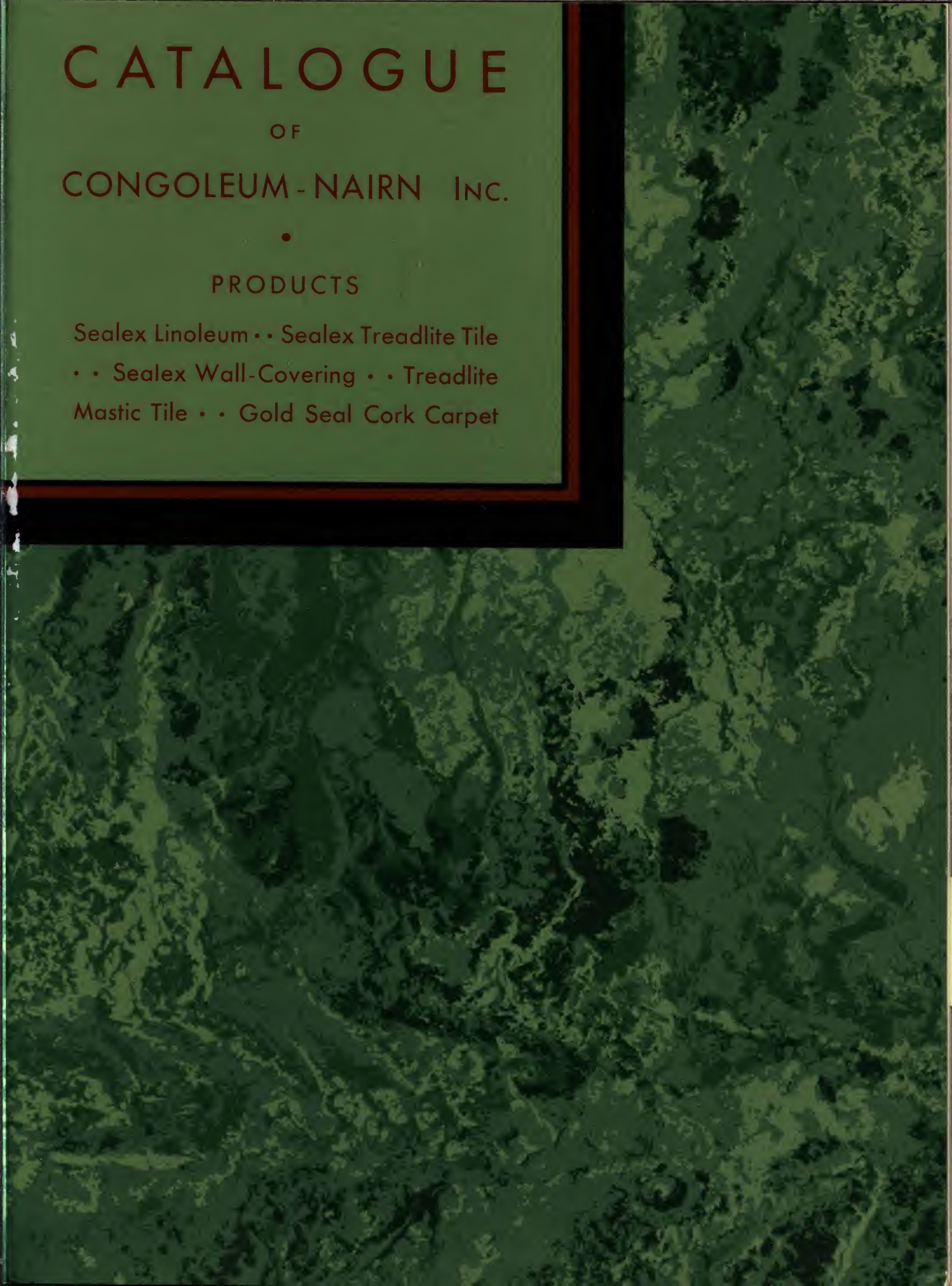
OF

CONGOLEUM-NAIRN INC.

•

PRODUCTS

Sealex Linoleum • • Sealex Treadlite Tile • • Sealex Wall-Covering • • Treadlite Mastic Tile • • Gold Seal Cork Carpet



CONGOLEUM-NAIRN ANNOUNCES TWO NEW MATERIALS

Sealex Wall-Covering

In numerous respects, this new wall-covering has the advantage over older types of walls. It is less expensive than tile or marble, has equal decorative value and is much easier to apply. Installations in various types of buildings indicate that wall surfaces may be covered at very moderate cost considering the beauty and utility of the finish.

An entirely new conception in wall-covering, this material has already made a most successful debut. It comes in many beautiful light colorings, three of which are shown on page 20. Making what is virtually a one-piece wall, it is ideal for use with colored bathroom and kitchen equipment, and provides an extremely sanitary and easily cleaned wall surface.

Apartment house owners and home builders will welcome this opportunity to create de luxe rooms at relatively low cost. Also, it will be widely used in public buildings and commercial interiors for wainscot and panelling work, since it enables the architect to design sumptuous effects at reasonable cost.

Further information on this new type of wall-covering will be furnished upon request. Inquiries addressed to our Architectural Service Department will receive prompt attention.

Treadlite Mastic Tile

This new flooring has been added to our line to answer special requirements. It makes an excellent floor for public buildings, commercial interiors, etc., on and below grade, and where economy is of prime importance.

Treadlite Mastic (Asphalt) Tile is constructed from the finest asphaltic products. It comes in a variety of solid colors and offers the architect a wide opportunity to obtain decorative effects by the combination and arrangement of contrasting colored tiles. Additional information will be found on page 5.

CONGOLEUM-NAIRN INC.

Manufacturers of Sealex Linoleum Floors, Wall-Covering and Mastic Tile

TELEPHONE
KEarny 2-1000

KEARNY, N. J.

BRANCH OFFICES

ATLANTA, GA., Healey Building, 57-59 Forsyth Street, N. W.
BOSTON, MASS., 20 Providence Street
CHICAGO, ILL., 14 East Jackson Boulevard
DALLAS, TEX., Southwestern Life Building, Main and Akard Streets
DETROIT, MICH., 647 Griswold Street
KANSAS CITY, MO., 10 E. 17th Street
MINNEAPOLIS, MINN., Plymouth Building, 6th Street and Hennepin Avenue
NEW ORLEANS, LA., Pere Marquette Building, 150 Baronne Street
NEW YORK, N. Y., 295 Fifth Avenue
PHILADELPHIA, PA., 1421 Chestnut Street
PITTSBURGH, PA., 717 Liberty Avenue
SAN FRANCISCO, CALIF., 180 New Montgomery Street

MILLS AND FACTORIES

KEARNY, N. J. — CAMDEN, N. J. — MARCUS HOOK, PA. — SALEM, N. J. — ASBESTOS, MD.

Products

SEALEX LINOLEUM: Battleship; Plain; Jaspé; Straight-Line Inlaid Embossed; Karnean Marbled Inlaid; Moulded Inlaid; Granite; Veltone.

GOLD SEAL CORK CARPET.

SEALEX TREADLITE LINOLEUM TILE: Plain Colors and Marble-ized.

TREADLITE MASTIC TILE: Plain Colors.



Use and Choice of Sealex Materials

The patterns reproduced on pages 15 to 20 give some idea of the extraordinary versatility of *Sealex* Linoleum and *Sealex* Treadlite Linoleum Tile. Congoleum-Nairn offers hundreds of ready-made patterns and boundless opportunity for distinctive, custom-made floors, wherein the pattern may assume almost any form designer chooses.

Considering this endless diversity of pattern, it is not surprising to find *Sealex* materials used in the widest variety of situations. In private homes, they have come out of the kitchen into the living room, dining room and bedrooms. Business offices and smart shops have discovered that *Sealex* Floors make real *selling floors.* In hospitals and schools, *Sealex* Battleship Linoleum has long been recognized as a standard floor. Churches, theatres, gymnasiums, office buildings, clubs, hotels, apartment houses, ocean liners—it is practically impossible to think of any type of structure in which men live, work or play where *Sealex* Linoleum and *Sealex* Treadlite Linoleum Tile have not been used again and again with conspicuous success.

Index to Catalogue

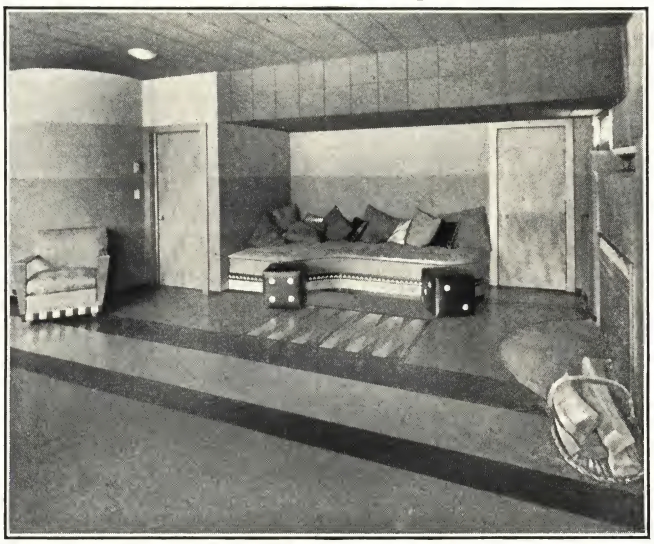
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SEALEX LINOLEUM

CONGOLEUM-NAIRN INC. is among the largest manufacturers of smooth-surface floor-coverings in the world. The company offers a complete line of linoleums which for forty years has represented the highest standards in quality, uniformity and staunch serviceability.

This year the variety of designs available for the architect's use has been greatly increased by the addition of new groups of uniquely decorative patterns. Exclusive developments in manufacturing processes have resulted in the utmost perfection of finish, great flexibility, unsurpassed ease of cleaning and unusual resilience and durability.

Sealex Linoleum takes its name from the exclusive *Sealex Process,* developed and perfected by our technical experts. The effect of the *Sealex Process* is to penetrate and seal the tiny, dirt-absorbing pores of the material, giving to *Sealex* Linoleum practical qualities never before possessed by linoleum.



Game Room Floor (with Glorified Backgammon Board) in the Home of E. W. Mitchell, Buffalo, N. Y.
Such a floor stands up under rough and ready treatment; when waxed it is ideal for dancing

Dirt cannot grind into these floors as into ordinary linoleum. Greases and liquids cannot penetrate them. Even hot fats, fruit juices, ink or ammonia can be easily removed without leaving damaging spots or stains.

Easier cleaning and lower maintenance costs are not the only advantages of these new linoleums. They wear longer, too, and their colors have depth and softness with no suggestion of glossy slipperiness.

TYPES AND DESCRIPTIONS OF SEALEX LINOLEUM

Type	Thickness	Colors	Description
Sealex Battleship Linoleum	Heavy (6 mm.) Medium ($\frac{3}{16}$ in.) Light (3.60 mm.)	Brown No. 1000 Green No. 1001 Terra Cotta No. 1002 Gray No. 1003 Mahogany No. 1004	*Sealex* Battleship Linoleum is manufactured to conform strictly to the rigid requirements of Federal Specifications LLL-L-351. The 6-mm. thickness of *Sealex* Battleship Linoleum—the heaviest grade manufactured—is intended for extreme wear over a long period of years. The $\frac{3}{16}$-in. and light grades will give excellent satisfaction for periods ranging from 10 to 15 years, if properly maintained and given reasonable care in upkeep.
	Medium ($\frac{3}{16}$ in.) Light (3.60 mm.)	Black No. 1005	
Sealex Plain Linoleum	"B" Gauge (3.00 mm.) "D" Gauge (2.00 mm.)	Brown No. 1100 Green No. 1101 Terra Cotta No. 1102 Gray No. 1103 Mahogany No. 1104 Black No. 1105	Exactly the same in quality as our *Sealex* Battleship Linoleum, from which it may be distinguished by the fact that its gauges are lighter and its burlap backing painted instead of plain. Under ordinary traffic conditions, *Sealex* Plain Linoleum will prove as satisfactory as the battleship grade at a material saving in first cost.
	"A" Gauge (3.60 mm.) "B" Gauge (3.00 mm.)	Light Green No. 1109 Yellow No. 1110 Orange No. 1111 Colonial Buff No. 1112 Ivory White No. 1113 Pacific Blue No. 1114	
Sealex Veltone Linoleum	"B" Gauge (2.40 mm.)	Pattern No. 6956 Pattern No. 6954 Pattern No. 6952 Pattern No. 6951 Pattern No. 6959	The Veltone group of patterns stands out as one of the most interesting of all Congoleum-Nairn innovations. There are no tiles, no mortar lines, no repeats of any kind. The gorgeous colors blend and intermingle to produce a type of floor decoration that is absolutely unique.
	Light Battleship Gauge (3.60 mm.)	Pattern No. 2956 Pattern No. 2955 Pattern No. 2954 Pattern No. 2953 Pattern No. 2952 Pattern No. 2951	
		See pages 15 and 16	
Sealex Jaspé Linoleum	$\frac{3}{16}$ in. Gauge (4.80 mm.) "A" Gauge (3.60 mm.) "B" Gauge (3.00 mm.)	Dark Gray No. 1252 Tan No. 1253 Brown No. 1254 Light Gray No. 1255	*Sealex* Jaspé Linoleum has all the recognized advantages of *Sealex* Battleship Linoleum and is manufactured with the same rigid care. The heavier gauges are extremely durable and are made for hard service. The two-toned, veined effect, resembling watered silk in appearance, is exceedingly rich looking and attractive. This type of floor is especially suitable for interiors where a happy medium is desired between a solid-color effect and the more decoratively patterned materials.
	$\frac{3}{16}$ in. Gauge (4.80 mm.) "A" Gauge (3.60 mm.)	Green No. 1256	
	"A" Gauge (3.60 mm.) "B" Gauge (3.00 mm.)	Apple Green No. 1259 Rose Glow No. 1258	
		(See Page 18)	
Sealex Embossed Linoleum (Straight-Line Inlaid)	"A" Gauge (3.00 mm.) "B" Gauge (2.40 mm.)	A variety of plain colors and exclusive marble effects.	*Sealex* Embossed Linoleum is offered in a well-balanced variety of clean-cut, smart-looking patterns. This material captures the quaintness, the charm and even the "feel" of hand-laid tiles. Many patterns are available with a variety of heraldic insets which add interest to the floor and increase the effect of a custom-made appearance.
Sealex Karnean Marbled Linoleum (Straight-Line Inlaid)	"A" Gauge (3.00 mm.) "B" Gauge (2.40 mm.) "D" Gauge (1.91 mm.)	A variety of true marble colorings (See page 17)	The Karnean Marbled group of patterns is one of the most popular types of *Sealex* Linoleum. The patterns reproduce the beautiful variegated veinings and colorings of fine marble, as free from artificiality as quarried stone itself. Patterns range from conservative effects through the conventional square and checkerboard patterns, to more intricately designed effects.
Sealex Moulded Inlaid Linoleum	"D" Gauge (1.80 mm.)	Patterns in a variety of colors	In *Sealex* Moulded Inlaid Linoleum the colors merge softly into one another along the edges of the patterns. This attractive mellow-toned material is especially appropriate for use in homes. It is available in a variety of fire clay designs and cheerful toned carpet effects.
Sealex Granite Linoleum	1.75 mm. (.069 in.)	Green Brown Blue (See page 19)	*Sealex* Granite Linoleum is offered in an all-over granular effect resembling the texture of granite.

TYPES AND DESCRIPTION OF GOLD SEAL CORK CARPET

Type	Thickness	Colors	Description
Polished	5.60 mm.	Brown Green	The outstanding advantage of Gold Seal Cork Carpet is quietness underfoot. The cork content is much coarser and rougher than that of battleship grades and there is considerably more of it in proportion to other materials. It is especially desirable for schools, libraries, auditoriums and other spaces where maximum quiet is required.
Unpolished	6.10	Brown Green	

SEALEX TREADLITE LINOLEUM TILE

Sealex Treadlite Linoleum Tile is a resilient composition of cork, oxidized linseed oil and other gums and pigments. It possesses to a remarkable degree the permanent resiliency, sure foothold and freedom from disintegration so characteristic of cork.

The "mix" of the ingredients which go to make up Treadlite Linoleum Tile is pressed onto a large sheet of heavy mesh burlap. This is removed after the material is thoroughly cured and leaves a corrugated undersurface which insures a perfect bond with the underfloor. The material is then cut into large slabs, stored and machine-cut into the required size of tiles at the factory, which assures absolute accuracy in size and even, straight edges vital to perfect workmanship and good results.

Like *Sealex* Linoleum, *Sealex* Treadlite Linoleum Tile is manufactured by our exclusive *Sealex Process* which gives to this material advantages heretofore unknown to resilient tile floors.

Treadlite Linoleum Tile is non-absorbent; durable even beyond the requirements of the average floor; quiet, bright and clean in appearance; sanitary and easily washed. In fact, it satisfies every utilitarian floor requirement—and is equally at home in the corridor of a great office building or the living room in a private house. It can be adapted to any type of construction and it can be installed on any smooth, solid backing, such as wood, concrete, steel, marble, etc.

The wide choice of colors—plain and marble-ized—affords an opportunity to provide a floor which is artistic, distinctive and thoroughly in keeping with the general scheme of decoration and design of the room in which it is to be installed. There is practically no other floor material available at the reasonable cost of Treadlite Linoleum Tile that so completely fills all of the many requirements of a satisfactory floor installation and is so in keeping with the most luxurious interiors.

TYPES AND DESCRIPTIONS OF SEALEX TREADLITE LINOLEUM TILE

Type	Sizes and Thickness	Colors	Description
Plain colors See Specifications G, page 12.	$\frac{3}{16}$ in. gauge Standard sizes:— 4x8, 4x4, 6x6, 9x9, 12x12, 6x12, 9x18, 12x24 and 18x36 ¼x4, ¼x6, ¼x9, ¼x12, ¼x36, 1x36, 1½x36, 2x36 Special sizes to order	Craft Brown, No. 1000 Moss Green, No. 1001 Terra Cotta, No. 1002 Slate Gray, No. 1003 Mahogany Brown, No. 1004 Stone Gray, No. 1015 Black, No. 1005 Pacific Blue, No. 1036 Fawn Gray, No. 1050 Colonial Buff, No. 1056 Ivory White, No. 1057	The colors available in Treadlite Linoleum Tile compare very favorably with those found in the most expensive ceramic tiles. They have a soft, mellow lustre which is enhanced by waxing.
Marble-ized See Specifications G, page 12.	$\frac{3}{16}$ in. gauge Standard sizes:— Same as above	White Mottled Black, No. 1070 Black Mottled White, No. 1071 White, Green, Black, No. 1072 Red Paisley, No. 1075 Light Sienna, No. 1076 Dark Sienna, No. 1077 Verde Antique, No. 1078 Sea Green, No. 1079	Marble-ized Treadlite Linoleum Tile is constructed of the same ingredients that go into the Plain Color Tiles. A step further, however, is taken in the matter of appearance. By combining in the process of manufacture various colored materials of like composition, the pleasingly irregular variations and beauty of marble grainings are obtained. This floor possesses beauty, utility and comfort to the utmost.

TREADLITE MASTIC (ASPHALT) TILE

Treadlite Mastic Tile is manufactured of the finest materials obtainable for the purpose, the main ingredients used being asphaltic products, gums, fibres, fillers and selected coloring pigments. In combining these ingredients, great care is expended to produce the finest finished product.

Economical in first cost, Treadlite Mastic Tile offers a durable, sanitary, water-resistant, fine appearing floor-covering for use on practically any type of commercial, institutional and educational building construction.

Congoleum-Nairn produces Treadlite Mastic Tile in a wide range of plain colors and standard sizes. These tiles, when combined in diagonal, square or special designs, offer a most desirable basis for decorative schemes on commercial flooring problems.

Treadlite Mastic Tile is manufactured in two thicknesses: ⅛ and $\frac{3}{16}$ in. The lighter gauge is recommended for areas where light traffic will prevail and the heavier gauge is for use where more severe wear is expected.

Treadlite Mastic Tile should be installed in accordance with the manufacturer's specifications and be secured to the underfloor by the use of Congoleum-Nairn tile flooring cement, an asphaltic waterproof material prepared from a special formula.

Complete details and specifications regarding Treadlite Mastic Tile will be furnished on application to any of the district offices listed on page 3 of this catalogue.

INSTALLATION OF SEALEX FLOORS

Sealex Linoleums are sold by leading floor-covering and furniture stores, rug and carpet houses, department stores and flooring contractors throughout the country. Most dealers who carry linoleum have competent laying departments, and bid on furnishing and laying linoleum. Names of reliable firms who handle large installations will be supplied on request. The durability and toughness of cork-composition floors, particularly in the heavier gauges, are universally known and require no additional comment. To obtain the full benefit of this inherent durability, it is extremely important that such floors be installed by skilled mechanics, that highest grade pastes be used, and that the correct method of installation be followed.

Specifications which specify only materials to be used and the method of laying, regardless of how carefully drawn, will not absolutely insure a satisfactory installation. The skilful handling of a linoleum knife, which is so essential in making watertight seams, trimming around pillars, radiators and the like, is not a thing that can be covered in a specification. Such an operation requires considerable skill and experience. It is unquestionably true that the best results and the best value per dollar of cost can be obtained when the architect specifies that the installation be made by one of a number of concerns who specialize in this type of work and maintain standards of workmanship which he knows to be satisfactory.

SERVICE AND GUARANTY BOND

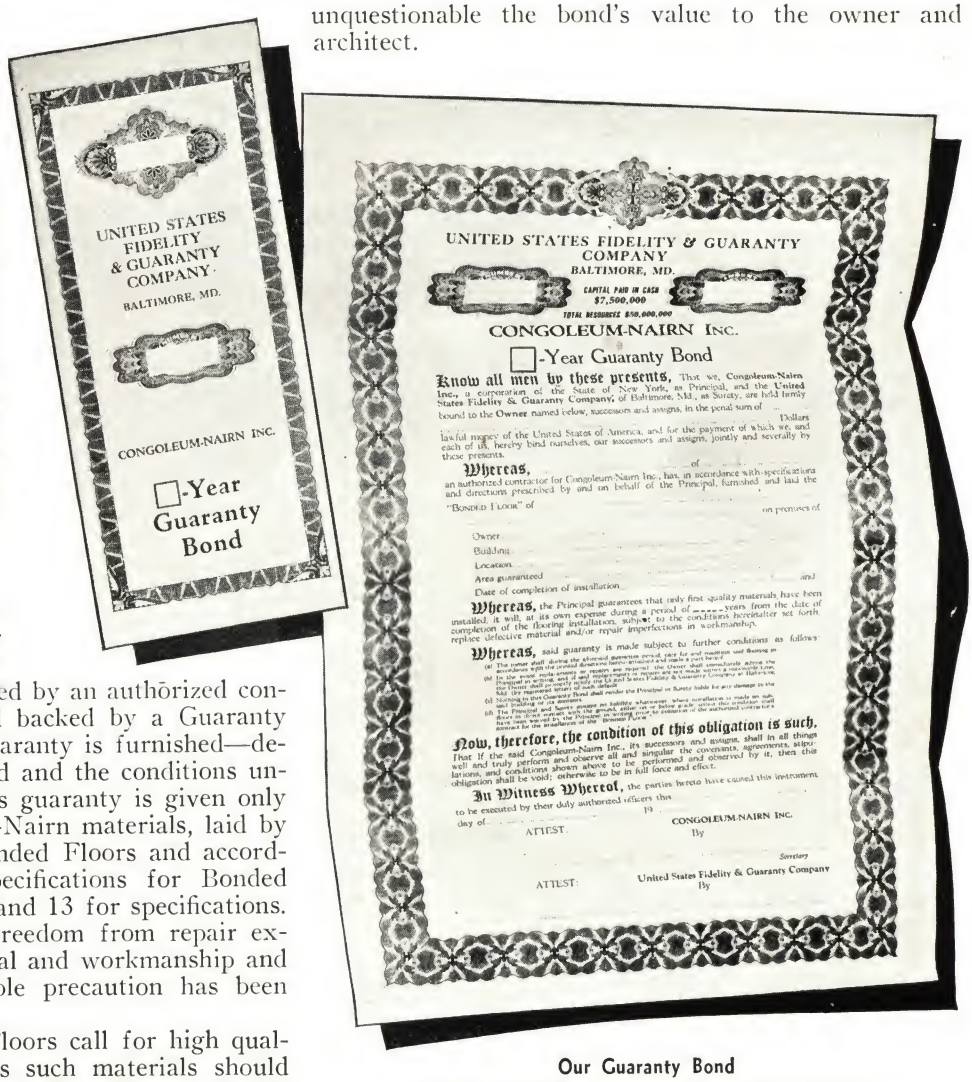
Contract and Architectural Service Division—Installation Service on "Bonded Floors"

A complete flooring service supervised by members of our own staff, is available to architects and building contractors wherever located. This service, offered through authorized contractors of Bonded Floors, covers all types of resilient cork-composition floors. Installations by authorized contractors of Bonded Floors combine the highest grade of materials, the skilful workmanship and the expert supervision which are so essential to proper installation and durability of all resilient floors.

A Guaranty Company Bond

A "Bonded Floor" is a floor of *Sealex* Linoleum, *Sealex* Treadlite Linoleum Tile or *Gold Seal* Cork Carpet, installed by an authorized contractor of Bonded Floors and backed by a Guaranty Bond. A 1, 2, 3 or 5-year guaranty is furnished—depending upon the material used and the conditions under which it is installed. This guaranty is given only on installations of Congoleum-Nairn materials, laid by authorized contractors for Bonded Floors and according to Congoleum-Nairn's specifications for Bonded Floors. See pages 10, 11, 12 and 13 for specifications. The Guaranty Bond insures freedom from repair expense due to defects in material and workmanship and also proves that every possible precaution has been taken to avoid such defects.

Specifications for Bonded Floors call for high quality floor materials installed as such materials should be installed. The bond is tangible evidence of this high quality of materials and workmanship, as well as legal binder and protection against repair expense. Needless to say, such a guaranty can be offered only by a responsible concern, sure of its materials and installation methods. Realization of this truth makes unquestionable the bond's value to the owner and architect.

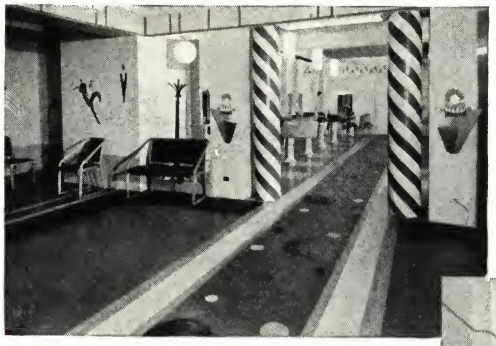


Our Guaranty Bond

Specimens will be sent to any interested Architect

Authorized contractors of Bonded Floors give this bond on installations of *Sealex* Linoleum, *Sealex* Treadlite Linoleum Tile and *Gold Seal* Cork Carpet.

SOME EXAMPLES OF CUSTOM-DESIGNED SEALEX FLOORS



(Above) A colorful and sanitary *Sealex* Floor in the children's barber shop of L. Bamberger & Co., Newark, N. J. Note the inset circles and half moons



(Above) A floor design reflecting the character of a business. Reception room of Radio Station WAAM, Newark, N. J. The letters WAAM were hand cut from *Sealex* Linoleum and inset into the floor



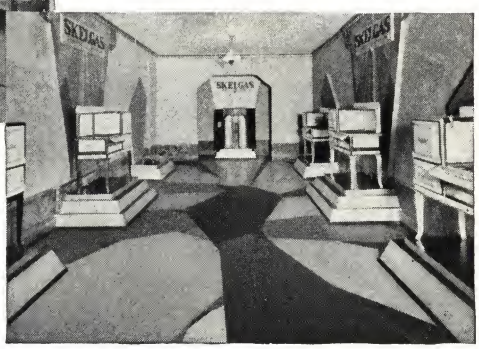
(Above) An unusual type of game-board and floor combined, illustrating the versatility of *Sealex* materials from a design standpoint



(Above) A cheery kitchen floor design in *Sealex* Treadlite Linoleum Tile the colors ranging in brown tones from dark Mahogany Brown to light Colonial Buff



(Above) An excellent illustration of the effective use of an inset. Judicial placement of insets in a floor area makes a pleasant departure from monotony.



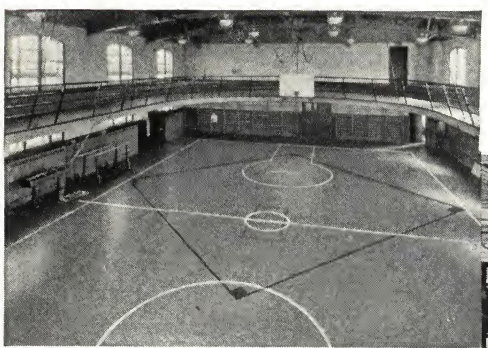
(Above) This modernistic floor of *Sealex* Linoleum is carried out in Black, Dark Gray, Light Gray, Terra Cotta, and Green. A showroom of the Skel-Gas Co., Division of Skelly Oil Co.



(Above) The random flagstone tile effect in First Methodist Church, Kalamazoo, Mich., was installed by an Authorized Contractor of Bonded Floors



(Above) A modernistic dressing room floor of *Sealex* Treadlite Linoleum Tile. The ease with which this material may be cut renders it extremely adaptable for this type of design.



(Above) A floor of Brown *Sealex* Battleship Linoleum in the gym of Blackhawk Park Field House, Chicago, Ill. Marker-outlines for games are inset with red, white and blue strips of the same material. *Gold Seal* Cork Carpet was used for the wainscoting and running track



(Left) That this foyer floor in Pawtucket High School, Pawtucket, R. I., was designed to order is unmistakable. Note how the floor design repeats that of the ceiling above



(Above) A simple yet effective floor design in *Sealex* Treadlite Linoleum Tile is the sole decoration in this modernistic office

(Below) A floor of Treadlite Linoleum Tile. Note the nicety of this installation in that there is no break in the pattern, even at the corners





(Above) The effect of old plank flooring is achieved through the use of tan *Sealex* Jaspé Linoleum, with "dowels," "butterflies," and interliners in Mahogany Brown



(Above) A reception room floored with *Sealex* Treadlite Linoleum Tile in random flagstone design. Three tones of Gray with Black interliners were used



(Above) The trade-mark inset of the Food Craft Shops Inc., executed in *Sealex* Treadlite Linoleum Tile, shows "Polly putting the kettle on"



(Above) Sealex Jaspé Linoleum in an interesting tan and brown parquetry effect. Winonah Public Library, Winonah, N. J.

SPECIALLY DESIGNED AND CUSTOM-LAID FLOORS

Within the past few years there has been an increasing tendency among architects and decorators to regard floors as a decorative element of any interior. The motif or design may be simple or ornate, depending on the nature of the space involved and the use to which the floor is put. Undoubtedly this tendency has developed from a desire to individualize homes, offices and stores, giving each a smart, distinctive note which at the same time, reflects the individual or the business itself. The effect thus achieved helps to create what is so often termed "atmosphere."

The use of *Sealex* Linoleum and Treadlite Linoleum Tile for these specially designed custom-laid floors has steadily increased. This resilient material, long wearing and durable, may be easily cut into any shape or figure. With but a few strokes of a linoleum knife in the hands of a skilled mechanic, rich effects which formerly were possible only at excessive cost and with the employment of expensive materials, are now reproduced at comparatively slight expense with remarkable quickness and precision.

The modernistic vogue which at the present time is fast establishing itself as a definite type of decoration, finds in *Sealex* flooring materials an ideal medium to interpret its new and original floor creations. These versatile materials permit the architect free rein in design and no matter how far his fancy roams, his design can be faithfully executed.

On the other hand, more conservative designs which follow the different period styles may be easily carried out through the use of *Sealex* materials. Irregular flagstone effects, old-fashioned tile patterns, even the picturesque oak plank floorings of Colonial times with their "dowels" and "butterflies" can be cleverly simulated. Finally, any one of those luxurious marble floors that are always associated with classic or renaissance interiors may be beautifully reproduced.

Interest is often added by the placing of an occasional inset, particularly if the floor is a plain one. The inset itself may be simple or intricate depending on the floor requirements. A single inset may be placed in the center of the floor area, or at the entrance way or in any other advantageous position.

Business organizations may have their trade-marks cut out of linoleum and inset into their office floors. These, of course, are incorporated as integral parts of the design and will last the lifetime of the floors.

Sealex Borders and Border Assemblies

The decorative possibilities of linoleum floors may be greatly enhanced by the use of borders of different but harmonious colors and by the general conformity of color to the interior decorations of the room in which they are installed. With the well balanced *Sealex* assortment of colors, many interesting border effects can be built up quickly and accurately.

SEALEX ONE-PIECE COVE BASE AND BORDER

While the usual factory-made cove base furnishes a satisfactory job, Congoleum-Nairn has developed something even better in the form of a one-piece cove base and border which can be very readily installed on the job by a skilled mechanic.

The accompanying diagram and illustrations explain the installation of this built-in cove base.

The one-piece base, border and cove, possesses certain definite points of superiority.

It lends itself to a much greater variety of decorative effects.

It makes possible a border of any width and in any color—as opposed to the strictly limited assortment of effects in the factory-made cove.

Furthermore, this Bonded Floors cove-and-border is structurally sounder than the old-style type. The number of cove cross-joints is reduced and it is less expensive to construct. This type does away with mopboards, makes it absolutely impossible for grease and grime to find a lodging place and adds a novel, modern touch to any room. In commercial and business installations, and particularly in installations in schools and hospitals, this built-in cove base has a general and a very useful application.

Method of Application Over Concrete Floor

In Fig. A is shown the materials required and the mechanical details of assembly. The cove stick is merely

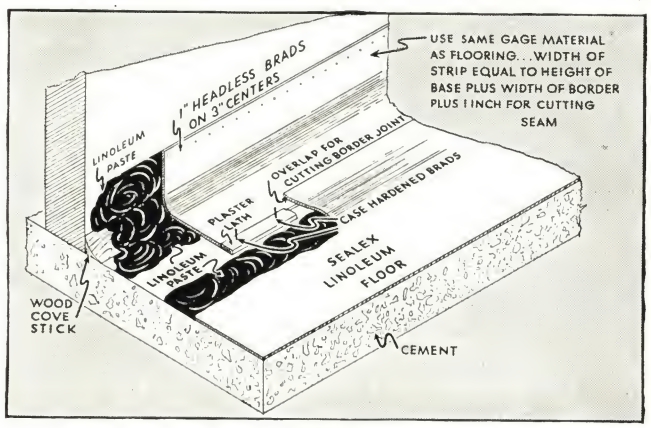


Fig. A

a piece of soft wood, triangular in shape, with 1½-in. legs rabbeted to a concave face.

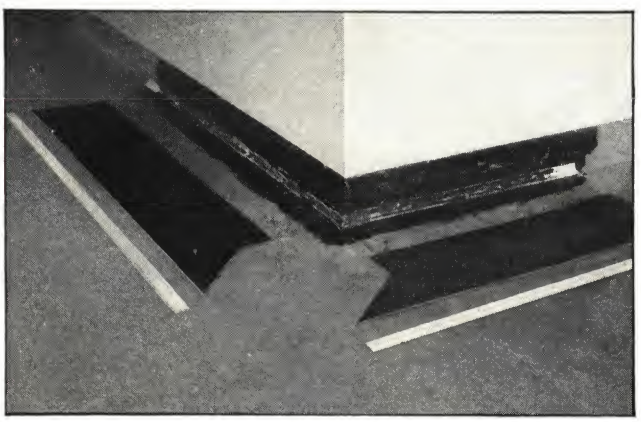


Fig. B

In Fig. B is shown the method of cutting the cove base for an outside corner. (For an inside corner the angles are reversed.) The cove stick has been placed in position and *Sealex* Green Label Paste applied to walls to the height of the base and on the floor to within 2 in. of the width of the border.

In Fig. C the mechanic is placing one of the linoleum strips to the proper height as specified, working the linoleum into the cove with the hand as headless brads are driven home through the linoleum at the top of the base. The plasterer's lath is then held tightly against

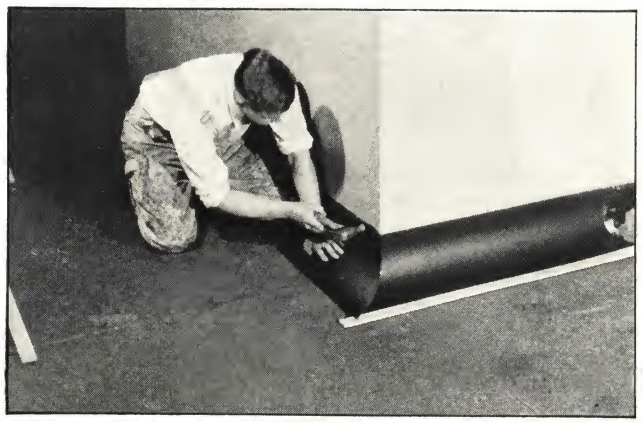


Fig. C

the outer edge of the material and the merchandise is driven back against the wall and the cove stick, thus making a tight job at the cove and setting the goods in the linoleum paste. The lath is then nailed to the floor and sand bags placed in the cove to insure complete adhesion.



Fig. D

Note in Fig. D that the lapped edges at the corner have been sliced through forming a perfect miter joint. *Sealex* Inlaid Linoleum has been cut to a true straight line along the edge of the pattern and overlaps the base and border material approximately 1 in., this dimension being determined by the fit of the pattern to the width of the area being covered. Using the edge of the inlaid linoleum as a guide, the border is cut, insuring a tight seam between the border and the inlaid linoleum. *Sealex* Green Label Paste is then applied under the edges of both.

Method of Application Over Wood Floors

The application of this *Sealex* one-piece cove base and border over a wood floor is exactly the same as above with the exception that lining felt should be laid before the work is started.

SPECIFICATIONS FOR SEALEX LINOLEUM OVER CONCRETE UNDERFLOORS

On all concrete underfloors as indicated on plans and/or as called for in the specifications, furnish and install *Sealex* Linoleum as follows:

Materials

Linoleum—The linoleum used to be Congoleum-Nairn *Sealex* Process, thickness ...., pattern No. ....

Note: When this specification is being used for Battleship Linoleum insert additional clause as follows:

..... manufactured in accordance with U. S. Government Standard Specifications.

Full roll perfect merchandise only shall be used.

Adhesive—The adhesive shall be Congoleum-Nairn's *Sealex* Green Label Paste.

Preparation of Underfloors

The concrete underfloor shall be furnished to the linoleum contractor broom clean and free from moisture. The surface shall be an even troweled cement finish. Where standard joint construction is used, the joints shall be filled in by the linoleum contractor with Plaster of Paris or other suitable material to form an even surface with the balance of the area.

Application of Materials

(1) On the underfloor thus prepared, the linoleum shall be cut so as to cover the area with the fewest possible number of longitudinal and cross seams. At junctions with vertical surfaces, the linoleum should be carefully scribed so as to form a tight joint at these points. Allowance shall be made for ½ to ¾-in. lap at all seams for double cutting.

(2) The entire body of the linoleum shall then be secured to the concrete underfloor, to within 4 ins. of seams, using *Sealex* Green Label Paste, and shall immediately be rolled into the adhesive with a linoleum roller, providing not less than 10 lbs. pressure per linear inch at the contact surface.

(3) After the body of the linoleum has thus been cemented to the underfloor, with the seams properly lapped, the seams shall be cut through the two thicknesses, the area beneath the seams spread with *Sealex* Green Label Paste, and the edges of the linoleum embedded into this adhesive, and thoroughly rolled to assure a tight, even, workmanlike job.

All seams and junctions at vertical surfaces shall be thoroughly weighted down to secure proper adhesion at these points.

Cleaning of Floors

After application, the surface of the linoleum shall be thoroughly cleaned, using water and kerosene, removing all spots of adhesives and other dirt, leaving the floor broom clean.

Base Treatment

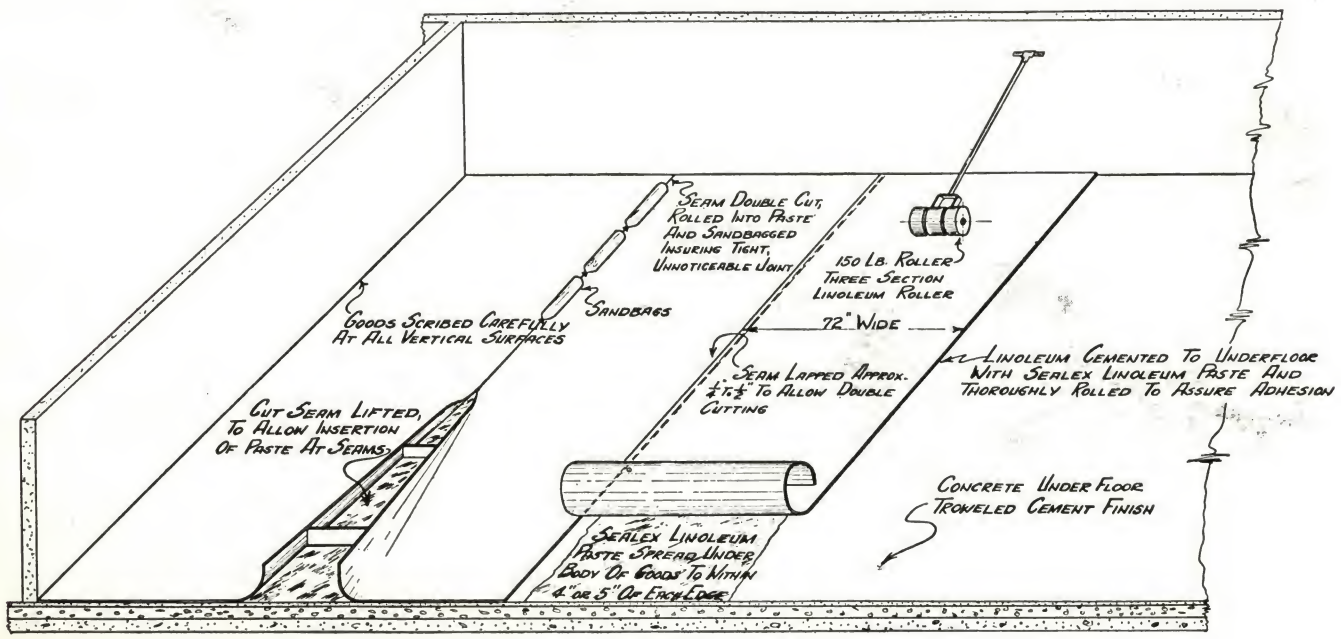
Where desired and specified, there shall be installed *Sealex* Process Cove Base of ..... inches height and ..... color. This base will be applied before the body of the floor, and secured to the vertical walls with brads. For this purpose, nailing strips or ground shall be provided by other contractors at a height 2 ins. less than the base height. Where such base is specified and installed, the linoleum shall be scribed to fit to this base, just as specified for the fitting to vertical walls, and seams at this point shall also be weighted with sand bags to secure proper adhesion.

General Conditions

No linoleum shall be laid in a room where the temperature is less than 68° F., nor shall the linoleum be unrolled, preparatory to using, unless it has been maintained at this temperature for a period of 24 hours.

Brief Specifications

On all concrete underfloors as indicated on plans and/or as called for in specifications, apply *Sealex* ..... Linoleum ..... color, ... thickness, in accordance with the manufacturer's specifications. The use of merchandise known as seconds and mill-ends will not be allowed. The double cutting method



or seams to be employed. The body of the linoleum to be thoroughly rolled, the seams to be rolled and sand bagged.

Guarantee

The linoleum contractor shall furnish where required, a guarantee against defects in material or workmanship for a period of ..... years from date of completion. This guarantee shall take the form of a bond in the full amount of the contract, issued by a reliable insurance company.

Under this guarantee, the contractor shall, upon receipt (within guarantee period) of written notice from the owner, make at his own (the contractor's) expense, any repairs that become necessary, except repairs or injury for any cause other than the ordinary wear and tear.

Supplementary Linoleum Specification

Linoleum Cove Base—The linoleum contractor shall also furnish and install *Sealex* One-piece Cove Base and Border .... inches high and .... inches wide. Color to be selected by the architect. This treatment to be applied on all walls and other vertical surfaces as indicated on the drawings and/or as herein specified.

SPECIFICATIONS FOR SEALEX LINOLEUM OVER WOOD UNDERFLOORS

On all wooden underfloors as indicated on plans and/or as called for in the specifications, furnish and install *Sealex* Process Linoleum as follows:

Materials

Linoleum—The linoleum used to be Congoleum-Nairn *Sealex* Process, thickness ...., pattern No. ....

Note: When this specification is being used for Battleship Linoleum insert additional clause as follows:

..... manufactured in accordance with U. S. Government Standard Specifications.

Full roll perfect merchandise only shall be used.

Felt—The felt shall be Congoleum-Nairn Congo Felt Lining, an unsaturated felt weighing approximately 1½ lbs. per square yard, 36 ins. wide.

Adhesive—The adhesive shall be Congoleum-Nairn's *Sealex* Green Label Paste.

Preparation of Underfloors

The wooden underfloors shall be thoroughly seasoned and dried, smooth and clean, and free from large cracks and holes. They shall be tongue and groove, laid closely and free from any face nails.

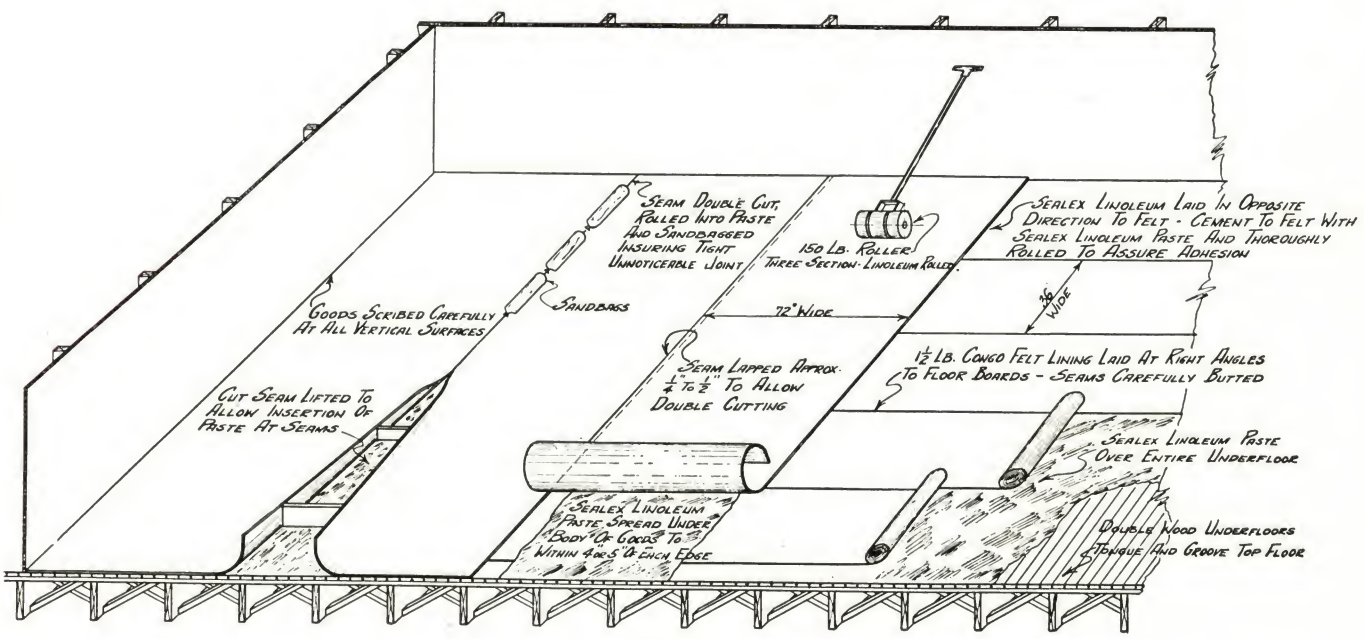
Application of Materials

(1) On the underfloor thus prepared, lay Congoleum-Nairn 1½-lb. Congo Felt Lining running the length of the materials at right angles to the flooring boards. This felt is to be laid with carefully butted joints—all cross joints to be staggered. The felt shall be carefully cut to fit all vertical surfaces and shall be applied to the floor with *Sealex* Green Label Paste.

The felt shall be thoroughly rolled into the adhesive by the use of a linoleum roller, preferably of the three-unit type providing not less than 10 lbs. pressure per linear inch at the contact surface. Care must be taken in rolling that all joints are carefully butted and closely joined, so that the finished felt covering presents an even, smooth surface to receive the application of the linoleum.

(2) On the underfloor thus prepared, the linoleum shall be cut so as to cover the area with the fewest possible number of longitudinal and cross seams. At junctions with vertical surfaces, the linoleum should be carefully scribed so as to form a tight joint at these points. Allowance shall be made for ½ to ¾-in. lap at all seams for double cutting. (If jaspé is specified—the adjoining sheets as they are laid shall be placed so that the jaspé striations form continuous lines at the seams and do not form a herringbone effect.)

(3) The entire body of the linoleum shall then be secured to the underfloor, to within 4 ins. of seams, using *Sealex* Green Label Paste, and shall immediately be rolled into the adhesive with a linoleum



roller, providing not less than 10 lbs. pressure per linear inch at the contact surface.

(4) After the body of the linoleum has thus been cemented to the underfloor, with the seams properly lapped, the seams shall be cut through the two thicknesses, the area beneath the seams spread with Sealex Green Label Paste, and the edges of the linoleum embedded into this adhesive, and thoroughly rolled to assure a tight, even, workmanlike job.

All seams and junctions at vertical surfaces shall be thoroughly weighted down to secure proper adhesion at these points.

Cleaning of Floors

After application, the surface of the linoleum shall be thoroughly cleaned, using water and kerosene, removing all spots of adhesives and other dirt, leaving the floor broom clean.

Base Treatment

Where desired and specified, there shall be installed *Sealex* Process Cove Base of ..... inches height and ..... color. This base will be applied before the body of the floor, and secured to the vertical walls with brads. For this purpose, nailing strips or ground shall be provided by other contractors at a height 2 ins. less than the base height. Where such base is specified and installed, the linoleum shall be scribed to fit to this base, just as specified for fitting to vertical walls, and seams at this point shall also be weighted with sand bags to secure proper adhesion.

General Conditions

No linoleum shall be laid in a room where the temperature is less than 68° F., nor shall the linoleum be unrolled, preparatory to using, unless it has been maintained at this temperature for a period of 24 hours.

Brief Specifications

On all wooden underfloors as indicated on plans and/or as called for in the specifications, apply *Sealex* Linoleum ..... color ..... thickness, in accordance with the manufacturer's specifications. The use of merchandise known as two-cuts, remnants and seconds will not be allowed. The double cutting method of seams to be employed. The body of the linoleum to be thoroughly rolled, the seams to be rolled and sand bagged.

Guarantee

The linoleum contractor shall furnish where required, a guarantee against defects in material or workmanship for a period of ..... years from date of completion. This guarantee shall take the form of a bond in the full amount of the contract, issued by a reliable insurance company.

Under this guarantee, the contractor shall, upon receipt (within guarantee period) of written notice from the owner, make at his own (the contractor's) expense, any repairs that become necessary, except repairs or injury for any cause other than the ordinary wear and tear.

Supplementary Linoleum Specification

Linoleum Cove Base—The linoleum contractor shall also furnish and install *Sealex* One-piece Cove Base and Border .... inches high .... inches wide. Color to be selected by the architect. This treatment to be applied on all walls and other vertical surfaces as indicated on the drawings and/or as herein specified.

SPECIFICATION G—SEALEX TREADLITE LINOLEUM TILE OVER CONCRETE UNDERFLOORS

The contractor for this work shall furnish and install *Sealex* Treadlite Linoleum Tile (plain or marble-ized) as manufactured by CONGOLEUM-NAIRN INC., or approved equal, on the floors as indicated on the drawings and/or as herein specified. It shall be full $\frac{3}{16}$ in. in thickness and homogeneous in texture throughout, cut true to size and shape, with absolutely square, clean-cut edges. The underside shall be scored to insure proper bond.

Samples of materials and shop drawings or layouts for selection of colors and design shall be prepared by this contractor and submitted for the architect's approval.

Scope of Work—(Specify rooms, corridors, stairs, landings, etc.)

Workmanship—The tile shall be cut to and fitted accurately against all walls, pipes, outlet boxes and permanent projections in the room, and shall be set with an approved and tested waterproof cement as manufactured by CONGOLEUM-NAIRN INC., or approved equal. The lines of border and tile and color arrangement shall correspond to the shop drawings or layouts which must be approved by the architect.

Note: See Supplementary Specification following.

Inspection of Subfloors—No tile is to be installed until the underfloors are clean, smooth and free from all moisture and foreign materials.

Before commencing work the tile contractor shall inspect the subfloors and in the event they and other conditions on the job are not suitable in every respect and in accordance with specifications, shall notify the architect or general contractor in writing, who will then cause any defects to be remedied.

Note: In Specifications for Heating, Light and Masonry, insert additional clauses as printed on page 13.

Guarantee—The tile contractor shall guarantee his work against defects of material or workmanship, for a period of ..... years from date of completion, and shall furnish an insurance company bond in the full amount of the contract.

Under this guarantee the contractor, upon receipt, within guarantee period, of written notice from the owner, shall replace defective material, and/or repair imperfections in workmanship, at his own (the contractor's) expense.

See details of Bond on page 6.

Supplementary Tile Specification

Tile Cove Base—The tile contractor shall also furnish and install (insert height—5 or 6-inch) high Treadlite Linoleum Tile cove base, of color to be selected by the architect, around all walls of the spaces as indicated on the drawings and/or as herein specified.

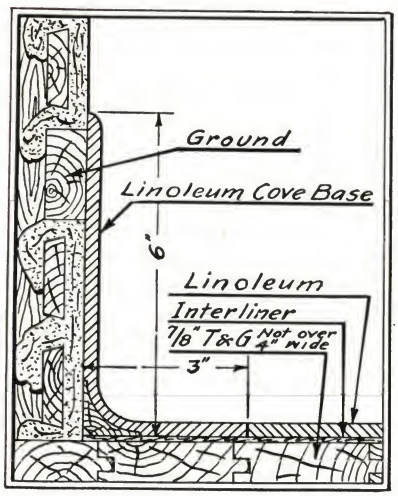
ADDITIONAL CLAUSES TO BE INSERTED IN ARCHITECT'S SPECIFICATIONS

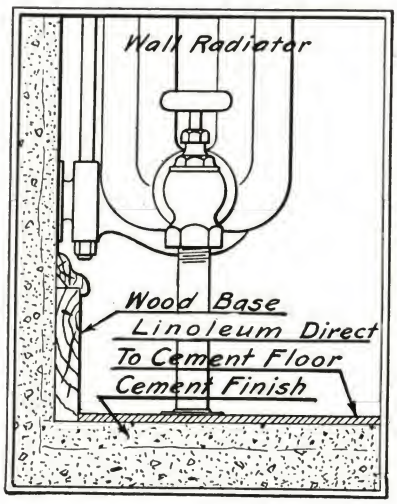
Heating—The General Contractor shall furnish without charge to the (Insert: Linoleum or Linoleum Tile contractor) heat necessary to maintain a temperature of approximately 70° F., in the spaces where (Insert: kind of floor) is to be laid—commencing 48 hours before the work is to start and continuously until finished.

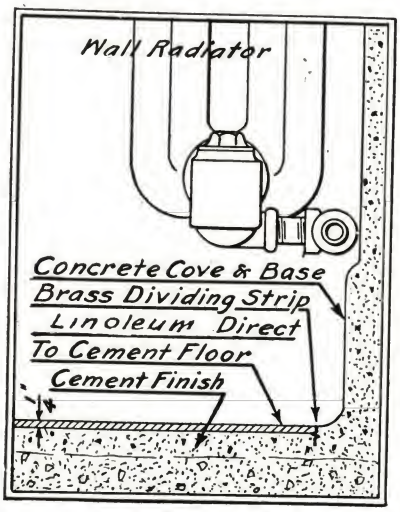
Lighting—The General Contractor shall furnish without charge to the (Insert: Linoleum or Linoleum Tile contractor) light, storage space, electrical current and hoisting facilities for the proper performance of the (Insert kind of floor) work.

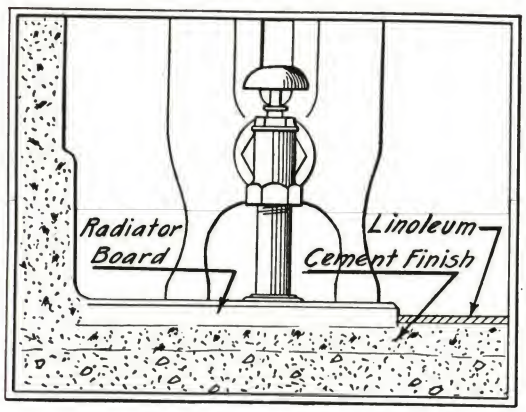
Plastering and/Carpentry and/or Masonry—Plaster (or other materials) against which (Insert: kind of material) cove base is to be installed shall have a smooth, even surface and shall be carried down to and finished square with the subfloor, making a clean, straight right angle with same and free from lumps, dirt or other obstructions. A $\frac{7}{8}$x$1\frac{1}{2}$-in. furring strip shall be provided, the top edge of which shall be approximately $5\frac{1}{2}$ ins. from the floor level.

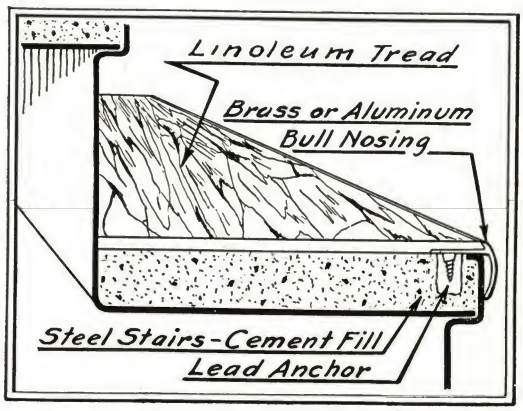
Note: Include above paragraph only if cove base is specified, otherwise omit.

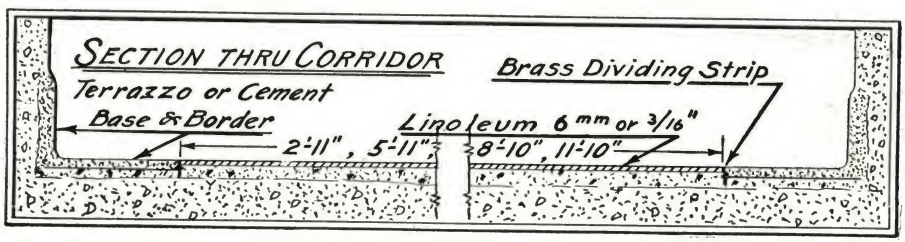












MAINTENANCE OF RESILIENT FLOORS

The proper maintenance of *Sealex* Linoleum and *Sealex* Treadlite Linoleum Tile Floors does not require elaborate equipment or highly trained employees. The observance of a few simple and ordinary precautions will result in maximum service and satisfaction.

Just as the dropping of a heavy weight on the best marble floor will cause cracks and chipping, and just as hardwood floors will scratch and splinter if abused, so will resilient floors be marred if too great concentration of heavy furniture, desks or large chairs on small bearing-surfaces be permitted.

The uniform, attractive smoothness of these floors can be maintained by using glass sliders or cups of composition instead of metal casters and silencers. A 2½-in. bearing surface is most desirable.



Strong soaps or washing compounds containing free alkali or abrasives are not necessary and should never be used. Such cleaning agents will attack ordinary cork-composition materials, causing them to harden in time and will shorten their natural longevity. Neither is it necessary nor desirable to flood the floors with water. The Pittsburgh Testing Laboratory has tested a large number of soaps. We will gladly furnish a list of those approved.

Every-day effects of traffic can readily be removed with damp cloth or mop or, if the floors are much soiled, can be removed by the use of lukewarm water and a mild soap.

Waxing is recommended as being the most beneficial and economical method to employ. It adds protection to the surface against wear and acts as a preservative of the material itself. In addition, it reduces the possible excessive use of water and injurious cleaning compounds, as waxed floors require only occasional washings and rewaxing. The ordinary accumulation of dirt and dust can be easily brushed off each day. Waxing also vastly enhances the general appearance of the floors.

As an additional service to our customers we are now prepared to furnish our own *Gold Seal* Floor Wax.

Informative Literature for Architects

Competent architects have collaborated with our flooring engineers in the preparation of a series of pamphlets on the floor requirements of various types of buildings. In addition to considerable general information, each pamphlet contains a special chart which enables one to determine at a glance which type of floor is most suitable and economical for a given area in any of the buildings described.

Any or all of the titles listed will be sent to architects upon request.

1. Facts You Should Know about Resilient Floors for Schools.
2. Facts You Should Know about Resilient Floors for Hospitals.
3. Facts You Should Know about Resilient Floors for Offices.
4. Facts You Should Know about Resilient Floors for Stores.
5. Facts You Should Know about Resilient Floors for Churches.
6. Facts You Should Know about Resilient Floors for Libraries.
7. Facts You Should Know about Resilient Floors for Clubs, Lodges, Apartments and Hotels.



Floor of Sealex Veltone Linoleum in General Electric Refrigerator Showrooms of Judson C. Burns Co., Philadelphia, Pa. Note in the Foreground the Cut-to-order Inset of the General Electric Trade-mark

SEALEX VELTONE LINOLEUM

The Sealex Veltone group of linoleum patterns, several of which are reproduced on this and the next page, stands out as one of the most interesting of all Congoleum-Nairn's innovations. Here, once again, is something entirely new in genuine linoleum floors.

Sealex Veltone is as different from ordinary linoleum as night is from day. There are no tiles, no mortar lines, no repeats of any kind. Each yard has its own individuality—a sudden flash of unforgetable color here—a sombre, restraining touch there. And through it, the main color motif flows on and on—undisturbed.

Architects and decorators have already discovered that Sealex Veltone is ideally suited to their purpose. By specifying Sealex Veltone Floors it is possible to create a room —or office—whose every detail will be in complete harmony. This was impossible—without spending a great deal of money—when drab, monotonous floors were all architects had to work with.

From the practical view-point, too, Sealex Veltone Linoleum has many advantages over the old type of floors. These Veltones are resilient, insuring a high degree of quiet and comfort when walked upon. And they're easy to clean. The famous Sealex Process seals the tiny linoleum pores, leaving no place for dust and dirt to collect.

The installation of Sealex Veltone Floors presents no difficulties. They may be laid either as a new floor or right over old floors on a remodeling job. When correctly installed, seams apparently disappear. And the final effect is one of solid beauty.



"ZANZIBAR"—Light Battleship Gauge. Pattern No. 2951
"ZANZIBAR"—"B" Inlaid Gauge. Pattern No. 6951



"VELMAR"—Light Battleship Gauge. Pattern No. 2956
"VELMAR"—"B" Inlaid Gauge. Pattern No. 6956



"NOCTURNE"—Light Battleship Gauge. Pattern No. 2955

SEALEX VELTONE LINOLEUM



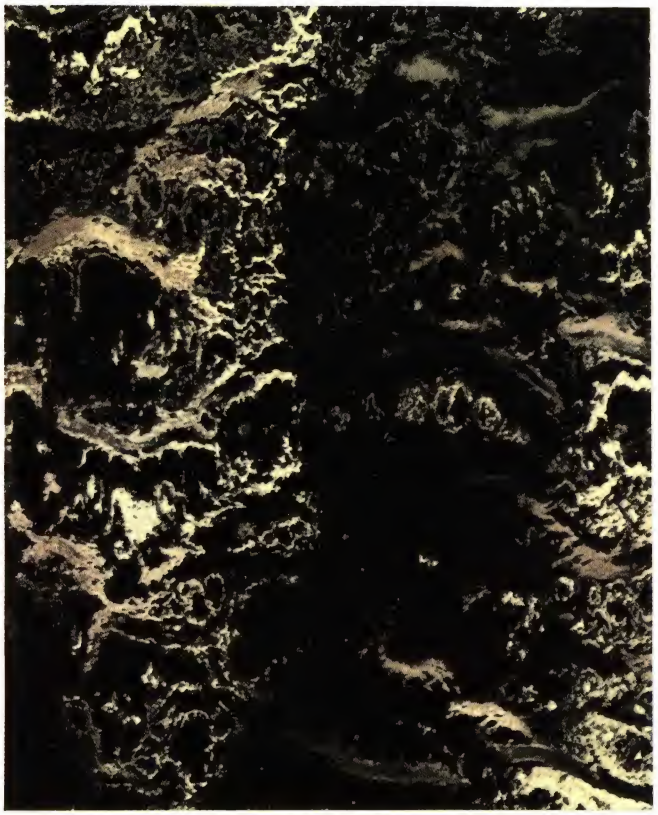
"ARABY"—Light Battleship Gauge. Pattern No. 2954
"ARABY"—"B" Inlaid Gauge. Pattern No. 6954



"DELPHI"—Light Battleship Gauge. Pattern No. 2952
"DELPHI"—"B" Inlaid Gauge. Pattern No. 6952

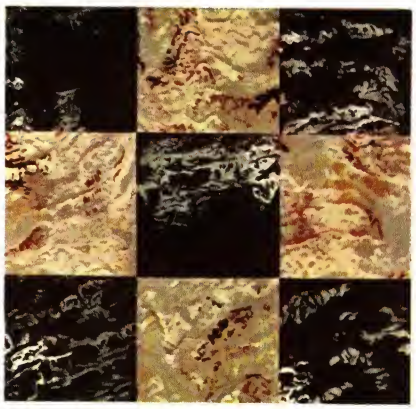


"RIVIERA"—Light Battleship Gauge. Pattern No. 2953



"VULCAN"—"B" Inlaid Gauge. Pattern No. 6959

SEALEX LINOLEUM—KARNEAN MARBLED INLAID



"Onyx"—No. 3102



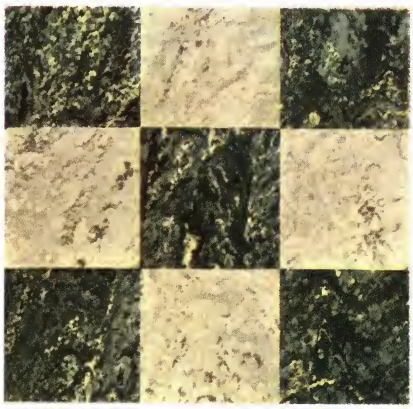
"Virginian"—No. 3227



"Regal"—No. 3094



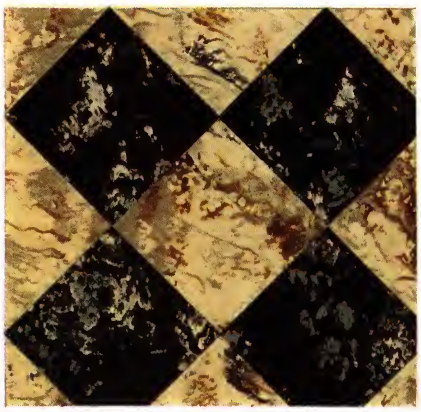
"Marabia"—No. 3333



"Korea"—No. 3103



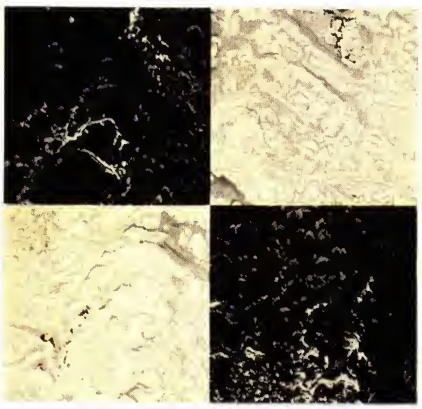
"Caribbean"—No. 3224



"Sea Rock"—No. 3037



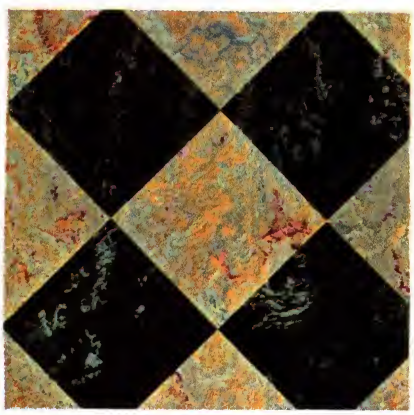
"Romano"—No. 3322



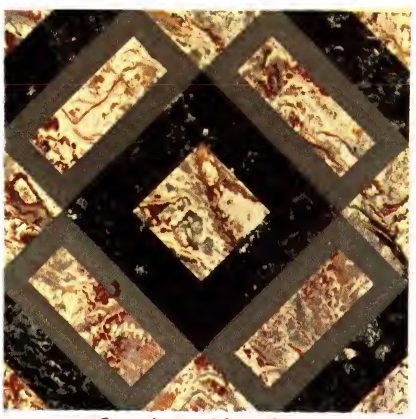
"Deauville"—No. 3041



"Miramar"—No. 3323



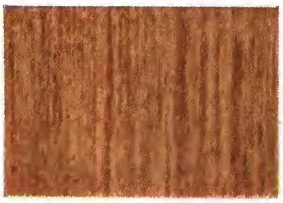
"Bermuda"—No. 3038



"Crusader"—No. 3092

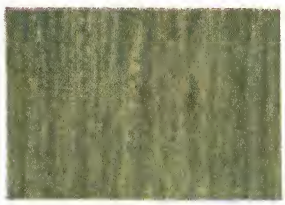
SEALEX LINOLEUM—JASPÉ, BATTLESHIP, PLAIN

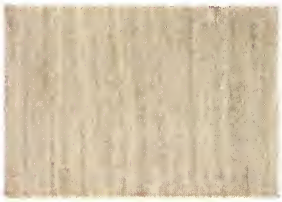

Brown Jaspé. No. 1254


Tan Jaspé. No. 1253


Rose-Glow Jaspé. No. 1258


Dark Gray Jaspe. No. 1252


Apple-Green Jaspé. No. 1259


Light Gray Jaspé. No. 1255


Green Jaspé. No. 1256


Brown, Battleship and Plain


Green
Battleship and Plain


Terra Cotta
Battleship and Plain


Gray
Battleship and Plain


Mahogany Brown
Battleship and Plain


Pacific Blue. Plain only


Colonial Buff. Plain only


Ivory White. Plain only


Light Green. Plain only


Yellow. Plain only


Orange. Plain only


Black. Battleship and Plain

For weights, gauges and other data on *Sealex* Jaspé, Battleship and Plain Linoleum see pages 3 and 4.

CUT-TO-ORDER FLOORS AND LINSIGNIA

Opportunity for individuality and artistry in design is afforded by the wide range of patterned, jaspé and plain linoleum in the *Sealex* line. That opportunity is further enlarged by our service on custom floors. This service includes cut-to-order and custom-laid materials for an entire floor area as well as special insets—*Sealex* Linsignia—such as those illustrated below. These are *not* stock insets—they are merely indicative of what can be done. Your own designs—or those illustrated—will be made up to order, at reasonable cost.


"Owl and Pussycat"

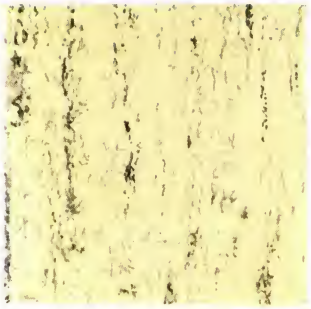

"Caduceus"


"Compass"


"Ancient Galley"

SEALEX TREADLITE TILE—PLAIN COLORS AND MARBLE-IZED

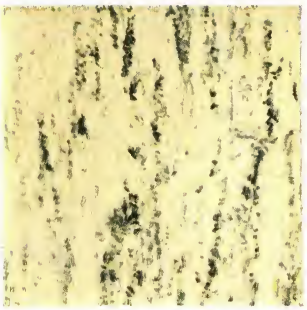
Eleven plain colors and eight marble-ized colors. Black, Craft Brown, Moss Green, Terra Cotta, Slate Gray, Mahogany Brown, Pacific Blue, Colonial Buff and Ivory White are the same colors as Plain Linoleum, illustrated on page 18. Other plain color tiles, not illustrated, are Stone Gray and Fawn Gray. Marble-ized colors are shown below. Additional information on page 5.



White Mottled Black. No. 1070



Black Mottled White. No. 1071



White, Green and Black. No. 1072



Light Sienna. No. 1076



Sea Green. No. 1079



Verde Antique. No. 1078



Red Paisley. No. 1075

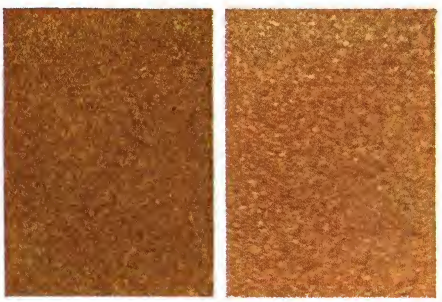


Dark Sienna. No. 1077

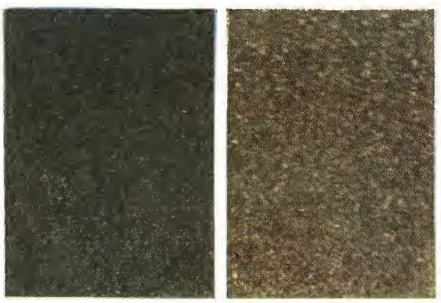
SEALEX GRANITE LINOLEUM AND GOLD SEAL CORK CARPET



Granite, No. 501

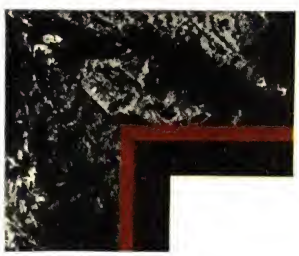


Brown Cork Carpet, No. 1200
Unpolished Polished



Green Cork Carpet, No. 1201
Unpolished Polished

SEALEX BORDER STRIPS AND BORDER ASSEMBLIES

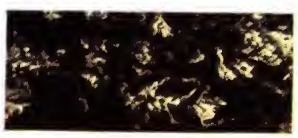




Black Border
60-90 foot lengths



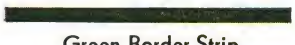
Plain Green Border
60-90 foot lengths



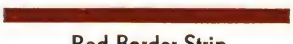
Black Marble Border
60-90 foot lengths



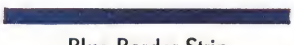
Black Border Strip
45 foot lengths



Green Border Strip
45 foot lengths



Red Border Strip
45 foot lengths



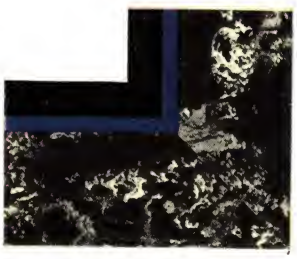
Blue Border Strip
45 foot lengths



Gray Border Strip
45 foot lengths

Four possible border assemblies are illustrated at the extreme right and left, combining various borders and border strips shown.





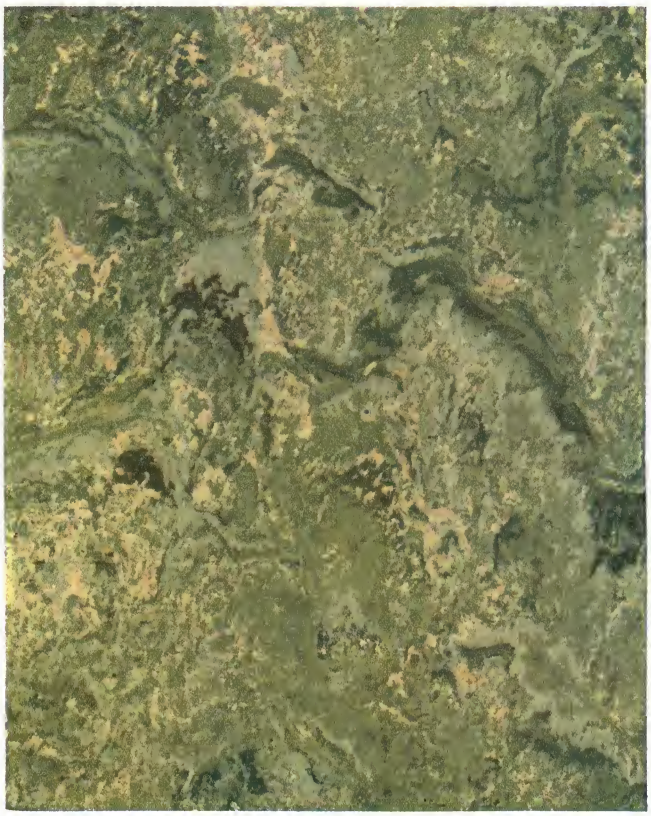
SEALEX WALL-COVERING



"ROSE BERYL"—Pattern No. 6960



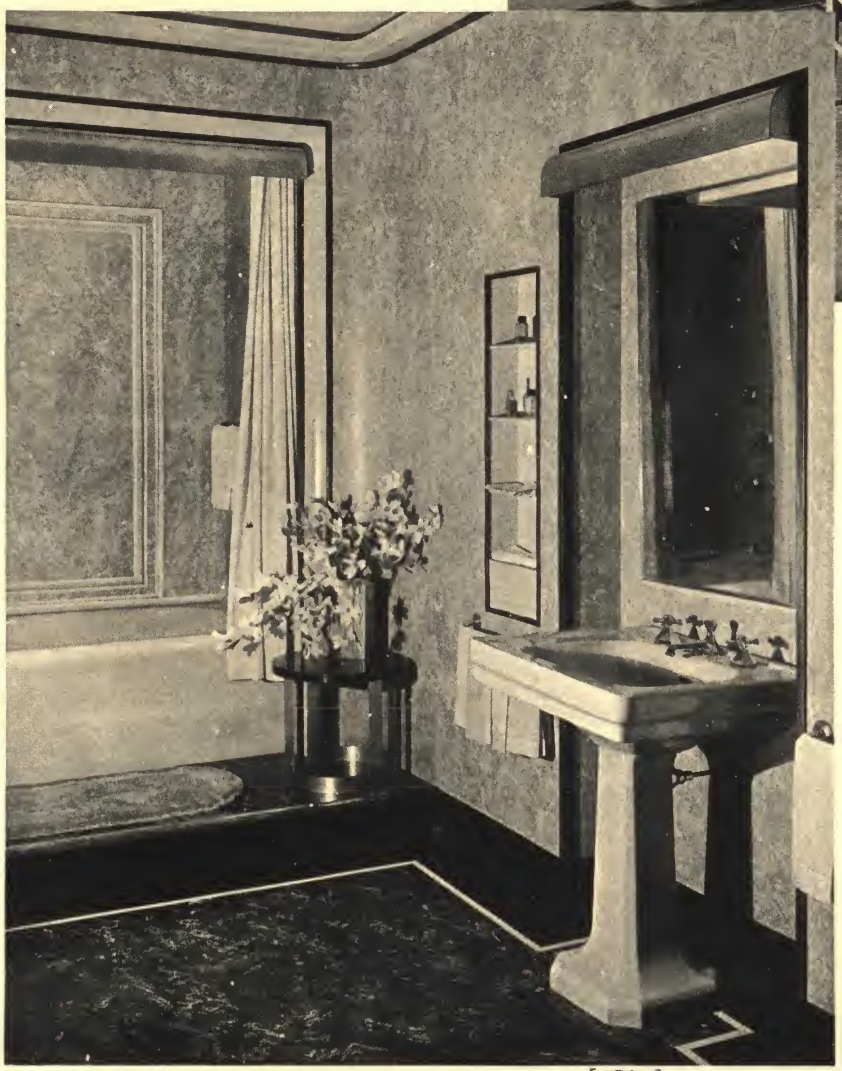
"GOLDEN ONYX"—Pattern No. 6958



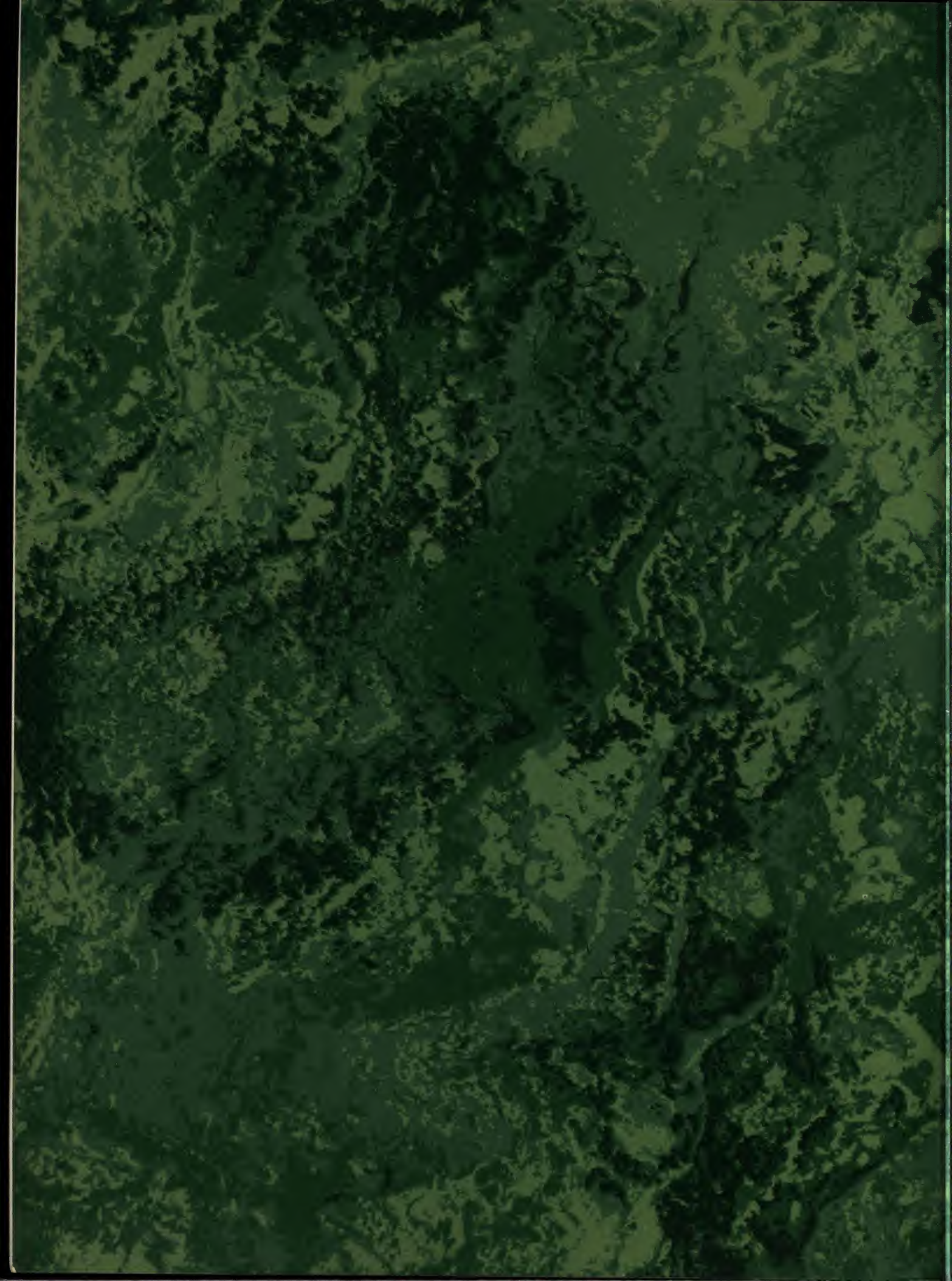
"BURMAH JADE"—Pattern No. 6957

Walls of richly tinted golden onyx in a combination kitchen and dinette. This material is stain-proof. Spattered grease, finger smudges and dirt may be washed away easily with a damp cloth. Installation of Sealex Wall-Covering presents no difficulties to any competent mechanic. It is easily cemented over plaster or other bases.





Ultra-modern bathroom—with truly modern walls. Sealex Wall-Covering from floor to ceiling, in an artistic, jade-green coloring, makes a pleasing contrast with the black Sealex Veltone Linoleum Floor and chromium fixtures. Note that this installation is apparently seamless—a one-piece wall.



SLOANE BLABON CORPORATION

LINOLEUM

ON AUGUST 1, 1931

SLOANE-BLABON CORPORATION

was formed by the consolidation of the following companies:

W. & J. SLOANE MANUFACTURING CO. **THE GEORGE W. BLABON COMPANY**

CERTAIN-TEED PRODUCTS CORPORATION
FLOOR-COVERING DIVISION

SLOANE-BLABON CORPORATION *manufactures Inlaid Linoleum, Printed Linoleum, Battleship, Plain and Jaspé Linoleum, Felt-base Rugs and Yard Goods and Cork Carpet. All patterns produced by the three companies prior to the merger are being maintained intact—at least until June, 1932—and are sold by W. & J. Sloane, 577 Fifth Avenue, New York.*

On the following pages you will find a complete list of Sloane-Blabon products; descriptions of the various grades; tables of weights and gauges; representative installations; and other material to enable you to judge the quality and variety of Sloane-Blabon merchandise and to assist in preparing floor-covering specifications.

It has been the privilege of W. & J. Sloane, as selling agents for floor-covering manufacturers, to co-operate with architects on floor-covering problems for more than fifty years. The W. & J. Sloane Architects' Service Department will be glad to answer all inquiries pertaining to linoleum and to co-operate with you on the selection of suitable patterns for specific uses, the preparation of specifications, the securing of estimates and the delivery of the linoleum at the time desired. You are invited to use this service freely. It is rendered without cost or obligation. Address Architects' Service Department, W. & J. Sloane, 577 Fifth Avenue, New York, N. Y., or any of the branch offices listed on the following page.

SLOANE-BLABON CORPORATION

Manufacturers of Linoleum and Other Smooth-Surface Floor Coverings

PHILADELPHIA, PA. TRENTON, N. J.

SOLE SELLING AGENTS

W. & J. SLOANE

577 Fifth Avenue, NEW YORK, N. Y.

BRANCH OFFICES:

BOSTON, MASS., 120 Boylston Street
CHICAGO, ILL., 228 South Wabash Avenue
CINCINNATI, OHIO, 520 Dixie Terminal Building
COLUMBUS, OHIO, 45 West Spring Street
DALLAS, TEX., 1200 Commerce Street
DENVER, COLO., 16th and Arapahoe Streets
DETROIT, MICH., Book Building
KANSAS CITY, MO., 1523 Grand Avenue
LOS ANGELES, CALIF., 1035 Santee Street
PHILADELPHIA, PA., Public Ledger Building
PITTSBURGH, PA., 617 Clark Building
PORTLAND, ORE., 12th and Morrison Streets
ST. LOUIS, MO., 1700 Washington Avenue
SAN FRANCISCO, CALIF., 180 New Montgomery Street
SEATTLE, WASH., 609 Terminal Sales Building

SLOANE-BLABON CORPORATION MANUFACTURES THE FOLLOWING TYPES OF FLOOR COVERINGS

Battleship Linoleum (Double-waxed)

Heavy Weight (6 mm.)—Brown, green, and gray.
Medium Weight ($\frac{3}{16}$ in.)—Brown, green, gray, and black.
Light Weight—Brown, green, gray, and black.

Plain Linoleum (Double-waxed)

A Gauge—Black.
B Gauge—Brown, green, gray, and black.
C Gauge—Brown, blue, green, gray, and black.
D Gauge—Brown, green, gray, and black.

Jaspé Linoleum (Double-waxed)

$\frac{3}{16}$-in. Gauge—Brown, gray.
A Gauge—Brown, green, gray.
B Gauge—Brown, sand, gray, black, green, peach.

Cork Carpet

¼-in. Gauge—Brown, green (polished or unpolished).

Inlaid Linoleum (Waxed Finish)

Kraft Line Straight Line Marble—A Gauge.
Straight Line Marble—A, B, C, D and Z Gauges.
Moulded B and D Gauges.
Straight Line "Onyx" Marble Tile—A Gauge (relief effects).
Straight Line "Stonetex" Marble Tile—B Gauge (relief effects).
Embossed Moulded—A, B and C Gauges.
Marble Border—A Gauge.

Printed Linoleum

8/4 (2 yds. wide)—Lacquered or unlacquered.
12/4 (3 yds. wide)—Unlacquered.
16/4 (4 yds. wide)—Lacquered or unlacquered.
5/8 Passage (22½ in. wide)—Lacquered or unlacquered.
24 ins.—Passage-lacquered.
3/4 Passage (27 in. wide)—Lacquered or unlacquered.
Printed Linoleum Rugs—Lacquered or unlacquered.

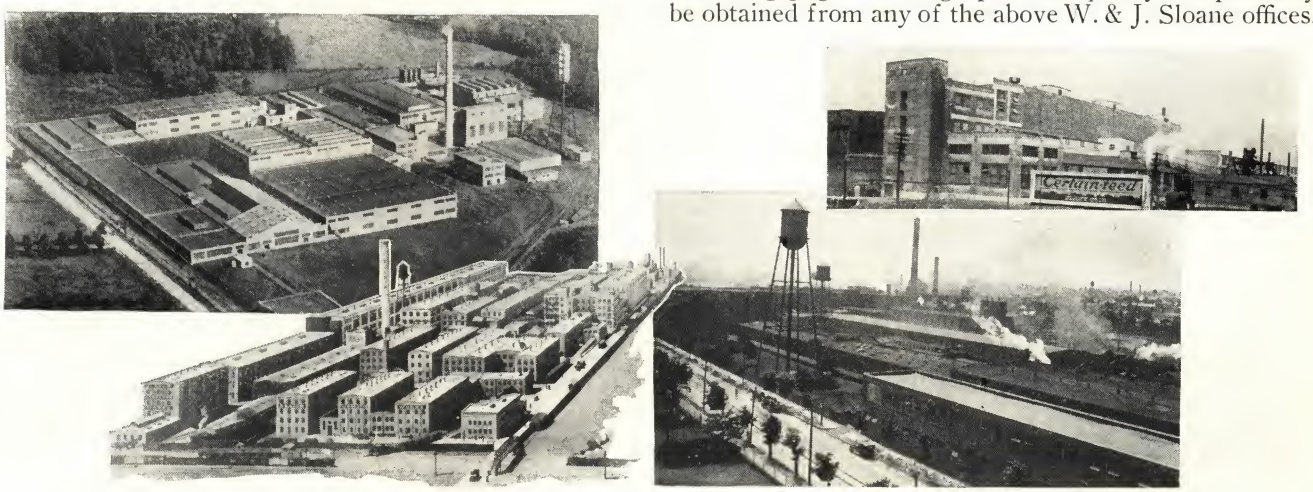
Felt-Base Products

Aristocrat, Floortex, Standard and Guard Felt-base Rugs; Floortex Rug Borders; Sloane and Floortex Yard Goods; Guard Yard Goods.

Miscellaneous

Linoleum Insets, Linoleum Feature Strips, Linoleum Paste, Linoleum Cement, Lining Felt.

A detailed description of the above grades and a table of weights and gauges will be found on the following pages. Lithographs and quality samples may be obtained from any of the above W. & J. Sloane offices.



Sloane-Blabon Linoleum Is Manufactured in Four Modern Plants Located in Philadelphia, Pa., and Trenton, N. J.

The linoleum produced in these plants is of the highest quality, amply attested to by the U. S. Government Tests (see third following page) and by the type of buildings in which it has been installed (see following pages)

DESCRIPTION OF SLOANE-BLABON GRADES

SLOANE-BLABON LINOLEUM is manufactured in four large plants equipped with the most modern machinery, insuring a uniformity of texture and a quality of finish excelled by no other make of linoleum. An example of the improved methods of manufacture is found in the calenders that roll the final mixture of cork, linseed oil and other ingredients on to the burlap back to form the finished product. These calenders are 49 inches in diameter and provide about 25% greater contact than ordinary rolls with a corresponding improvement in quality.

In addition to employing the most up-to-date equipment obtainable, raw materials are thoroughly tested before they are accepted for use; manufacturing operations are constantly checked at various stages and the finished product is thoroughly inspected before receiving the approval which makes possible the Sloane-Blabon guarantee.

THE MOST WIDELY USED SLOANE-BLABON GRADES AND THE USES FOR WHICH THEY ARE RECOMMENDED

Battleship Linoleum

A plain colored linoleum made to specifications of the U. S. Government to withstand the hardest kind of wear. Due to special processing and the use of finest quality materials, Sloane-Blabon Battleship Linoleum has an unusual density and pliability, a superfinish, and a uniform color throughout. Made in brown, green, gray, and black.

Plain Linoleum

Similar to Battleship, Plain Linoleum is manufactured by processes which insure maximum quality and long wear. Made in black, brown, green, gray, and blue. Recommended for use where the heavier Battleship is not required.

Jaspé Linoleum

Similar to Battleship and Plain goods, but offers a two-tone color effect instead of the solid color. Jaspé is particularly desirable for contract work, and is popularly used for residence work as a background for rugs and furnishing. Unusual two-tone combinations are available in brown, gray, green, sand, black and peach.



Bank of Manhattan Building, New York, N. Y.
9000 sq. yds. Sloane-Blabon Battleship

Cork Carpet

Makes an exceptionally resilient floor covering, particularly suitable for libraries, churches, schools, and hospitals, where noise must be eliminated. Made in brown and green.

Inlaid Linoleum

Different grades of inlaid linoleums in the Sloane-Blabon line offer a wide variety of patterns, and colors go clear through to the burlap back. Inlaids are the longest wearing of all patterned linoleums.

For large contracts, the grades usually used are Kraft Line Straight Line Marble Tile "A," Straight Line Marble "A" and "B," Straight Line "Onyx" Marble Tile "A," Straight Line "Stonetex" Marble Tile "B," Marble Border "A," and Embossed Moulded "A." These grades offer a wide selection of geometric patterns, individual for design and unusual color effects. The designs make available both large and small figures, the majority having a veined effect akin to marble. The "Onyx" and "Stonetex" patterns present relief effects for refreshing decorative possibilities. The inlaid grades outlined above are the heaviest gauges, and hence the most resistant to wear.

For installation where traffic is lighter, an equally outstanding selection of patterns and colors is offered in the lighter gauges of Straight Line Inlaids, Moulded "B" and "D" gauges, and Embossed Moulded "B" and "C." The lighter gauges of inlaid linoleums are made in a variety of attractive color combinations, and are readily acceptable for household use. Clean-cut squares, distinctive geometric effects, and harmonious color combinations are a feature of these qualities. Inlaids are made by a process permitting wide latitude in color and pattern effects.

Printed Linoleums

Made by printing patterns with high grade oil paints on the surface of the lighter gauges of genuine plain linoleum.



International Telephone and Telegraph Building, New York, N. Y.
16,000 sq. yds. Sloane-Blabon Battleship

Where Sloane-Blabon Linoleum May Be Obtained

In nearly every city there are one or more floor-covering stores, furniture stores, department stores or linoleum contractors carrying the Sloane-Blabon line. They will gladly show samples of all patterns and grades, submit estimates and attend to all details of installation. Names of dealers or contractors will be furnished on request.

GAUGES AND WEIGHTS

Grades	Finished, inches	Gauge M.M.	Nearest fraction, inch	Average weight of roll crated, pounds	Average weight of sq. yd. crated, pounds	Square yards to roll
BATTLESHIP LINOLEUM—(Double-waxed)—2 yds. wide						
Heavy Weight (6 mm)—U.S.N. Standard	.236	6.00	15/64	811	13.5	60
Medium Weight (3/16 in.)—U.S.N. Standard	.187	4.75	3/16	646	10.7	60
Light Weight—U.S.N. Standard	.142	3.60	5/32	501	8.3	60
PLAIN LINOLEUM—(Double-waxed)—2 yds. wide						
A Gauge	.142	3.57	9/64	525	8.75	60
B Gauge	.118	3.00	1/8	445	7.4	60
C Gauge	.098	2.49	3/32	390	6.2	60
D Gauge	.078	2.00	5/64	310	5.2	60
JASPÉ LINOLEUM—(Double-waxed)—2 yds. wide						
3/16-in. Gauge	.187	4.76	3/16	715	11.9	60
A Gauge	.142	3.60	5/32	565	9.4	60
B Gauge	.118	3.00	1/8	480	8.0	60
CORK CARPET—(Polished or unpolished)						
1/4-in. Gauge	.250	6.35	1/4	550	9.16	60
INLAID LINOLEUM—(Waxed Finish)—2 yds. wide						
Kraft Line Straight Line Marble, A Gauge	.118	3.00	1/8	588	9.4	60
Straight Line Marble, A Gauge	.118	3.00	1/8	588	9.4	60
Straight Line Marble, B Gauge	.095	2.40	3/32	440	7.3	60
Straight Line Marble, C Gauge	.078	2.00	5/64	365	6.1	60
Straight Line Marble, D Gauge	.071	1.80	5/64	350	5.8	60
Straight Line Marble, Z Gauge	.055	1.40	1/16	300	5.0	60
Moulded, B Gauge	.095	2.40	3/32	440	7.3	60
Moulded, D Gauge	.066	1.70	5/64	320	5.3	60
Straight Line "Onyx" Marble Tile, A Gauge (relief effects)	.118	3.00	1/8	588	9.4	60
Straight Line "Stonetex" Marble Tile, B Gauge (relief effects)	.098	2.50	3/32	441	7.3	60
Embossed Moulded, A Gauge	.118	3.00	1/8	505	8.4	60
Embossed Moulded, B Gauge	.095	2.40	3/32	440	7.3	60
Embossed Moulded, C Gauge	.078	1.98	5/64	365	6.1	60
Marble Border, A Gauge	.118	3.00	1/8	588	9.4	60
PRINTED LINOLEUM						
8/4 (2 yds. wide)—Lacquered or unlacquered	.066	1.70	1/16	260	4.3	60
12/4 (3 yds. wide)—Unlacquered	.066	1.70	1/16	370	4.1	90
16/4 (4 yds. wide)—Lacquered or unlacquered	.066	1.70	1/16	530	4.4	120
5/8 (22½ ins. wide)—Passage—Lacquered or unlacquered	.066	1.70	1/16	170	3. lin. yds.	30 lin.
24 ins.—Passage—Lacquered	.066	1.70	1/16	175	2.8 lin. yds.	30 lin.
3/4 Passage (27 ins. wide)—Lacquered or unlacquered	.066	1.70	1/16	200	3.3 lin. yds.	30 lin.

Note: The gauges in Battleship Linoleum shown are subject to an allowable variation of .005 inches over or under the figures given. For purposes of figuring freight the average weight of crated rolls will answer all practical purposes, subject to slight variations due to differences in length of roll and to the weight of the crate.





At left and above:

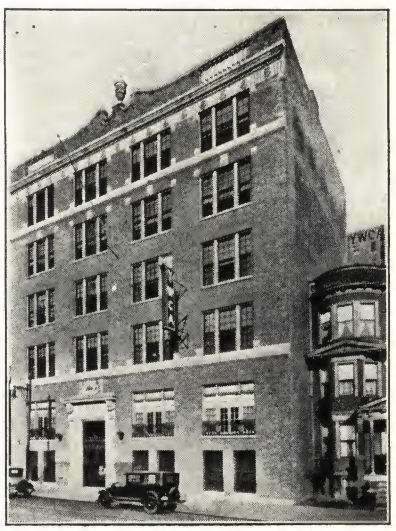
The Doctors Hospital, New York, N. Y.

Light Brown Jaspé, 12,429 sq. yds.
3/16-in. Brown Jaspé, 923 sq. yds.
3/16-in. Green Battleship, 2,585 sq. yds.
Installed by Nathan Straus & Sons, New York, N. Y.

At right:

Y. W. C. A., Jersey City, N. J.

5000 sq. yds. Sloane-Blabon Brown Battleship



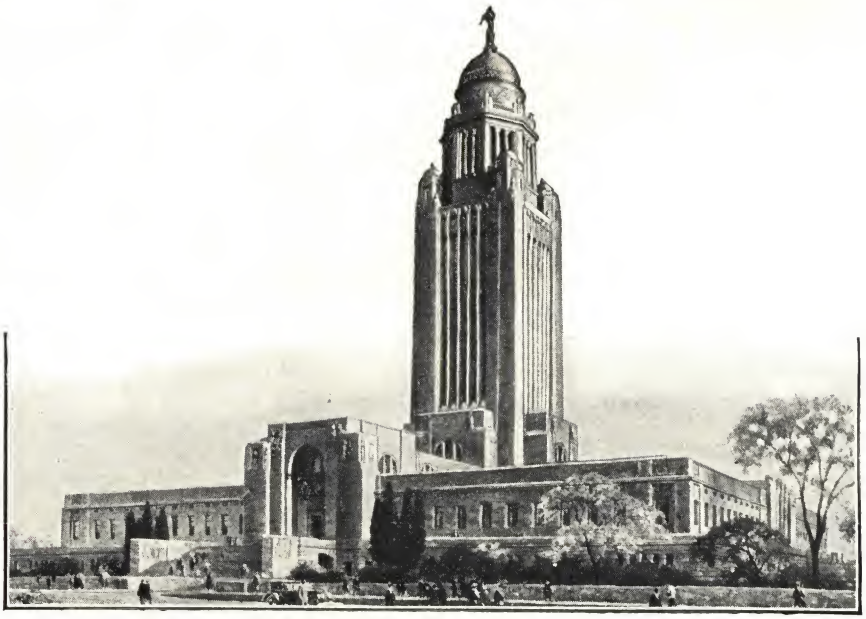
SLOANE-BLABON BATTLESHIP LINOLEUM

Battleship Linoleum is more widely specified by architects than any other grade.

Battleship Linoleums are generally manufactured to conform to standard specifications of the United States Navy. According to these specifications each gauge must pass certain tests of pliability, density, elasticity, resistance to moisture, etc. As a result of extra-processing employed in Sloane-Blabon plants it has been found possible to produce Battleship Linoleums of a quality far in excess of the United States Navy standards. Details of independent tests in comparison with Navy specifications are given below.

Sloane-Blabon Battleship Linoleum is delivered to the job *double-waxed*. The matter of linoleum finish is not adequately covered in standard Government specifications, but has become of increasing importance to large buyers both for the actual appearance of the goods and because the finish is an indication of quality.

In the Sloane-Blabon manufacturing process a superfine *natural* finish is produced without artificial means by extra grinding and mixing of raw materials and by super-calendering. To this unusually smooth and compact natural finish is added two separate and individual waxing operations by a special process developed in a Sloane-Blabon plant. *Double-waxing* at the plant eliminates the necessity for surface treatment after the linoleum is laid. It brings out the sheen and beauty of color and allows the linoleum to be used the instant it is laid.



Nebraska State Capitol, Lincoln, Neb.
10,000 sq. yds. of Sloane-Blabon Battleship Linoleum

ANALYSIS SHOWS SLOANE-BLABON BATTLESHIP LINOLEUM EXCEEDS GOVERNMENT STANDARDS

The following partial analysis of tests made by the Pittsburgh Testing Laboratories of 6 mm. Battleship Linoleum manufactured by a unit of Sloane-Blabon Corporation indicates the high standard of this linoleum in comparison with Government Specifications

	United States Government Specifications	Sloane-Blabon 6 mm. Battleship	Excess Quality
Weight	Government says weight 1 sq. yd. of 6 mm. Battleship Linoleum should be 10.50 lbs.	Sloane-Blabon 6 mm. Battleship Linoleum weighs 13.50 lbs.	17.4%
Uniformity	Government states linoleum should be even in thickness throughout entire goods. Government specifications allow a variance of .010 in.	Sloane-Blabon 6 mm. Battleship Linoleum varies only .004 in.	150%
Adhesion	Government specifies that a pull of 6 lbs. be required to separate burlap from linoleum.	Sloane-Blabon 6 mm. Battleship Linoleum requires a pull of 17 lbs. to separate burlap from linoleum.	183%
Absorption	If linoleum is left in water for 24 hours and absorbs much water it shows that it is not compact enough to resist dirt, dust, etc. Government allows an absorption of 2.5% of the weight of the linoleum. 1 sq. yd. of linoleum weighing 15 lbs. may absorb over 5 oz. of water and pass the test.	Sloane-Blabon 6 mm. Battleship Linoleum under this test absorbs less than 3 oz. of water.	66⅔%

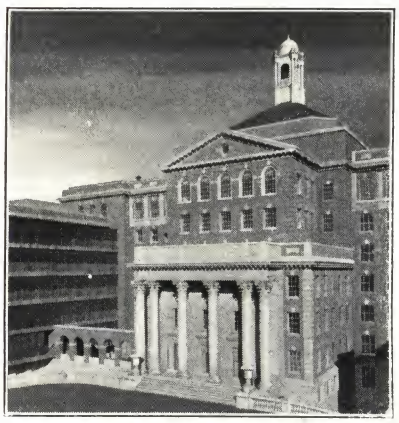
(In all instances Sloane-Blabon 6 mm. Battleship Linoleum more than meets United States Government Specifications.)

ADVANTAGES OF LINOLEUM FLOORS

Linoleum floors have many practical advantages which commend them particularly to architects for a wide variety of uses. Among these advantages the following may be considered the most important:

Economy

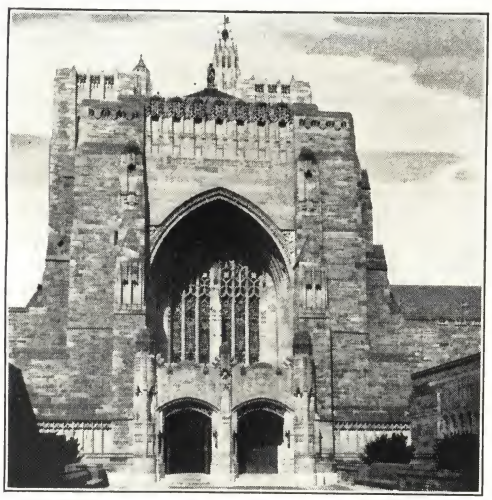
When included in original plans and laid over subfloors, the installation cost of linoleum is generally considerably less than hardwood. Yet it is long-wearing and thus low in ultimate cost. No costly refinishing operations are ever required.



New Haven Hospital, New Haven, Conn.

Long Wear

A floor of Sloane-Blabon Linoleum will wear for years, even when submitted to hard and constant use. The actual length of life will depend on the grade selected and the care given to it.



Sterling Memorial Library, Yale University
10,000 sq. yds. Sloane-Blabon Battleship

Germproof

A linoleum floor is highly sanitary. Its smooth, closely knit surface, free from cracks or any unevenness, prevents the absorption of dust and germs. This is particularly true of a floor of Sloane-Blabon Linoleum, which is subjected to greater pressure in the manufacturing process, thereby attaining greater density and smoothness. For this reason, it is recommended particularly for hospitals, schools, nurseries, etc., where sanitation is a primary consideration.

Easily Cleaned

Because of its non-absorptive qualities, the day-to-day care of Sloane-Blabon Linoleum is ordinarily only a matter of sweeping with a soft brush or wiping with a damp mop.

An occasional waxing will both preserve inlaid linoleum and help to keep cleaning costs at a minimum. An occasional coat of varnish is recommended for printed linoleum.

Fireproof

It has been thoroughly demonstrated to the fire prevention boards of nearly all large cities that linoleum is suitable for fireproof construction.

Pleasing Appearance

Whether in plain colors or in patterns, linoleum floors offer a neat and pleasing appearance. The patterns present unusual decorative possibilities, in keeping with the modern trend toward color and design in the floor.

Insulation

When cemented to the floor linoleum prevents any passage of air in either direction. It helps to maintain an even room temperature in the winter months and, during the summer, retards heat from permeating the rooms.

Comfort

Linoleum floors are resilient and easy to walk on. They are quiet, odorless and soundproof.

Decorative Features

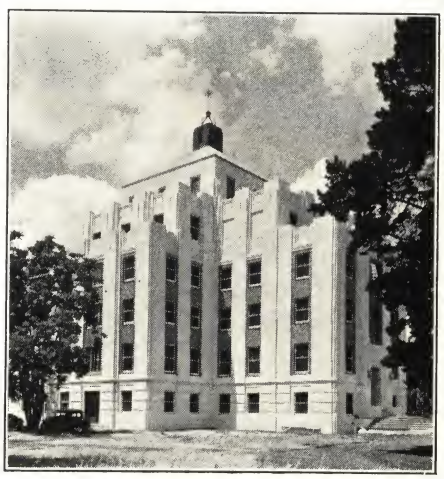
Sloane-Blabon Corporation has given particular emphasis to the development of authentic designs which can be employed by architects in their original plans.

Start Your Decorative Treatment with the Floors

In the Sloane-Blabon line, there is a pattern or color that will meet your decorative requirements and become a permanent flooring, when properly laid, for every room in the house.

Doing Over Old Wood Floors

Where old or unsightly floors exist in the home, an entirely new atmosphere and one that usually alters the entire appearance of the room, can be obtained by laying linoleum. This is far less costly and troublesome than ripping up the wood and laying new—and permits of the use of color effects as a foundation for a room of individuality.



Palo Alto Hospital, Palo Alto, Calif.

DETAILED SPECIFICATIONS FOR LAYING LINOLEUM FLOORS

The following detailed specifications for laying linoleum have been prepared with the greatest care in order to provide architects with comprehensive specifications for any type of installation. They have been put in such form that they may be copied, in whole or in part, thereby saving the work involved in preparing original specifications for the linoleum.



Park Square Building, Boston, Mass.
31,000 yards of Sloane-Blabon Linoleum used in this building

Scope of Work

Linoleum contractor shall furnish all labor and materials for covering spaces hereafter called for in the specifications or where indicated on drawings to be covered with linoleum.

The spaces to be covered are as follows: (Here give rooms, halls, closets, stairs, etc., to receive linoleum and grade and design of linoleum for each room.)

Linoleum

Linoleum shall be Sloane-Blabon Linoleum of the grades and kinds as called for under list of spaces to be covered. Samples shall be submitted with the estimate of the grade and colors called for.

Finish—Linoleum shall be delivered to the job with a waxed-finish surface dressing already applied.

Felt

Where felt underlining is called for it shall be of good quality, unsaturated builder's deadening felt weighing not less than 1½ lbs. per sq. yd.

Linoleum Cement

Cement shall be delivered to the job in the manufacturer's original containers.

Note: Several approved pastes, waterproof and water-resistant, are easily obtainable. A list will be mailed on request. We recommend Sloane-Blabon Linoleum Cement (water-resistant).

Floor Preparation

The surfaces of floors, etc., where linoleum is specified, shall be delivered to contractor broom clean, free from any inequalities in surface, lime, oil, dampness, etc. Contractor shall report to architect or general contractor in writing any defects which will prevent the laying of a good job.

Cement Floors—***New Work***—If linoleum is to be laid on cement floors, the floor shall be troweled smooth and hard. All ruling off of cement finish into squares shall be omitted in finished coats.

Old Work—Just as in new cement floors, it is necessary that an old floor be made clean and smooth. Any lining off of blocks in finish coat or holes in floor shall be filled with plaster of paris by linoleum contractor.

If the cement floor has been painted, paint shall be cleaned off or linoleum paste or cement will not stick. Paint can be softened with paint remover or lye and then scraped off. Care must be taken to see that the material used in removing paint is also thoroughly cleaned off.

Oil should also be removed or cleaned off as much as possible, and the cleaner also removed before laying linoleum.

Cracks—Cracks in cement floors must be filled with plaster of paris and smoothed down evenly and brought to a level surface.

Wood Floors—Wood floors on which linoleum is to be laid, must be smooth and floor boards nailed tight.

New—For new floors the boards should not be more than 3 or 3½-in. face. A double floor should be used and top floor blind nailed. To obtain the best job, a sanding machine should be first run over floor and a crack filler used to fill up any large cracks.

Old—Old floors should be made as smooth as possible. All loose boards should be securely nailed. Face nailing should be avoided unless nails are toed in and countersunk. Floors which have been painted or varnished should have these finishes removed as described for cement floors.

Cracks and Seams—Wide cracks in wood floors should be filled with wooden strips, nailed in place and plane leveled with the balance of the floor. Small cracks must be filled with approved material.

SPECIFICATIONS—Continued



United Shoe Machinery Building, Boston, Mass.
28,000 sq. yds. of Sloane-Blabon Battleship Linoleum

Workmanship

The contractor shall furnish competent labor thoroughly trained in the laying of linoleum.

The name of subcontractors for linoleum work shall be submitted to architect for approval before contract shall be awarded.

Delivery of Material

Linoleum contractors shall notify general contractor sufficiently in advance so that latter may supply a temperature of 70° F., starting at least 24 hours before linoleum work is begun and continuing for 24 hours after it is finished.

Laying Felt

Where felt is specified to be used, it shall be cemented to underfloor with linoleum paste. Paste shall be spread over entire surface of floor. Felt shall be laid in strips in opposite direction to run of boards of a wood floor. It shall be neatly fitted around all projections, pipes, etc., to make a smooth surface free from cracks, inequalities, etc. All seams of felt shall be butted, not lapped. After laying, felt shall be rolled with iron roller to remove air blisters and secure proper adhesion.

Laying the Linoleum

Before starting to lay linoleum, surface on which it is to be laid shall be perfectly smooth, clean and free from all dirt, moisture or oil. Linoleum contractor shall satisfy himself that surface is in condition to start laying and shall not commence until surfaces are satisfactory.

After felt has been properly laid over wood floors, linoleum shall be laid over felt with fewest possible seams and no small patches will be permitted. Seams shall run parallel with joints in felt and care shall be taken that seams in felt and linoleum do not come over one another.

Linoleum shall be laid over cement floor with fewest possible seams.

Plain linoleum shall be laid so that joints lap about ½ in. It shall be fitted accurately around all pipes, against walls and other projections in room.

Figured linoleum joints shall be butted to match out the pattern.

Body of linoleum, to within 6 ins. of joints and edges, shall be cemented down with an approved linoleum paste.

Linoleum shall then be thoroughly rolled with a 150-lb. steel roller to remove all air blisters and secure proper adhesion.

In plain linoleum, joints shall be cut through both pieces with one cut so as to make an accurate and close joint.

Edges and seams shall be turned back and then cemented down with an approved waterproof cement. Joints and edges shall be rolled as above specified, and any surplus cement which may be left on surface shall be removed immediately.

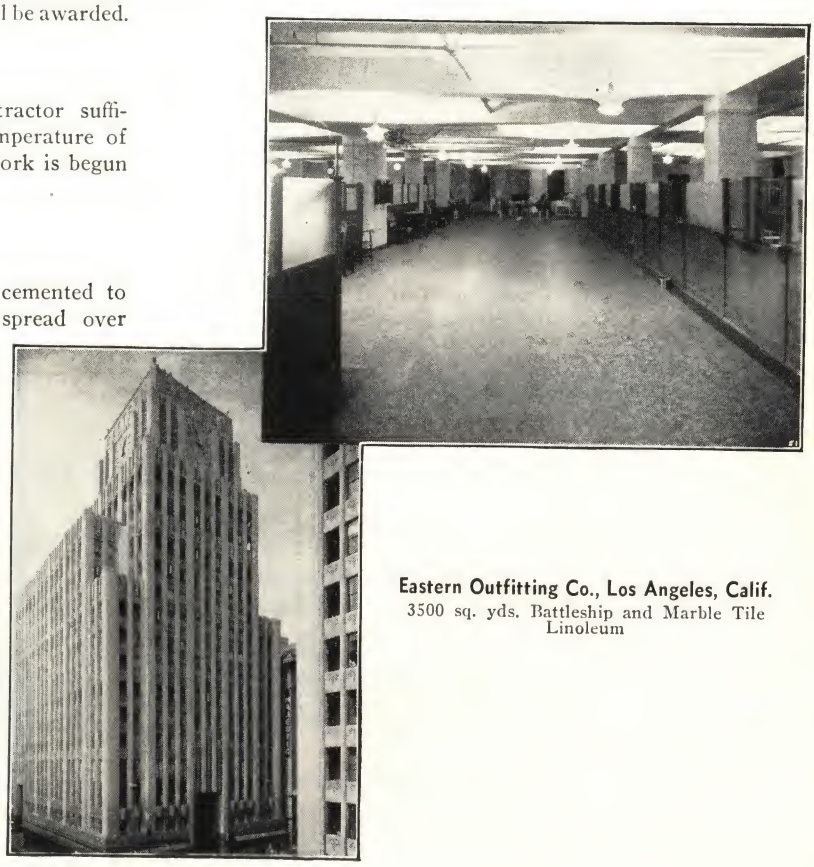
Edges and joints shall then be weighted down with sand bags or bricks for 24 hours.

Contractor shall leave floor in a clean condition, ready for occupancy on completion, and protected with heavy paper.

Guarantee

Linoleum contractor shall guarantee his work for one year to owner or general contractor, as directed by architect, against all defects of material and workmanship.

He shall, on receipt of written notice from owner, make at his own expense, any repair that may be necessary, except repairs of injury from any cause other than ordinary wear and tear.



Eastern Outfitting Co., Los Angeles, Calif.
3500 sq. yds. Battleship and Marble Tile Linoleum

ESSENTIAL POINTS TO WATCH WHEN LINOLEUM IS BEING LAID

The following points may or may not be included in specifications for linoleum floors. Whether they are included or not, however, they are important points for an architect to bear in mind in preparing specifications. For convenience, therefore, they are given separately from the detailed specifications on the preceding pages.

(1) Storing of Linoleum on the Job

Linoleum should be stored in a dry place in a temperature of at least 70 degrees for 48 hours previous to using. The crates should be placed on end—not flat—and in no case should a crate be allowed to drop on its side as it is liable to injure the linoleum.



Offices of Postal Telegraph & Cable Co.
9th floor I. T. & T. Building, New York, N. Y.
Sloane-Blabon Battleship

(2) Unpacking Linoleum

Light, heat and power sufficient for efficient work shall be furnished by the general contractor, so that the linoleum contractor can do his work properly and without cost to the latter. In unpacking linoleum it is essential that it be done in a temperature of at least 70°.

Cold decreases the pliability of linoleum and it is more liable to be injured when handled. The rolls should be loosened up and allowed to stand in the warm temperature for 2 or 3 days before being used, after which it will be in a pliable condition and will lay flat.

(3) Floor Must Be Dry

One of the most essential conditions for laying linoleum on a cement floor is that the cement floor must be absolutely dry. Linoleum can never be laid satisfactorily on a floor containing any moisture. If there is any moisture in floor or slab beneath it, the laying of linoleum seals the surface and dampness is brought to top. This loosens cement and causes linoleum to curl or blister.

Cement Floors in Contact with Earth—Linoleum should never be laid over cement floors which are in contact with earth. Condensation or moisture is almost certain to be brought to surface of concrete as soon as surface is sealed by laying linoleum over it, and the linoleum will be loosened from cement floor and spoiled.

(4) Use of Deadening Felt Under Linoleum

Over Cement Floors—Although not essential, its use under linoleum makes it easier to take up the linoleum in case it becomes necessary to move. The extreme pliability of Sloane's Linoleum when laid directly over a concrete floor makes a particularly resilient floor without deadening felt.

Over Wood Floors—On account of shrinking and swelling of wood floor boards, the use of builder's deadening felt allows a certain amount of play between linoleum and boards. It also helps to bridge over small cracks in floor and to keep linoleum from following the impression of the cracks. An uneven or worn wood floor can also be built up with the felt to make a comparatively level floor.

Builder's deadening felt is made 1 yd. wide and the grade recommended weighs 1½ lbs. to the sq. yd., and is approximately ⅛ in. thick. Felt should be run lengthwise across boards, butt-joined and cemented to wood floor with linoleum paste. Linoleum is cemented to felt, the strips running parallel with felt.

(5) Linoleum Cements

There are two types of cements used for linoleum—waterproof cement and water-resistant paste.



Nurses Home, Jersey City, N. J.
15,000 sq. yds. Sloane-Blabon Gray-Jaspé Linoleum

PARTIAL LIST OF SLOANE-BLABON LINOLEUM INSTALLATIONS

City	Sq. Yds.
BINGHAMTON, N. Y.	
New York Telephone Co.	6,000
BIRMINGHAM, ALA.	
Standard Oil Co.	1,200
BUFFALO, N. Y.	
City Hall	35,000
Gerrans Building	18,000
Public Schools 31, 63, 74, 76	19,000
BOSTON, MASS.	
Park Square Building	43,000
Chamber of Commerce	17,500
Statler Hotel Building	20,000
United Shoe Machinery Building	28,000
First National Bank	22,500
CHARLOTTE, N. C.	
Southern Power Co.	5,000
CHICAGO, ILL.	
Chicago Trust Building	3,000
CREEDMORE, L. I., N. Y.	
Brooklyn State Hospital	18,000
DETROIT, MICH.	
Receiving Hospital	2,000
DAYTON, OHIO	
National Cash Register Co.	3,000
HOLLYWOOD, CALIF.	
Hollywood Hospital	4,500
JERSEY CITY, N. J.	
Nurses' Home	15,000
JOHNSTOWN, PA.	
Bethlehem Steel Co.	2,500
LOS ANGELES, CALIF.	
Los Angeles City Hall	32,000
Public Library	3,300
University of California	22,000
LINCOLN, NEB.	
Nebraska State Capitol	10,000

City	Sq. Yds.
MINNEAPOLIS, MINN.	
Federal Reserve Bank	1,000
MIAMI, FLA.	
Dade County Courthouse.	12,000
NEW HAVEN, CONN.	
Yale University	18,000
NEW YORK, N. Y.	
Bank of Manhattan	9,000
Consolidated Gas Co.	100,000
Sloane Memorial Y.M.C.A.	17,500
World-Telegram Building	5,300
Hotel Waldorf Astoria	12,000
Presbyterian Hospital	60,000
Daily News Building	11,000
PALO ALTO, CALIF.	
Palo Alto Hospital	5,000
PHILADELPHIA, PA.	
Pennsylvania R. R. Co.	12,000
PITTSBURGH, PA.	
Koppers Building	20,000
Bell Telephone Co.	13,000
PORTLAND, ORE.	
Pacific Telephone Building	7,000
SAN JOSÉ, CALIF.	
Bank of Italy	6,700
SACRAMENTO, CALIF.	
Sacramento High School	10,000
SAN FRANCISCO, CALIF.	
Russ Building	40,000
Aptos Junior High School	6,000
SPRINGFIELD, MASS.	
Massachusetts Mutual Life Insurance Building	22,000
TRENTON, N. J.	
Central High School	10,000
WASHINGTON, D. C.	
Acacia Mutual Life Insurance Building	10,000
Department of Internal Revenue	5,000

THE SLOANE-BLABON GUARANTEE

All Sloane-Blabon Linoleum is guaranteed to be made of the best raw materials. It is rigidly tested and inspected throughout all the processes of manufacture and is uniform in gauge and weight and of the highest standard in wearing quality and finish.

Every yard of Sloane-Blabon Linoleum and Felt-base Floor Covering is guaranteed to give satisfactory service.

SLOANE BLABON CORPORATION

LINOLEUM

MUNDET CORK CORP.

450 Seventh Avenue, NEW YORK, N. Y.

DOMESTIC FACTORIES: HILLSIDE, N. J., BROOKLYN, N. Y.

BRANCHES

ATLANTA, GA. | CHICAGO, ILL. | HOUSTON, TEX. | MEMPHIS, TENN. | ST. LOUIS, MO.
BOSTON, MASS. | CINCINNATI, OHIO | KANSAS CITY, MO. | NEW ORLEANS, LA. | SAN FRANCISCO, CAL.
BUFFALO, N. Y. | DETROIT, MICH. | LOS ANGELES, CAL. | PHILADELPHIA, PA. | TULSA, OKLA.

AGENTS

CLEVELAND, OHIO, C. S. Ross
DES MOINES, IOWA, John Kennedy
MINNEAPOLIS, MINN., Insulation Sales Co.
PORTLAND, ORE., F. J. Leonard
PORTLAND, ORE., Pacific Asbestos & Supply Co.
SALT LAKE CITY, UTAH, L. A. Roser
SEATTLE, WASH., Pacific Asbestos & Supply Co.
UTICA, N. Y., George Weisenberger
VANCOUVER, B. C., CANADA, T. M. Grindley Company, Ltd.

Product
MUNDET "JOINTITE" CORKTILE FLOORING.

For other Mundet products, including Cork Insulation and Cork Bulletin Board, see Manufacturers' Index.

"Jointite" Cork Tile Flooring

Mundet "Jointite" Cork Tile is manufactured in two thicknesses, namely $\frac{5}{16}$ and ½ in.

Mundet "Jointite" Cork Tile is composed of the very best selected cleaned and screened cork shavings. These shavings are placed in moulds of the proper depth to produce the tile thicknesses desired and are subjected to tremendous pressure to insure the proper density for floor use. The moulds are then placed in an oven maintained at a relatively high degree of heat (approximately 600° F.). This heat allows the rosin in the cork shavings to liquify and acts as a binder for the shavings, thus no foreign substance is needed to hold the shavings together and the natural properties of the cork shavings are not impaired in any way.

"Jointite" Cork Tile is produced in three shades, all of which are brown in color, some light, some medium and some dark. These shades are obtained by governing the period of baking. Proper designs and arrangements of an artistic nature can be obtained by laying the tile in the different shades.

Ideal for

Corridors, halls, vestibules, ramps, stair treads, hospitals, schools, colleges, railroad stations, libraries, telephone rooms, offices, gymnasiums, churches, bathrooms, bedrooms, sleeping porches, nurseries, banks, theatres, courtrooms, art galleries, museums, etc.

Uses and Advantages

(1) Comes in various sizes, suitable for any floor.
(2) Does not shrink, swell or warp.
(3) Only absolutely pure cork used in its manufacture.
(4) Immune to grease, ink and most liquids.
(5) Cannot catch or absorb dirt or moisture.
(6) Easily cleaned, washable with soap and water.
(7) Varying shades of color are created by varying the temperature when baking. No coloring matter is used.
(8) Cannot splinter, tear, corrode, rot or crumble.
(9) Easy to walk upon due to its natural elasticity.
(10) Hard heels on Mundet "Jointite" Cork Tile are noiseless.
(11) Cosy and warm owing to its insulating qualities.
(12) Restful to the eye as well as to the ear.
(13) Highly compressed, hence strong, firm and durable.
(14) Not slippery, even when wet.

Sizes

12x36 in. is standard size. We also make standard 6, 9 and 12-in. squares; special 3, 4 and 5-in. squares; 3x18, 4x18, 6x18 and 9x18-in. border strips; and **9x36, 6x36, 6x12,** 4x36, 4x8, 4x12, 3x12, 3x9 and 3x6-in. oblong strips.

Cove Base

We furnish Mundet "Jointite" Cork Tile Sanitary Cove Base in all heights.

Specifications

All cork tile stair treads and cork tile floors to be ½ or $\frac{5}{16}$-in. thick cork tile.

The tile to be highest grade pure cork throughout, solid, compressed, properly baked. There must be no forcing substances whatever in the tile. Only high grade, waterproof, elastic cement shall be used in applying the tile. All joints to be securely and hermetically cemented.

Where wood is used as a base under tile, nothing inferior to tongued and grooved flooring ⅞ in. thick, 6 in. maximum width, shall be used to support Mundet "Jointite" Cork Tile. It must be well fitted, tight, firmly nailed, smooth and level.

Where cement is used as a base under tile, it must be of a nailing quality and it shall be at least 1 in. thick and shall be made of 5 parts of acceptable clean screened sand, and 1 part fresh cement. It must be troweled smooth. Allowance must be made for ½ or $\frac{5}{16}$-in. thickness of tile. Do not lay cork tile before the concrete has set and dried.

Note (1): **Nosing**—Mundet "Jointite" Cork Tile is adaptable to any type of nosing on stair treads.

Note (2): **Cove Base**—The wall and floor must make a true and smooth right angle with each other so that the Mundet "Jointite" Cork Tile Cove Base will fit evenly throughout with both the wall and floor. There must be no foreign lumps or dirt on the surfaces. Surfaces may be of any standard acceptable backing—wood, plaster, cement, etc.



The Norwood Telephone Exchange, Cincinnati, Ohio—Flooring of "Jointite" Cork Tile

AMERICAN RUBBER PRODUCTS CORPORATION

GENERAL OFFICES
125 East 46th Street
NEW YORK, N. Y.

RUBBEROCK—AN OUTSTANDING RUBBER TILE FLOORING

Trackless—Lasting—Beautiful—Economical—Installation by Experts—No Waxes, Lacquers or Cleaning Agents Necessary for Maintenance

Foreword

RUBBEROCK Rubber Tile Flooring has been manufactured and installed in prominent buildings from coast to coast during the past eight years by the AMERICAN RUBBER PRODUCTS CORPORATION. During this period there was developed the new, *trackless* T-S-100 RUBBEROCK Rubber Tile—an economical, beautiful rubber flooring with a lasting and inherent surface that cleans readily and retains its glossy surface without waxing.

Colors

T-S-RUBBEROCK comes in all colors. There are beautiful blends of shades of reds, browns, tans, greens and many others. Often as many as six shades of browns are combined to attain a required hue. T-S-100 colors of this blending are known as "Multi-Tone." *Consequently, never in any way does T-S-100 RUBBEROCK imitate marble.* It is a flooring with a warm, distinguished individuality. Should the architect desire *plain colors* to carry out a desired effect, they are likewise to be had in RUBBEROCK Flooring.

Installed by Skilled Mechanics

The architect realizes how vitally important is the erection or installation to the ultimate success of any product in his building.

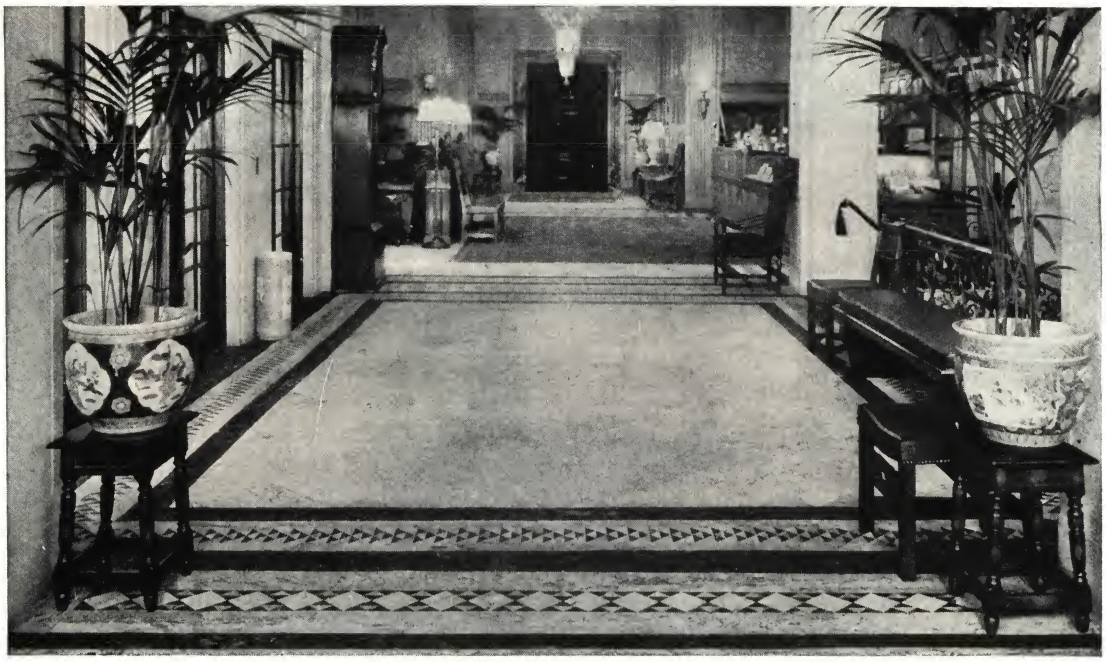
In T-S-100 RUBBEROCK Rubber Tile our chemists have developed a beautiful and lasting resilient flooring. That solves but half the problem. The other half—that of installation—is solved by our own staff of skilled mechanics, all of whom have been in our employ for more than five years. They insure the architect and owner of the proper installation under any and all conditions. The entire, undivided responsibility for the success of the job is ours.

Maintenance

"How shall rubber flooring be maintained?" "How shall it be kept clean?" Every architect will agree that these are the chief problems faced in the use of the average flooring. T-S-100 RUBBEROCK answers these questions with one simple direction: "Use no waxes, lacquers, or cleaning agents—T-S-RUBBEROCK requires only very little clear warm water and a damp mop." This completely eliminates the use of exorbitantly priced cleaning agents. Thus maintenance and cleaning problems are cleared up economically, quickly, easily. Such a solution is possible with T-S-100 RUBBEROCK because dirt lies on top of its hard, dense, glossy surface and does not penetrate. Take a sample and walk dirt on it. See how easily a moist cloth and light rubbing remove the dirt.

Installations

During the past eight years we have installed over three million square feet of rubber flooring in all types of public buildings, residences and steamships. No operation is too small to secure our most careful attention. For complete data write for booklet A-100 and we will be glad to send it to you.



Rubberock Rubber Tile Flooring Installed in a Prominent Club

A Partial List of Recent Installations and Their Architects

Standard Statistics Co., New York, N. Y., Wm. F. Wholey & Co.
Lincoln Building (Corridors, Madison Avenue Wing), New York, N. Y., J. E. R. Carpenter
New York Polyclinic Hospital, New York, N. Y., William S. Gregory
First Church of Christ Scientist, New York, N. Y.; Flushing, L. I., N. Y.; Mamaroneck, N. Y., Bernhardt Muller
Downtown Athletic Club, New York, N. Y., Starrett & Van Vleck
Clyde Steamship Co. (Uptown Ticket Office), New York, N. Y., John E. Craig, Executive Vice President
St. Ann's Villa, Convent Station, N. J., Myers & Shanley
Salvation Army Building (Cafeteria), New York, N. Y., Voorhees, Gmelin & Walker
Brooklyn Hospital, Brooklyn, N. Y., Lord & Hewlett
New Jersey Bell Telephone Building, Newark, N. J., Voorhees, Gmelin & Walker
St. Francis of Assisi R. C. Church, New York, N. Y.
Jenks, Gwynne & Co., New York, N. Y., F. J Horvath & Co.

AMERICAN TILE & RUBBER COMPANY

Manufacturers of Amtico Marbleized Rubber Tile and Flooring

Perrine Avenue, TRENTON, N. J.

INSTALLATION BY AUTHORIZED DISTRIBUTERS

SUBSIDIARY TO

PANTHER RUBBER MFG. CO., Stoughton, Mass.
PANCO RUBBER COMPANY, Chelsea, Mass.

PURITAN RUBBER MFG. CO., Trenton, N. J.
PANTHER RUBBER CO., LTD., Sherbrooke, Que., Can.

Amtico Rubber Tile and Flooring

Rubber tile of unusual resiliency. Has stood the test of hard usage since 1922.

A tile which shows minimum absorption, good ageing qualities and a low relative percentage of loss on abrasion. These are the most necessary features of a sanitary, durable and satisfactory rubber tile floor.

Thirty-two marbled and sixteen plain colors constitute our range, enabling us to meet the most exacting requirements.

The patronage of many large and modern hospitals and public buildings bears testimony to the merit of Amtico Tile.

Tests conducted by disinterested engineering houses on behalf of various architects over a period of nine years, have proven Amtico to be more than satisfactory.

The selection of Amtico Tile, the choice of many architects after proof of merit, insures the utmost in a truly resilient and durable floor of lasting beauty.

Amtico Tile is of the same uniform quality from face to back, and is made to a quality standard—not to a price.

Guarantee—Amtico Tile carries the standard guarantee of the Rubber Manufacturers' Association, Inc., of which we are members.

Application and Installation

Because of its light weight, Amtico Tile is splendid for remodeling old buildings, for flooring, wainscoting, stair covering, table tops and counters, and for use wherever dignity, smart appearance and good wearing quality is demanded.

It is installed by authorized distributers who are chosen as being well qualified by experience to give expert workmanship.

WARREN HARDING HIGH SCHOOL
BRIDGEPORT, CONN.

RALPH W. HEDGES
PRINCIPAL

March 22, 1929.

Mr. H. D. Turner
American Tile and Rubber Co.
Perrine Ave.
Trenton, N. J.

My dear Mr. Turner:

It is indeed a pleasure to write in commendation of the Amtico marbelized rubber tile and flooring which was installed in the library and front corridor of the Warren Harding High School in 1925.

It is so noiseless that we consider it indispensable in our Library. Our school has an enrollment of 1,470. Consequently the floors are subjected to very hard usage. At the present time there are no evidences of wear. If I were free to select any type of flooring, regardless of cost, for a school library it would be Amtico.

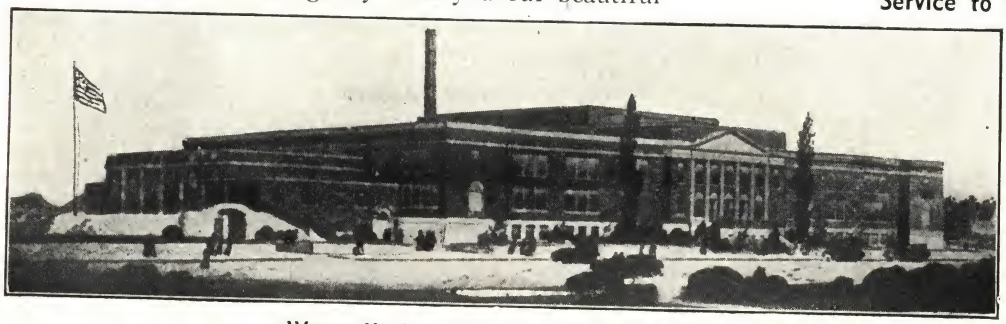
Very truly yours,

Ralph W. Hedges
PRINCIPAL.

RWH:L

Samples

Upon request we will gladly send you our beautiful cabinet of tile samples showing all colors, also manual and design booklet.



Warren Harding High School, Bridgeport, Conn.
CALDWELL, WALKER, BECKWITH, Architects; WILLIAM B. ITTER, Consulting Architect

Service to the Architect

The Amtico Designing Department is ready at all times to co-operate with the architect in creating custom-built flooring that will lend itself to any motif, decoration, period or personal design. Rich, glowing color combinations and patterns are available for your selection. Our Engineering Department is always available free of charge.

HOOD RUBBER FLOOR TILING

MANUFACTURED BY
HOOD RUBBER COMPANY, INC.
WATERTOWN, MASS.

HOOD



Advantages of Hood Rubber Tile

Hood Rubber Tile is a floor covering possessing many artistic, serviceable as well as practical advantages. It is:

Durable	Waterproof
Artistic	Sanitary
Noiseless	Stainless

Easy to clean





Hood Rubber Tile Installation, Aetna Life Insurance Building, Hartford, Conn.



Hood Rubber Floor Tile Installation, Jameson Memorial Hospital, New Castle, Penn.

Hood Rubber Floor Tiling

The *density* of Hood Floor Tiling is its most outstanding feature. It is created by a special Hood process, making a more *compact, resilient* mass with less *porosity*. These qualities assure a tile of *greater durability,* which will give many times the wear of ordinary floor coverings.

The unusual and attractive, finished appearance of Hood Rubber Tile is a natural lasting sheen, produced without the aid of greases or other artificial agents. Its many colors and color combinations and its exceptional wearing qualities provide a floor covering that can be safely and confidently specified for many types of installation.

Standard Mottled Colors of Hood Tiles

The following are standard mottled colors of Hood Tiles:

Black white	Alleghany
White black	Black gold
Gray mixture	Oxford fleuri
Napoleon gray	Walnut mixture
Black mixture	Cream mixture
Red mixture	Light brown mixture
Blue white	Dark brown mixture
White blue	White paisley
Tennessee pink	Tan mixture
Dark verde antique	Veined carnelian
Green white	Gray piastra
White green	Ivory mixture
Light verde antique	Green gold
	Plain black

Also made in plain and pastel colors.

Suggested Specifications

Preparation of Wood Floors—All wood underfloors should be double floors of kiln-dried lumber. The top layer should be not less than ¾-in. material, not more than 4 in. wide, tongued and grooved, thoroughly top-nailed and toe-nailed and finished true and level to exactly the thickness of the Hood Tile below the finished floor line. Old wood floors that have been waxed or oiled should be thoroughly scrubbed before laying Hood Tile. Tile should not be laid on a wood floor over concrete as this type of floor is subject to dry rot. A good quality 1½-lb. building felt and strong cotton fabric should be tacked to the wood before laying tile.

Over Concrete Floors—All concrete floors should be finished true and even to within the thickness of the tile from the finished floor level. Concrete must be absolutely dry and free from moisture. Old concrete floors which have been painted must be thoroughly cleaned, and all cracks should be filled and smoothed over.

Installation—Hood Tile should be laid in the following manner: The border material should be first laid out and fitted to accommodate a center space of the proper size for the blocks selected. An especially made waterproof cement is thinly spread with a trowel. Border tile should be laid on two adjacent sides, then the tile in the center, placing each block about an inch away from the desired joint and pushing it over the cement into place. This insures enough cement on the edges to fill the joint. The last rows of tile on two remaining sides of room should be laid loosely overlapping the border, which is then cut to perfect fit. Border and remaining blocks are then cemented.

Finishing—Finished floors should be rolled thoroughly after cementing and all surplus cement removed by use of alcohol and a cloth. The floor should not be washed until five days after the installation is completed.

Sizes and Thicknesses

Standard Thicknesses—¼ and $\frac{3}{16}$-in.
Standard Sizes—4x4, 6x6, 9x9, 12x12 in.
Standard Border Strips—36 in. long by 6, 12, 24, 27 in. wide.
Cove Base, Internal and External Corners—4 in. or 6 in. high.
Wainscot Caps—2 in. high, ⅜ in. thick and 3 ft. long.
Stair Tread and Nosing—In one piece ¼ in. thick, 12-in. tread and 1½-in. nosing. 30, 36, 42 in. long.
Thresholds—Are made 5½ in. wide, ½ in. high and 4 ft. long.
Plinth Blocks—6⅜ in. high, 4 in. wide and 1 in. thick.

QUABAUG RUBBER COMPANY

FACTORY AND MAIN OFFICE
NORTH BROOKFIELD, MASS.

BRANCH OFFICE: 125 East 46th Street, NEW YORK, N. Y.

ARMORTRED RUBBER-STYLE FLOORING

Furnished in Individual Block Tile

Description

Armortred Rubber-style Flooring is made from new live rubber, scientifically compounded, giving it maximum durability, combined with resiliency, sanitation, and beautiful color effects. It is vulcanized in one piece under tremendous pressure, the colors penetrate from face to back, making a solid homogeneous tile.

Armortred Rubber-style Floors

Uses

Armortred Rubber-style is suitable for installation in every type of commercial building where the floors are subjected to heavy foot traffic—in every office, store, hospital, institution, theater, bank, showroom, apartment house or residence, where durability, character and beauty are desired.

Sanitation

Armortred Rubber-style is manufactured by a process that eliminates all pores and furnishes an absolutely smooth surface with a high finish. It is not affected by any ordinary staining agent, such as dirt, ink, grease, mild acids, etc.

Colors and Sizes

Colors—Armortred Rubber-style Flooring is manufactured in more than 60 mottled or plain colors. Our standard colors and sizes give you an unlimited range of harmonious color combinations and beautiful designs. When necessary, special colors can be produced.

Standard Thicknesses—$\frac{3}{16}$, $\frac{1}{4}$, $\frac{3}{8}$, and $\frac{1}{2}$ in.

Standard Sizes — Squares, 4x4, 6x6, 8x8, 9x9, 12x12, 24x24 ins.

Rectangles, 3x6, 6x12, 4x8 and 12x24 ins.

Border strips, 24x24, 24x36 and 18x36 ins.

Cove Base—All standard colors. Height—4 and ins. Gauge—$\frac{3}{16}$ and $\frac{1}{4}$ in.

Accessories—Saddles, 39 ins. long.

Wainscoting—$\frac{1}{8}$, $\frac{3}{16}$ and $\frac{1}{4}$ in.

Wainscot Cap—$\frac{3}{8}$ in. thick, $1\frac{5}{8}$ in. wide, 39 ins. long.

Nosings—*Curved Nose*—$\frac{1}{4}$ in. thick, 39 ins. long. *Straight Nose*—$\frac{1}{4}$ in. thick, 39 ins. long.

Maintenance

It is not necessary to wax Armortred Rubber-style Floors. Proper cleaning with clear warm water and mild soap will remove all accumulation of grit and dirt and bring out the glistening beauty of the tile. We will furnish instructions for the proper cleaning and care of Armortred Floors with each installation.

Guarantee

We guarantee Armortred to be free from defects in material and workmanship. All guarantees, expressed or implied, are contingent on the use of such cleaning agents and methods as are recommended by us.

Deliveries

Our organization is so planned and equipped that every order receives personal attention, and our manufacturing facilities insure exceptionally prompt deliveries.

Co-operation and Service

We are always at the service of the architect or contractor, to submit laying specifications, suggestions, and recommendations, covering installation of rubber tile on floors, stairs, and other locations.

We will furnish scaled drawings showing suggested designs for any installation you may contemplate. We will suggest tentative color combinations to harmonize with the decorations of the building when asked to do so.

Samples of colors, in any standard size desired, furnished upon request.

We shall be glad to furnish quotations promptly upon receipt of blue prints or drawings showing all necessary dimensions.

Armortred Rubber-style Flooring has been successfully used for more than eight years. Original installations show no appreciable wear

KLEISTONE RUBBER COMPANY, INC.

Manufacturers of Rubber Tile
715 Cutler Street, WARREN, R. I.
DISTRIBUTERS IN PRINCIPAL CITIES

Product

KLEISTONE RUBBER TILE for floors and walls in marbleized and plain colors.

KLEISTONE RUBBER TILE FLOORS

Description

Kleistone Rubber Tile—A resilient, noise deadening flooring of the highest quality standards, combining permanence with unlimited decorative possibilities. Its reasonable initial cost and low upkeep expense make it an ideal floor material wherever soft floors are desirable.

Being without fibrous content, it is almost entirely non-absorbent and its smooth surface, with proper care, permanently retains the original polished finish. Colors and markings go through to the back, and the entire thickness of the tile is made of the same high quality composition as the surface.

For Walls—Kleistone Tile is unusually well adapted for use on walls, because of its sanitary qualities and permanent freedom from any maintenance cost.

Sizes and Thicknesses

Standard thicknesses are ⅜, ¼ and $\frac{3}{16}$ in.

Standard sizes are 4x4, 6x6, 9x9, 12x12, 18x18, 24x24, 3x6, 6x12, 9x18, 12x24 in.

Border strips of any width up to 24 in., border slabs up to 28x60 in.

Cove base and other accessories shown in detail on following page.

Colors

Kleistone Rubber Tile is regularly made in 24 marbleized color effects, and in 8 plain colors as listed below. Special colors can be manufactured, as required, to harmonize with any special decorative scheme.

202 Verde Antique
205 Red Paisley
207 Dark Sienna
209 Black and White
210 Black and Gold
211 Gray Paisley
213 Napoleon Gray
214 Brown Napoleon
215 White, Red and Black
216 White, Green and Black
217 Light Sienna
218 White and Black
219 Pink Tennessee
220 White and Blue
221 Blue and White
222 Green and White
223 Red, White and Black
225 Brown and Buff
226 Chocolate Brown
227 Buff, Black and Brown
228 Brown, Gold and White
229 Gray, Green, White and Black
230 Brown Paisley
231 Black, Red and White
301 Plain Brown
302 Plain White
303 Plain Black
304 Plain Red
305 Plain Light Gray
307 Plain Blue
308 Plain Green
309 Plain Dark Green

Warranty

The life and satisfactory service secured from rubber tile floors being dependent upon their usage and care, no definite time warranty can be given, but we warrant the installation against defective material or workmanship provided our recommended cleaning agents and methods are used. We do not assume responsibility for defects due to defective subfloors or other surfaces provided by you, or for defects arising from dampness in the subfloor or underparts of the building.

Samples and Service

Samples and literature mailed on request. Our Service Department is prepared to forward information regarding proper methods of installation, to make suggestions regarding designs, or furnish other pertinent information.

Specifications

Standard Specification for Rubber Tile Floors—(1) Rubber tile flooring indicated on drawings or as listed herein, shall be Kleistone Rubber Tile, manufactured by KLEISTONE RUBBER COMPANY, INC., Warren, R. I., or other tile of equal quality in the opinion of the architect. The rubber tile shall contain no fibrous material and shall be practically non-absorbent. Thickness of tile shall be .... inches, (insert $\frac{3}{16}$, ¼ or ⅜ in.) and all tiles furnished shall be of exactly equal thickness, cut true to size with square, clean-cut edges. The colors and markings of the rubber tile shall run through the entire thickness of the material and the tile shall be made of the same composition throughout. Colors and sizes of tile and border to be selected by the architect.

(2) The cement used in setting the rubber tile shall be waterproof and shall be "Topco" Cement manufactured by Templar Oil Products Co., Brooklyn, N. Y., or other make of waterproof cement approved by the architect.

(3) The contractor installing the rubber tile flooring shall be experienced in this class of work and shall employ only mechanics thoroughly familiar with the laying of rubber flooring. Before commencing work, the contractor shall ascertain whether the subfloor is suitable for the rubber tile work. If it is not suitable he shall not proceed with his work until all



Modernistic Floor of Kleistone Rubber Tile (in Solid Colors)
MYERS, MINOTT & COMPANY, New York, N. Y., Furnishing Engineers



Kleistone Rubber Tile Floors in New York Telephone Co. Building, 175th St. and Grand Concourse, New York, N. Y.
VOORHEES, GMELIN & WALKER, Architects



Treatment of Steps and Risers Using Kleistone Rubber Treads, Nosing and Risers

defects are remedied. Tile and border shall be accurately fitted against all walls, pipes and other permanent projections. Borders, wherever possible, shall be approximately equal in width on all sides of each space. After setting, tile shall be thoroughly rolled in both directions with a roller weighing not less than 150 lb., and not more than 12 in. long. All cement shall be removed from the surface of tile and the floors shall be left broom-clean by the tile contractor.

Specification for Concrete Underfloors to Be Covered with Rubber Tile—*(Include in mason's specifications for floors).* Concrete subfloor to receive rubber tile shall have a top layer 1 to 1½ in. thick, composed of 1 part portland cement to 2½ parts clean screened sand, troweled to a smooth sidewalk finish and free from high and low spots, ... inches (insert 3/16, ¼ or ⅜ in.) below the required finished floor level.

Joints shall be cut through top layer approximately 20 ft. apart, following the lines of floor beams and girders. After the concrete has set, the joints are to be filled and troweled even with top surface. No lines shall be struck on the surface, and it shall be delivered to the rubber tile contractor clean, dry and free from foreign material.

Cement hardeners and so-called integral waterproofings should not be used in concrete over which rubber tile is to be installed. They tend to retard evaporation of the moisture content.

In order to insure rapid drying, allow all possible ventilation in rooms where rubber tile floors are to be laid.

Concrete which has been frozen, or has a chalky or scaly surface, or which is not well bonded to fill, must be removed and replaced with top coat as above.

All concrete and masonry laid in contact with the ground, on or below grade, shall be thoroughly waterproofed by the membrane method.

Specification for Wood Underfloors to Be Covered with Rubber Tile—*(Include in carpenter's specifications for floors).* In spaces where rubber tile is called for in the plans and specifications, lay double floors; the top or finished floors to be ⅞ in. tongued and grooved, not more than 4 in. wide, driven tight, well nailed and finished true and level .... inches (insert 3/16, ¼ or ⅜ in.) below the required finished floor level; joints and butts to be planed or scraped smooth.

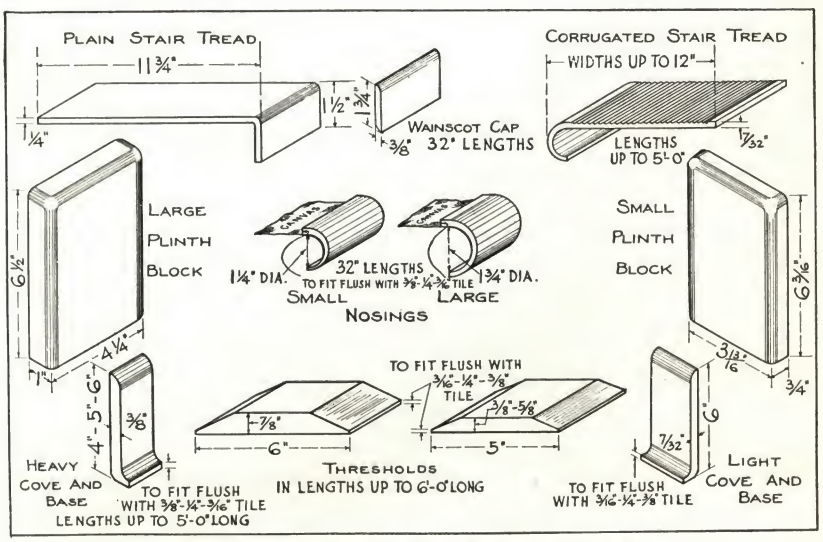
Old Work—In preparing old wood floors to receive rubber tile, remove all badly worn or decayed boards, and boards containing knotholes or loose knots, and replace with new lumber, in accordance with wood flooring specifications. Old floors to be thoroughly surface-nailed to secure all springy boards, loose butts or joints; joints or butts then to be scraped, planed or sanded smooth and even.

Note: In laying rubber tile floors over wood subfloors, both old and new, it is necessary to provide an interlining between the wood and the rubber to prevent any possible expansion or contraction of the wood floors from being communicated to the rubber tile. A light weight canvas or heavy cotton sheeting should be carefully tacked with special ½-in. flat headed tacks over the entire area of the wood floor. Care must be taken to drive the tacks well home so that the heads do not protrude above the surface of the canvas. Tacks should be scattered over the entire area of the floor on about 3-in. centers. In spaces where traffic is light and where there is no possibility of water getting beneath the surface of the tile, unsaturated builder's deadening felt may be used instead of canvas or cloth. The rubber tile is cemented directly to the canvas or felt with waterproof cement.

Specification for Ground Over Which Rubber Cove and Base Is to Be Installed—Plaster, wood or other material against which base or wainscoting is to be installed shall be carried down to and finished square with the underfloor, making a clean, straight right angle with same, and free from lumps, dirt or other obstruction.

Installations

Thousands of Kleistone Rubber Tile Floors give satisfactory service in a wide variety of buildings. We will be glad to furnish a list of such installations for any locality in the United States.



Kleistone Cove Base and Other Accessories

SYRA-BORD RUBBER FLOORING CO.

SYRACUSE, N. Y.

Syra-Bord—A Superior Rubber Flooring That Stays Laid

Syra-Bord is a real flooring, not merely a floor covering.

Syra-Bord

TRADE-MARK

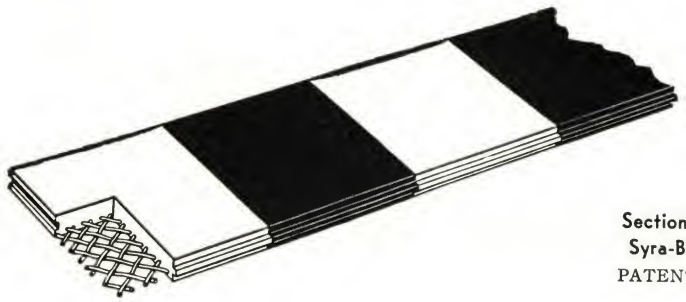
It is made with pure rubber as a base material, either in solid or with cushion back.

The sides and ends are tongued and grooved, same as wood flooring. It is made in 6 to 12-inch squares, ¼ and ⅜ inch thick and 10 feet long, with expansion joints separating the squares, making a continuous strip of square tiles.

These features all combine to make Syra-Bord the logical floor for kitchens, bathrooms, sun parlors, breakfast nooks, vestibules and other rooms in residences.

Ideal for Heavy Duty

The preceding features make Syra-Bord an ideal floor for stores, show windows, elevators, offices, banks, hospitals, schools, hotels, restaurants, factories, or any place where a heavy duty floor is required.



Section of Syra-Bord
PATENTED

Easily Laid

Syra-Bord is very easily and quickly laid in the same manner as a tongued and grooved wood floor on wood-concrete or any suitable under floor.

Durable and Attractive

The materials compounded in Syra-Bord insure durability, and its patented features and methods employed in its manufacture insure its permanency because they prevent creeping, curling, cracking, peeling and warping.

Syra-Bord combines attractiveness with the utmost durability and comfort.

Other Points of Merit

Syra-Bord is sanitary, verminproof, moistureproof, dustless, non-slipping, and quiet and soft under the tread. Syra-Bord embodies all the resiliency possible to obtain without loss of the other characteristics necessary to the ideal floor and will retain its natural elasticity permanently.

Color Effects

These can be made in solid or two-color designs, either in plain or mottled colors.

Special color designs can also be created.

Border Effects

Syra-Bord is also made in 10-foot strips for borders.

Cove Base, Stair Treads and Mouldings

We make a cove base 4, 5 and 6 inches high, and stair tread and mouldings to match Syra-Bord flooring.

Drainboard Material

A special material is supplied for kitchen or pantry drainboards, shelf covering, table tops and counter tops, in ⅛ to ¼-inch thicknesses.

Sidewall Material

We make a special sidewall covering, with panel strip and top rail. As this material is made on a special press-wood base, and in large areas, it produces an artistic effect.

STEDMAN RUBBER FLOORING COMPANY

Originators of the Modern Reinforced Rubber Tile Floor

SOUTH BRAINTREE, MASSACHUSETTS

AGENCIES IN ALL PRINCIPAL CITIES

LOCAL REPRESENTATIVE

The Products

STEDMAN REINFORCED RUBBER TILE, the original reinforced multiple colored rubber flooring; originated 1920; patented Feb. 5, 1924; other patents since that date.

Tiles, Runners, Wainscoting, Panels, Cove Bases, Stair Treads, Thresholds, Plinths, Push and Kick Plates, Desk, Counter and Table Tops.

The original Ray Proof Rubber for floors and walls of X-Ray rooms.

The Organization

The STEDMAN RUBBER FLOORING COMPANY is an organization devoted solely to the production and installation of reinforced rubber tile floors. This company is not only the originator of marbleized rubber tile floors but is the pioneer concern of the industry, the first to perfect this type of material and place it on the market. In 1920, the first floors of reinforced rubber were laid and through the ensuing 12 years, this company's business and prestige have increased until today it occupies a secure position in the flooring field.

Reinforcing Process

The principle of integral reinforcement lies in the process of introducing new cotton fibres—short filaments almost invisible to the eye—into the rubber compound which surrounds and impregnates them, forming a reinforced mass that later, under a tremendous vulcanizing pressure becomes a homogeneous whole. That a definite physical affinity and reinforcement follow is unmistakably shown by the demonstrable fact that the Stedman process yields the highest results in *tensile strength, ultimate elongation and resistance to abrasion, indentation and penetration.* In everyday language it means that *wear and permanence* in a floor are after all a matter of structure.

Structure

The great pressure required in the reinforcement process produces a density which, in turn, is an effective resistant to spreading, absorption and premature deterioration. Stedman Tile does not warp or curl, nor does it become brittle, and it is notable for its wear in areas subject to extreme traffic. The precision of special machines operated by experienced mechanics insures the square edges and uniform thickness of each tile, so essential for the satisfactory installation.

Installation

The skilled workmanship which characterizes Stedman Tile does not stop with its production. Stedman laying organizations have been developed to a high degree of skill and initiative, because a high quality floor material may be easily defeated by inferior installation. In addition, a proper installation calls for co-operative and expert effort so that a typical Stedman floor will result—the subfloor must be correct, border strips must fit closely to wall and threshold, every joint and juncture must be level and snug, and the floor must be left clean, ready for use. The importance of these factors cannot be minimized, and they are the essential ingredients of Stedman service.

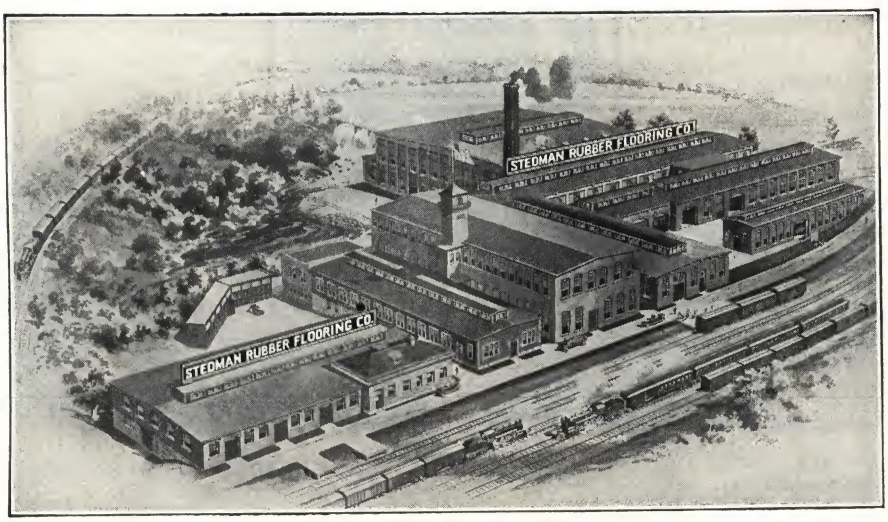
Specialization

Over this period of time the company has assembled and trained an organization of experts whose entire time is occupied with the problems attendant upon the manufacture and installation of rubber tile. Because of this undivided attention to the various flooring problems, this company is equipped to handle efficiently every phase of rubber floor design and installation.

Trained sales representatives, located in the leading cities of the country, stand ready to be of every assistance to architects desiring to draw on their experience and technical knowledge.

Supporting the efficient services of the sales representatives is a modern factory equipped with machinery and processes devoted entirely to the manufacture of reinforced rubber flooring with complete assurance of quality and reliability.

In selecting a Stedman floor, the architect secures all the recognized advantages of rubber flooring intensified by the exclusive Stedman method of reinforcement and manufactured by a company which makes only this single product and in one quality only—the best that it is possible to produce.



Factory, South Braintree, Mass.

Characteristics

Appearance—The beauty of Stedman Tile is wholly original in its rich, definite veinings. These colors are permanent and extend through the thickness of the material. Stedman Tile can be secured in a variety of color combinations (see color chart), many of which have been developed for specific conditions of lighting and traffic.

Durability—The extreme density of the scientifically constructed Stedman Tile is responsible for its high resistance to the effects of traffic, age, and fire. When installed under the proper conditions (see specifications) and maintained according to instructions, a Stedman floor may be considered a permanent installation.

Comfort—The natural resilience of Stedman Tile is such that it is always comfortable under foot. By its reduction of foot traffic clatter at the source it is a definite aid in the designing of quiet areas. It does not originate dust to be inhaled or to settle into valuable mechanical equipment.

Use—Because of its appearance, its resistance to wear and its proved economy, Stedman Tile may be safely and wisely used on practically every type of interior area. This includes public buildings of all kinds, particularly hospitals and department stores whose floor requirements are more exacting. Office buildings, churches, schools, and shops find the color latitude and the economy of this product appealing. Its use in residences, once confined to bathrooms, is largely expanding to its application in every room.

Precision—The characteristic exactness of its tile units is a vital factor in the success of Stedman installations. Square cut edges devoid of beveling and undercutting are necessary to insure perfect results; this is an important requirement commonly overlooked.

Maintenance—The maintenance of a Stedman floor is reduced to a simple economical process by the use of the newly developed water emulsion waxes, which cannot penetrate the dense surface of the Stedman Tile, but lie upon it in a firm, protecting film. This process supplemented by damp mopping and infrequent renewals of the wax, keeps the Stedman floor indefinitely in a prime condition. Complete and definite maintenance instructions are made with each installation.

Architect's Library

The following supply of catalogue and informative literature, helpful to architects, is available upon request:

General Catalog
Residential Catalog
Stedman Photograph Gallery
Bound Sweet's Copy
Standard Designs
Ray-proof Rubber Booklet
Accessories of Reinforced Rubber
Maintenance Information



Chicago Club
Chicago, Ill. Stair treads and landings of Stedman Reinforced Rubber



Montefiore Hospital
Pittsburgh, Pa. Squares of Red Gold Paisley set off by rectangles of Verde Antique and spots of Slate Red Paisley



Dunster House, Harvard University
Cambridge, Mass. Rectangles of O. S. Red with inner liners of plain white

Technical Data

Colors—Stedman Tiles are divided into two general classes, Standard and Special. Standard colors or types are those listed as such on Stedman literature and may be obtained through all regular channels. Special types are colors especially compounded to meet the requirements of architects' original designs. These made-to-order types are developed in the factory's laboratory which co-operates closely with the designing architect until a satisfactory color is secured.

Borders—Outer borders are cut to fit while inner borders or feature strips are supplied in 1, 2 and 3-in. widths.

Wainscoting—Tile or runner, 3/16-in. thickness, is available and has proved practical for this purpose. Material may be attached direct to trowel finish cement; to kiln dried matched hardwood boards not more than 3 in. wide blind and surface nailed; to ¾-in. hard plaster, Keene cement, portland cement plaster; or to securely nailed compo board or sheetrock. Wood pulp boards are not to be used. Wall backing must be dry and free from moisture before installation of rubber is started. The use of a special molded wainscot cap, specially molded internal and external corners, and standard cove base insure a decorative and practical result. Installation will not show nailholes. Inside corners should be furnished with the new Stedman molded corner section and all corners must be true 90° angle. Size of molded section 18x6x2x3/16 in.

Limitations—Stedman Reinforced Rubber Tile should not be laid in areas subject to moisture and the continued contacts of strong acids, alkalis, oils, and other rubber solvents.

Ray-proof Rubber for X-ray Rooms—This material is being used successfully as a substitute for lead or barium plaster on the floors and walls of X-ray, deep therapy, cystoscopic and fluoroscopic rooms. Furnished in ½ and 1-in. thicknesses. Easily installed and insulates the room against the leakage of rays (special booklet on request).

Reinforced Rubber Tops—This attractive material in flat or molded sections makes a decorative as well as practical topping for all types of desks, tables and counters. Because of its easy application it is of special appeal to furniture manufacturers both for the protection of surface or base and as a substitute for marble, metal or wood.

STANDARD SIZES

Size, in.	Area sq. ft.	Size, in.	Area sq. ft.
3x 3	.0625	3x 6	.125
6x 6	.25	6x12	.50
9x 9	.5625	9x12	.75
12x12	1.00	9x18	1.125
18x18	2.25	12x18	1.50

Border and strip base widths, in.	Feature strip widths, in.	Full runner sheets
3, 6, 9 and 12	1, 2 and 3	15 ft. 10 in. x 36 in.

Approximate shipping weights per sq. ft.
3/16 in.....2.00 lbs. ¼ in.....2.50 lbs.

Standard Guaranty of the Rubber Manufacturers' Association, Inc.

We guarantee our product against defects provided our recommended cleaning instructions are followed and we will repair or replace any such defective product which is brought to our attention in writing, within one year after date of completion of installation. We do not accept responsibility for any damages arising from defects or dampness in sub-floors or other surfaces which may occur after completion of installation.

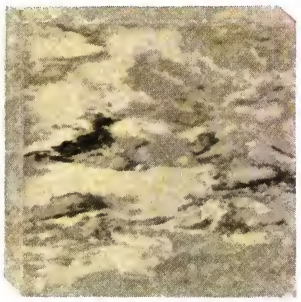
STEDMAN REINFORCED RUBBER TILE



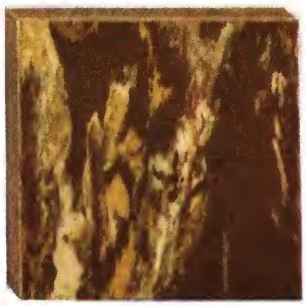
Escalette
Cream with veinings of
Black, Red and Gold

THIS COLOR CHART is designed to assist you in your selection of types. The material is homogeneous, the veinings being a definite part of the structure. For this reason each color and pattern is lasting, the tile retaining its fine appearance through years of wear. Because these clear cut color contrasts and veinings are produced in a non-repeating process, we do not guarantee exactly the same color and design in every tile.

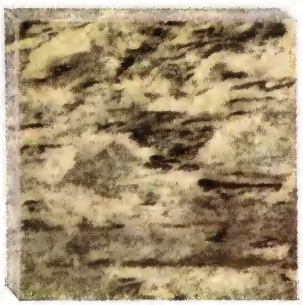
STEDMAN RUBBER FLOORING CO.
SOUTH BRAINTREE MASSACHUSETTS



Silvertone Grey
Light Grey with veinings of
Black and White



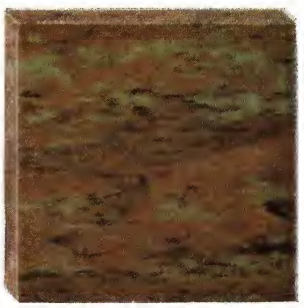
Walnut Paisley
Walnut with veinings of
Gold and Cream



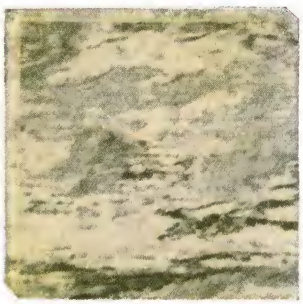
O. S.
Cream with veining of
Black



Black White
Black with veining of
White



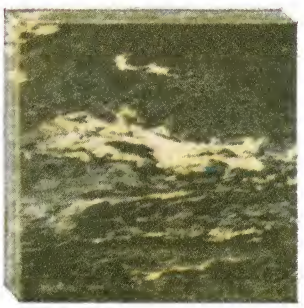
Brown Green Paisley
Brown with veinings of
Sea Green and Black



White Sea Green
White with veining of
Sea Green



Black Red
Black with veining of
Dark Red



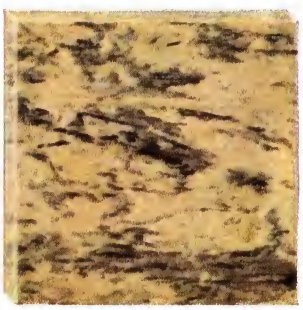
Sea Green White
Sea Green with veining of
White



Slate Red Paisley
Slate with veinings of
Dark Red and Cream



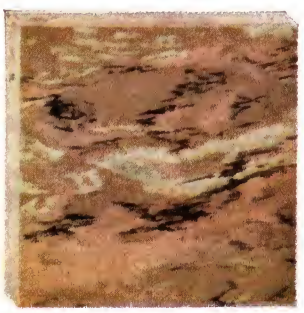
Brown Black
Brown with veining of
Black



Buff Black
Buff with veining of
Black

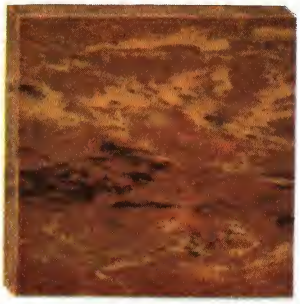


Dark Red



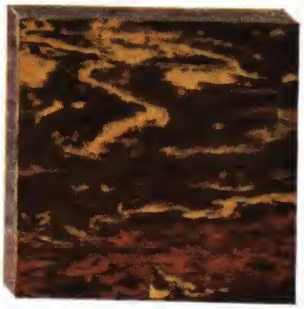
Napoleon Grey
Grey with veinings of
Pink, Cream and Black

STEDMAN REINFORCED* RUBBER TILE



Red Gold Paisley
Dark Red with veinings of Gold and Black

***REINFORCED.** In selecting a Stedman floor, the architect secures all the recognized advantages of rubber flooring intensified by the exclusive Stedman method of reinforcement and manufactured by a company which makes only this single product and in one quality only—the best that it is possible to produce.



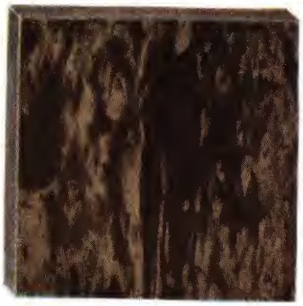
Black Gold Paisley
Black with veinings of Gold and Dark Red



Grey Black
Grey with veining of Black



Buff Walnut
Buff with veining of Walnut



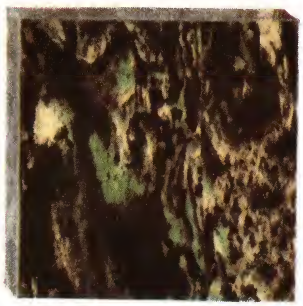
Black Grey
Black with veining of Grey



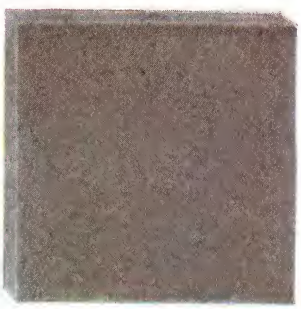
Brown Gold Paisley
Brown with veinings of Black and Gold



O. S. Red
Cream with veinings of Black and Dark Red



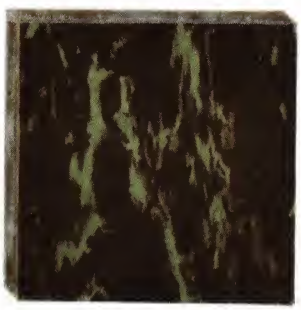
Verde Antique
Black with veinings of Sea Green and Cream



Grey



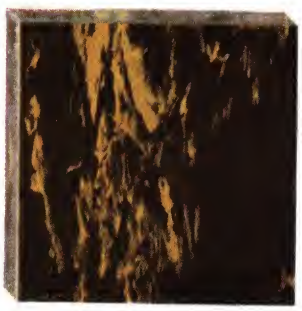
Red Black
Dark Red with veining of Black



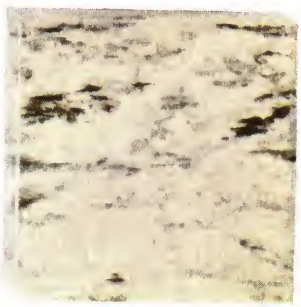
Black Green
Black with veining of Sea Green



Pink Tennessee
Cream with veinings of Pink and Walnut

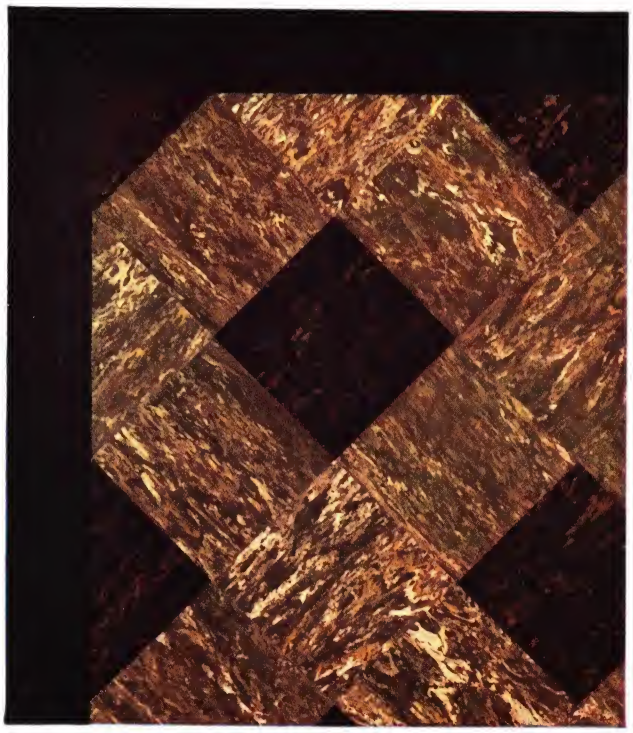


Black Gold
Black with veining of Gold



White Black
White with veining of Black

STEDMAN REINFORCED RUBBER TILE



Panel A

Tile
Black Red
Walnut Paisley

Border
Plain Black



Panel M

Tile
Brown Gold Paisley
Black Gold Paisley

Border
Black Gold Paisley



Panel RA

Planks
Brown Black

Dowels
Plain Black



Panel G

Tile
Black White

Border
Black White

Inner Border
Plain Black

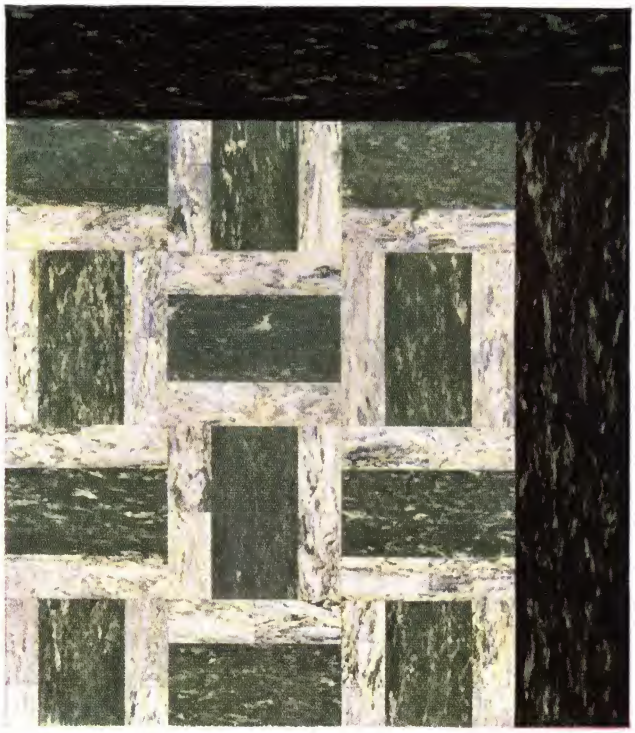
STEDMAN REINFORCED RUBBER TILE



Panel F

Tile
O. S. Red

Border
Plain Black



Panel N

Tile
Sea Green White
White Sea Green

Border
Black Green



Panel L

Tile
Silvertone Grey
Sea Green White

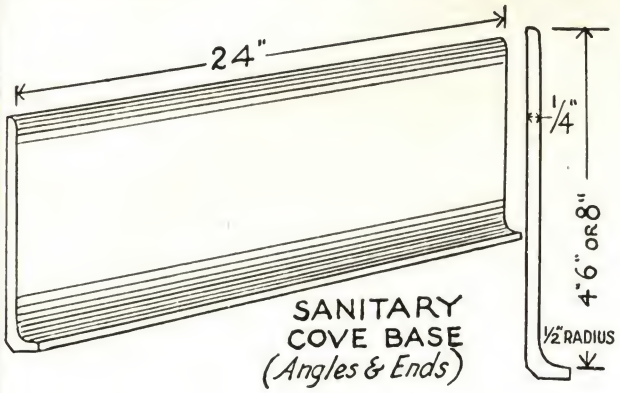
Border
Black Green



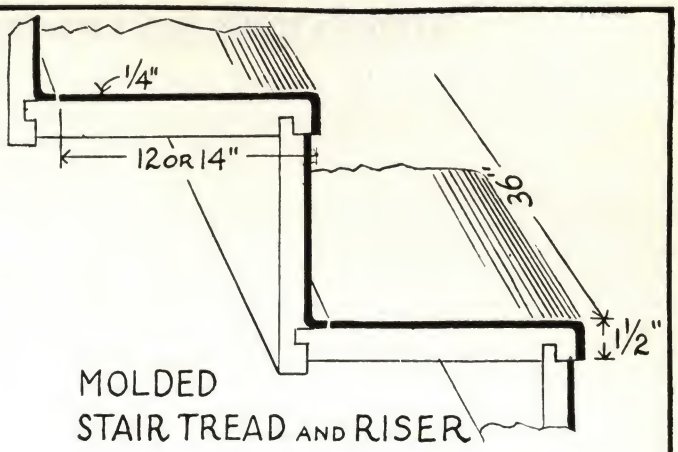
Panel D

Tile
Escalette
Verde Antique

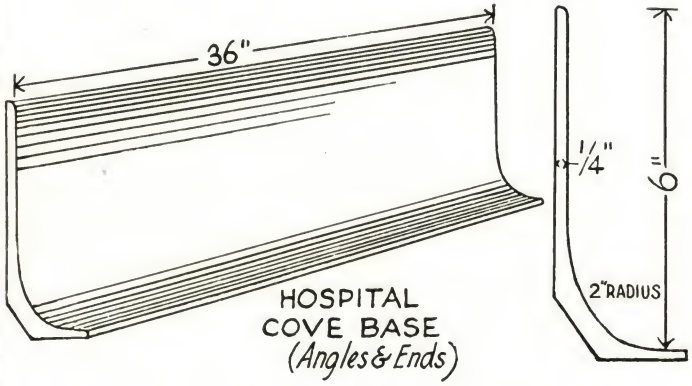
Border
Verde Antique



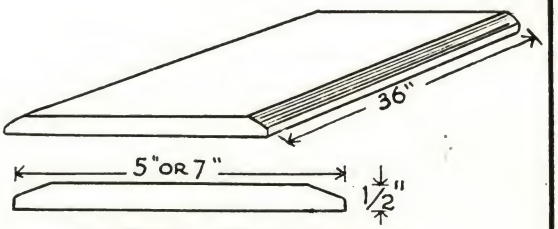
SANITARY
COVE BASE
(Angles & Ends)



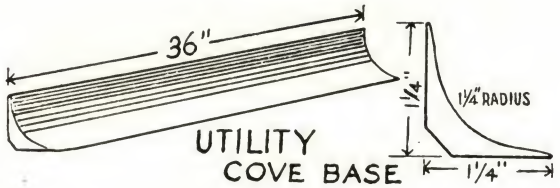
MOLDED
STAIR TREAD AND RISER



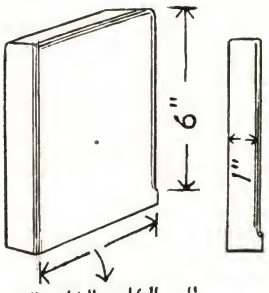
HOSPITAL
COVE BASE
(Angles & Ends)



DOOR THRESHOLD

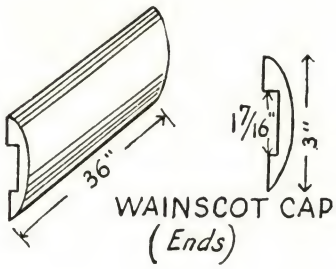


UTILITY
COVE BASE

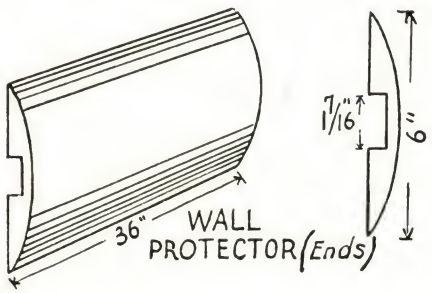


PLINTH BLOCK

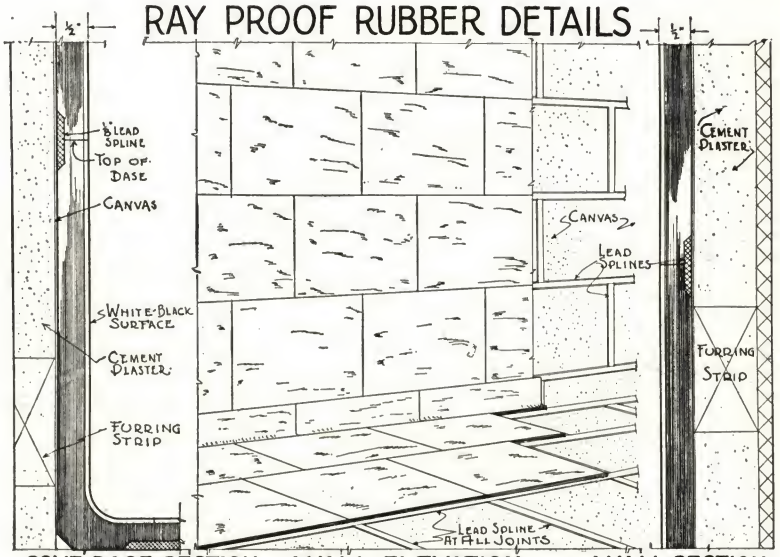
RAY PROOF RUBBER DETAILS



WAINSCOT CAP
(Ends)



WALL
PROTECTOR *(Ends)*



COVE BASE SECTION WALL ELEVATION WALL SECTION

SPECIFICATIONS FOR STEDMAN REINFORCED RUBBER TILE

Note: Stedman Reinforced Rubber Tile is applied over any smooth, level and dry surface of wood or trowel-finished concrete. It is furnished in tile form, squares or rectangles, long runner effects or panels.

In spaces so indicated, furnish and apply Stedman Reinforced Rubber Tile, as manufactured by the STEDMAN RUBBER FLOORING COMPANY, South Braintree, Mass.; to be laid throughout in accordance with the manufacturer's directions, using cement supplied by him for bed and joints. (Allowance to finish floor level to be equal to thickness of rubber tile or runner.) The flooring contractor shall report to the architect any underfloor not acceptable to him and shall not proceed with work until underfloors have been satisfactorily finished.

Note: Spaces below grade and floors resting directly on ground without a ventilated area beneath are not to be covered with Stedman Reinforced Rubber Tile. Hotel, hospital or restaurant kitchens, spaces behind lunch counters or soda fountains, hospital sterilizing rooms or rooms where a great amount of spillage of liquids or grease are common, shall not be covered with Stedman Reinforced Rubber Tile.

Schedule

Note the following under schedule:

(1) Room name or number.
(2) Size of tile units.
(3) Type names of tile to be used in field and border.
(4) Cove base, state type and height.
(5) Type of underfloor (wood or concrete).

Preparation of Concrete Floor

(Include also in concrete specifications.)

In all spaces designated as "Stedman Reinforced Rubber Tile," bring the surface to within specified distance of the required finish floor level. Over cinder concrete or coarse stone concrete, place a finished surface at least 1-in. thickness, composed of a 1 to 3 mixture of portland cement and clean screened sand. Finish to clearance level above mentioned and trowel smooth. Omit hardeners, paint or surface coats of any kind. Heat shall be applied to building to remove all moisture from concrete before rubber is laid.

Finished surface to be free from waves or irregularities.

Concrete which has been frozen or has a choppy or crumbly surface cannot be accepted. Finished concrete must be completed at least two weeks before ready to lay the rubber tile, and must be absolutely dry. At least two weeks after concrete has set and when thoroughly dry, sweep carefully of dust and remove any lumps or any roughness.

Floors that are worn, cracked, warped, tessellated or surface lined are not acceptable for rubber tile and such necessary repairs as will make them smooth, true and level shall be made by owner before installing said rubber tile. Floor contractor shall test concrete for moisture and satisfy himself of dryness before starting installation.

Preparation of Wood Floor

(Include also in Carpenter specifications.)

In all spaces designated as "Stedman Reinforced Rubber Tile," bring underflooring to within specified distance of the required finished floor level. The underfloor laid over rough flooring shall be not less than ¾-in. tongue-and-groove, kiln dried hardwood flooring not more than 3 in. wide, driven up tight, blind nailed and surface nailed; surface to be sanded to a smooth finish.

(Existing floors.) Secure all ends of boards and plane down irregularities to furnish a smooth and level surface. Floors shall be planed smooth, where irregularities occur, all loose boards to be made tight. Remove worn or decayed boards and replace with new lumber. Thoroughly surface nail and secure all loose or springy boards. The entire area should be scraped or sanded to a smooth finish.

Note A: Rubber tile shall not be laid over subfloors built on sleepers or screeds set in concrete until concrete is thoroughly dry to prevent dry rot. On new work we suggest laying rubber over smooth concrete instead of this type of floor construction.

Note B: In the laying of rubber tile over wood subfloors a provision to prevent expansion and contraction of wood from being transmitted to the rubber tile is necessary. Four-ounce canvas should be thoroughly tacked at 3-in. centers to subfloor with rustproofed, burred shank, ½-in. flat headed tacks. Tacks should be driven well home to prevent head showing through rubber. Rubber tile is cemented directly to canvas.

Felt Paper

As a means of further insurance against possible showing of board lines in underfloor through finished floor, and as a further means of increasing sound deadening qualities, a 1½-lb. felt paper may be applied under cloth. Apply felt paper over entire floor area, butting joints evenly (not overlapping). Stretch cloth over felt as described herein for wood floors. Do not tack or cement felt paper to underfloor.

Plaster Surfaces (Wainscoting)

To receive rubber tile, areas shall be composed of portland cement plaster, Keene's cement or hard dado, laid to accurately set base and wainscot cap wood grounds, carefully rodded and screeded, trowel-finish to an absolutely smooth hard finished surface. All wainscot backing must test dry before applying rubber tile. Omit surface coats or finishes of any kind.

Laying

Lay Stedman Reinforced Rubber Tile in the cement supplied by STEDMAN RUBBER FLOORING COMPANY, using little or only as much as is necessary to preserve an even surface at the joints. Lay with a slide or "push" motion to insure complete coating of all contact edges.

Rolling shall be started as soon as floor is laid, using a 150-lb. steel three-section linoleum type floor roller. Floor must be rolled sufficiently to remove all entrapped air and any uneven joints shall be trued up during rolling process to insure a smooth finished installation.

Soon after laying and before it finally hardens, wipe up all surplus cement with cloth moistened with alcohol and leave the floor clean, smooth and level, covering it with sheathing paper.

Cove Base

Where called for, shall be set even and straight, flush with floor and finished wall surface, tile or plaster. Walls and floors where base is to be applied must be smooth, true and level. Wall backing for cove base is to be a true 90° with floor. Two wood grounds shall be installed, the lower one about ¾ in. above the subfloor level, the upper ground about ½ in. below the top line of the rubber base. The faces of both grounds shall be plumb with each other. Do not plaster below lower ground.

Plinth Blocks

Where called for shall be ..... inches wide, standard types, and shall be set in place with baseboards or cove base before door trim is installed and before flooring is laid. Base of plinths shall be furnished to meet ..... inch flooring.

Molded Treads

Where called for molded units shall be furnished ..... inches in depth. Before applying treads scribe edges where necessary to fit contour of risers. Apply cement as furnished by STEDMAN RUBBER FLOORING COMPANY and fit treads in place using weights or sand bags which are not to be removed for a period of 24 hours—graining to be lengthwise of tread.

Wall Protector (Chair Rail)

Shall be set ..... inches above finished floor level to top of wall protector. Apply standard wood lath securely to wall surface and cement protector to wall over lath with approved cement furnished by STEDMAN RUBBER FLOORING COMPANY. The wall protector shall be thoroughly braced to wall and kept in place for at least 24 hours to allow cement to properly set and bind to wall.

WRIGHT RUBBER PRODUCTS CO.

Manufacturers of Rubber Floor Tile, Cove Bases, Stair Treads, Table and Counter Tops and Paving Blocks

RACINE, WIS.

Products

WRIGHT RUBBER TILE for Floors, Bases, Wainscots, Table and Counter tops.

Also Wright Rubber Integral-nosing, One-piece Stair Treads; Wright Rubber Paving Blocks for Industrial Floors, Roadways, Sidewalks, etc.

Description

Wright Rubber Products are composed of carefully selected materials scientifically compounded in a thoroughly modern plant designed and used for the manufacture of rubber flooring products exclusively. All tiles are ground to uniform thickness not to exceed ten one-thousandths of an inch variation and cut on precision machines to accurate sizes with square, clean cut edges.

Wright Rubber Tile

Characteristics—***Durable***—Wright Rubber Tile is sufficiently tough and dense to resist the impact and abrasion of traffic over a long period of years. When properly installed, will remain permanently flat without creeping, shrinking, curling or warping.

Resilient—Permanently resilient for the life of the material. Sufficiently elastic to recover from indentation caused by castors or sharp blows. Promotes quiet and foot comfort.

Non-absorbent—Surface is impervious to stains and acids (not nitric or sulphuric). Oils, particularly mineral, and grease, unless promptly removed, are injurious. The hair line joints are permanently sealed with insoluable cement, assuring the utmost in sanitation.

A Non-conductor—A non-conductor of electricity. Is low in thermal conductivity, consequently is not cold underfoot.

Fire Resisting—Practically fireproof. Burning matches and cigarettes leave but slight surface discolorations which are easily removed.

Superior Appearance—Color tones are permanent and clear. Mottling and veining of color combinations are clearly defined and extremely harmonious. Original surface luster easily maintained.

Variety of Design—Wide variety of standard colors and color combinations, coupled with the number of stock sizes, assure greatest flexibility in design and pattern arrangement. Special inlaid decorative designs may be obtained at moderate added cost.

Adaptability—Due to its inherent characteristics, Wright Rubber Tile is adaptable in every type of building where long-wearing, practical, quiet, beautiful floors are desired. It is unusually suitable for hospitals, schools, churches, public buildings, institutions, hotels, banks, offices and stores. The wide range of colors and the unlimited variation in designs possible with Wright Rubber Tile make it ideal for the home—each installation individually harmonizes with the finish and decorations.

Note: Rubber Tile should not be laid (a) over unexcavated areas whether above or below grade; (b) over wood floors attached to sleepers set in concrete fill; (c) in hotel or restaurant kitchens near cooking or dishwashing equipment where deposits of heavy grease are prevalent.

Colors—Wright Rubber Tile is made in 12 plain colors—dark red, light red, slate, dark grey, light buff, dark buff, blue, black, green, brown, sea green and apple green—and in 38 combinations of mottled colors to resemble natural domestic and imported marbles and grained woods. Complete color charts sent on request.

Types

Homogeneous Tile—Colors and markings extend through the entire thickness of the tile. This type is recommended for use where heavy traffic is expected. It is the highest grade tile made. $\frac{3}{16}$, ¼ and ⅜-in. thicknesses.

Cushion Back Tile—Colors and markings extend through approximately one-half the tile thickness and the tile is backed with black cushion material. Recommended for residential work or in other classes of buildings where moderately heavy traffic is expected. $\frac{3}{16}$, ¼ and ⅜-in. thicknesses.

Wrightex Tile—Has the same characteristics of other Wright Rubber Tile. Comparable with battleship linoleum in cost. Made only in mottled designs in 10 most popular color combinations. $\frac{3}{16}$-in. thickness only.

Sizes

Tile—4x4, 4½x4½, 4x8, 4½x9, 6x6, 6x12, 8x8, 9x9, 9x18, 12x12, 12x24, 16x24, 18x18 and 18x36 ins. Borders furnished in 18x36 ins. for Homogeneous and Cushion Back.

Stair Treads—42x12x¼ ins. with nosing, smooth surface.

Bases—Heavy: straight or coving—42x5x½ and 42x6x½ ins.
Straight—42x8x½ ins.
Cove—42x9x½ and 42x4x⅜ ins.
Light coving—42x5x$\frac{3}{16}$ and 42x6x$\frac{3}{16}$ ins.
Fixture base—42x6x¼ ins.

Thresholds—42x3x¾ and 42x5½x½ ins.

Plinth Blocks—4¼x6¼x⅞ and 3⅞x6¼x⅞ in.

Quarter round, shoe moulding and wainscot capping in 42-in. lengths.

General Specificational Data

Subsurfaces—A clean, sound, smooth, true subfloor surface without indentations or projections is imperative. Chalky, flaky, dusty surfaces will affect the cement bond. The same provisions apply to plaster wall surfaces behind rubber tile bases and wainscots.

Wood Subfloors—Shall be double floors of kiln dried, sound, matched flooring laid close and thoroughly blind nailed to bearings. Finished layer should not be less than $\frac{25}{32}$ in. thick or more than 3¼ in. face (1x4-in. stock). Allow tile thickness plus $\frac{3}{32}$ in. from subfloor surface to finished floor level.

Concrete Subfloors—Shall be structurally sound and hard, free from scale or foreign deposits. They shall be "bone dry" and have a smooth, steel troweled surface. Allow tile thickness plus $\frac{1}{16}$ in. from subfloor surface to finished floor level.

Plaster Surfaces—Shall be laid to accurately set base and wainscot cap grounds carefully rodded and screeded and troweled to a hard, smooth surface. They shall be "bone dry."

Preparing Wood Subfloor—Wood subflooring shall be covered with Bird's 30-lb. asphalt felt accurately fitted with edges carefully butted. Cement felt to wood in a full bed of linoleum paste and roll with 150-lb. roller to expel air bubbles.

Installing Rubber Tile—Each tile shall be set in a full bed of waterproof cement with joints flushed full by sliding it into position. Tile shall be laid true to line and pattern in accordance with approved shop drawings. Before setting cement has hardened, roll the surface in two directions with 150-lb. roller. Before surplus cement has hardened on the tile surface clean off thoroughly with a rag moistened with alcohol.

Where rubber tile is applied against plaster surfaces, size the plaster with a thin coat of waterproof cement. Allow cement to dry before installing tile.

Bases, wainscot caps, etc., shall be bradded to wood grounds in addition to cementing.

Service Department

Experienced factory service is accessible to architect and contractor. Complete working drawings, specifications and estimates will be furnished on receipt of blue print giving necessary dimensions. Color charts, suggested designs and samples will be sent on request. Our service department will assist in solving any flooring or paving problem.

Warranty

The WRIGHT RUBBER PRODUCTS CO. guarantee their products fully in accordance with the current warranty of the Rubber Association of America.

UNITED STATES RUBBER COMPANY

FLOORING DIVISION

"Royalite" Rubber Floors

355 Valley Street, PROVIDENCE, R. I.

Products

"Royalite" Rubber Floors; Wainscoting; Stair Treads.

Also Thresholds, Cove Base, Plinth Blocks; Mats and Matting; Sheet Rubber Flooring; Table and Desk Topping.

For our pages on "Durite" Asphalt Tile Floors, see Manufacturers' Index.

U. S. "ROYALITE"—"THE ARCHITECTURAL RUBBER"

"Royalite" Rubber Floors

Modern conditions call for modern materials. A floor must not only be durable and beautiful, but it must be quiet, easy to clean, sanitary, comfortable underfoot and low in upkeep cost. "Royalite" meets all of these conditions fully.

Decorative Adaptability—There is a cheerful warmth of friendly color in a floor of "Royalite" that subtly rounds out and adds the finishing touch to decorative completeness. There are in the "Royalite" line many distinctive types and colors. The varied perfection and rich color tones found in this line represent a real triumph of rubber manufacture. Full color reproductions of every style in the line will be sent on request.

Sizes—In addition to the variety of colors, "Royalite" is available in the following standard dimensions: 4x4, 6x6, 9x9, 12x12, 18x18, 6x12, 12x18, and 9x18 in. There are three standard thicknesses: $\frac{3}{16}$, $\frac{1}{4}$ and $\frac{3}{8}$ in.

The broad range of colors and sizes makes possible an unlimited number of combinations to create floors in fullest decorative harmony with any interior. The rich colors and textures run entirely through the full thickness of "Royalite."

Durability and Sanitation—Our long experience in compounding rubber enables us to build into "Royalite" maximum durability and service. The basic foundation is virgin rubber from our own plantations in the Far East, carefully compounded and skillfully vulcanized.

"Royalite" is a floor of maximum sanitation. This non-absorbent material is tightly cemented together with waterproof glue when laid. "Royalite" floors are easy to clean and to keep clean. Their shining surfaces are highly resistant to the action of acids, alkalis, abrasion, etc.

Resiliency and Quiet—All the resiliency of finest rubber, skilfully compounded, assures noiseless comfort and ease underfoot. Its high acoustical properties eliminate traffic reverberations. In churches, auditoriums, theaters, etc., "Royalite" is forming an important part of acoustic and audition remedies.

Maintenance—"Royalite" requires no special treatment—simply washing when necessary. Ink, matches, lighted cigars, etc., leave no permanent marks. It does not show indentations. Folder on cleaning "Royalite" will be gladly sent on request.

Installation—"Royalite" floors may be laid over concrete or wood subflooring in accordance with our complete specifications. The proper installation of a rubber floor is equal in importance to the actual manufacture of the material itself. All "Royalite" floors are installed according to the instructions laid down by the Company regardless of whether the installation is made by our own Contracting Department or an Approved Flooring Contractor. This insures a perfect installation without which no rubber floor can give satisfactory service.

Standard Guaranty on Rubber Flooring

We guarantee our product against defects provided our recommended cleaning instructions are followed, and we will repair or replace any such defective product which is brought to our attention, in writing, within one year after date of completion of installation.

We do not accept responsibility for any damages arising from defects or dampness in subfloors or other surfaces which may occur after completion of installation.

Special Information; Prices—Estimates on any installation are sent promptly upon receipt of inquiries. Requests for quotations should be accompanied by a sketch or blue print of space to be covered, showing all dimensions, with description of floor (wood or concrete) over which tile is to be laid. Prices for installations are governed by size and location of installation, and thickness of "Royalite" selected.

"Royalite" Wainscoting

An interesting development in the use of "Royalite" is its application in tile and panel form to wainscoting. Unusually practical and decorative effects are obtained. Installation on smooth walls is simple and floor loads are materially reduced. "Royalite" Wainscoting is $\frac{3}{16}$ in. thick.

A special "Royalite" Wainscot Cap (moulding) is furnished to finish off the installation.

"Royalite" Stair Treads

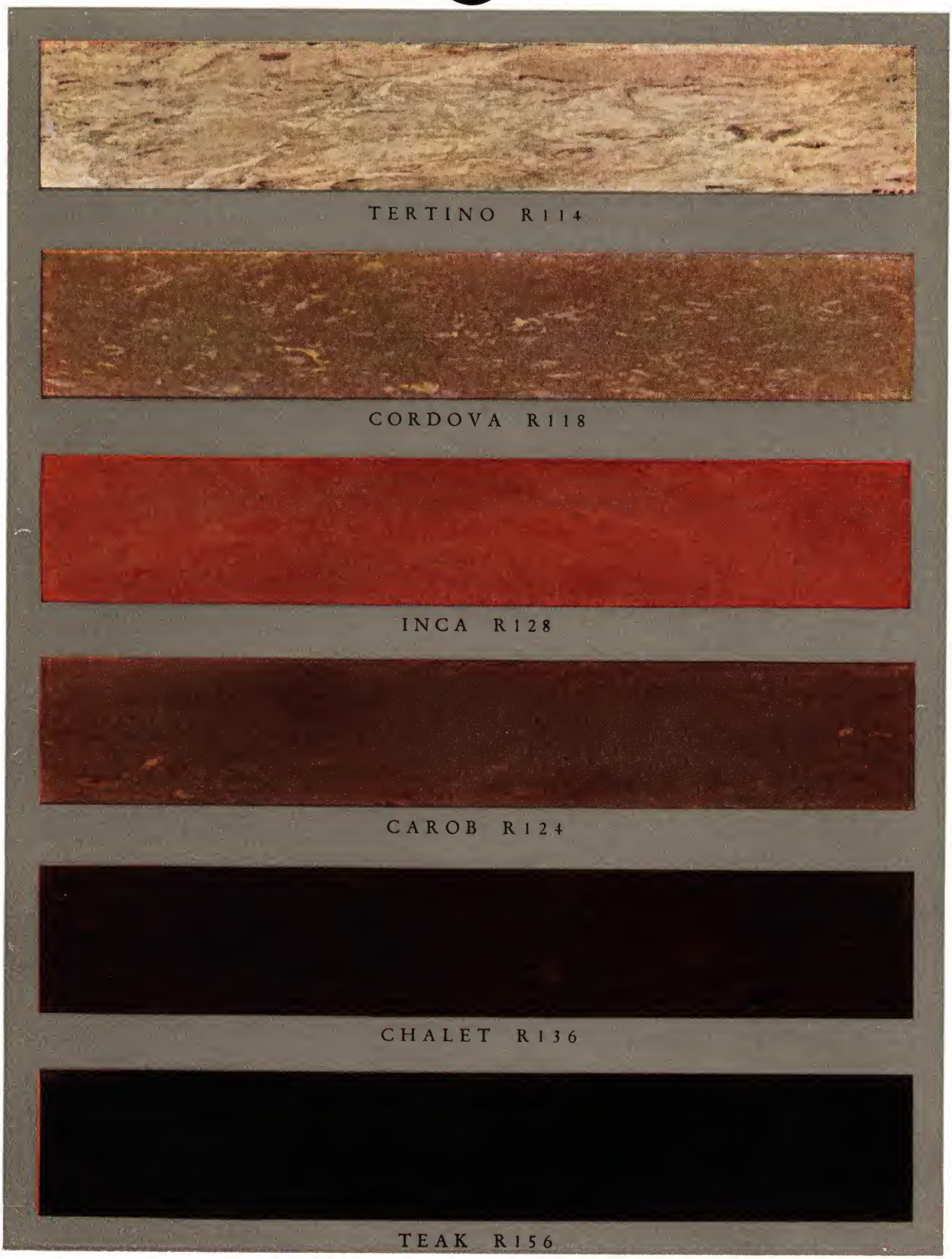
Noiselessness, safety, beauty, and durability make "Royalite" Stair Treads a perfect covering for stairs subjected to heavy traffic. Attached to wood, steel or concrete. Installed with or without metal nosing.

UNITED STATES RUBBER COMPANY

ROYALITE

THE ARCHITECTURAL RUBBER

New Colors and Textures ROYALITE for Floors, Walls and Stairs



TERTINO R114

CORDOVA R118

INCA R128

CAROB R124

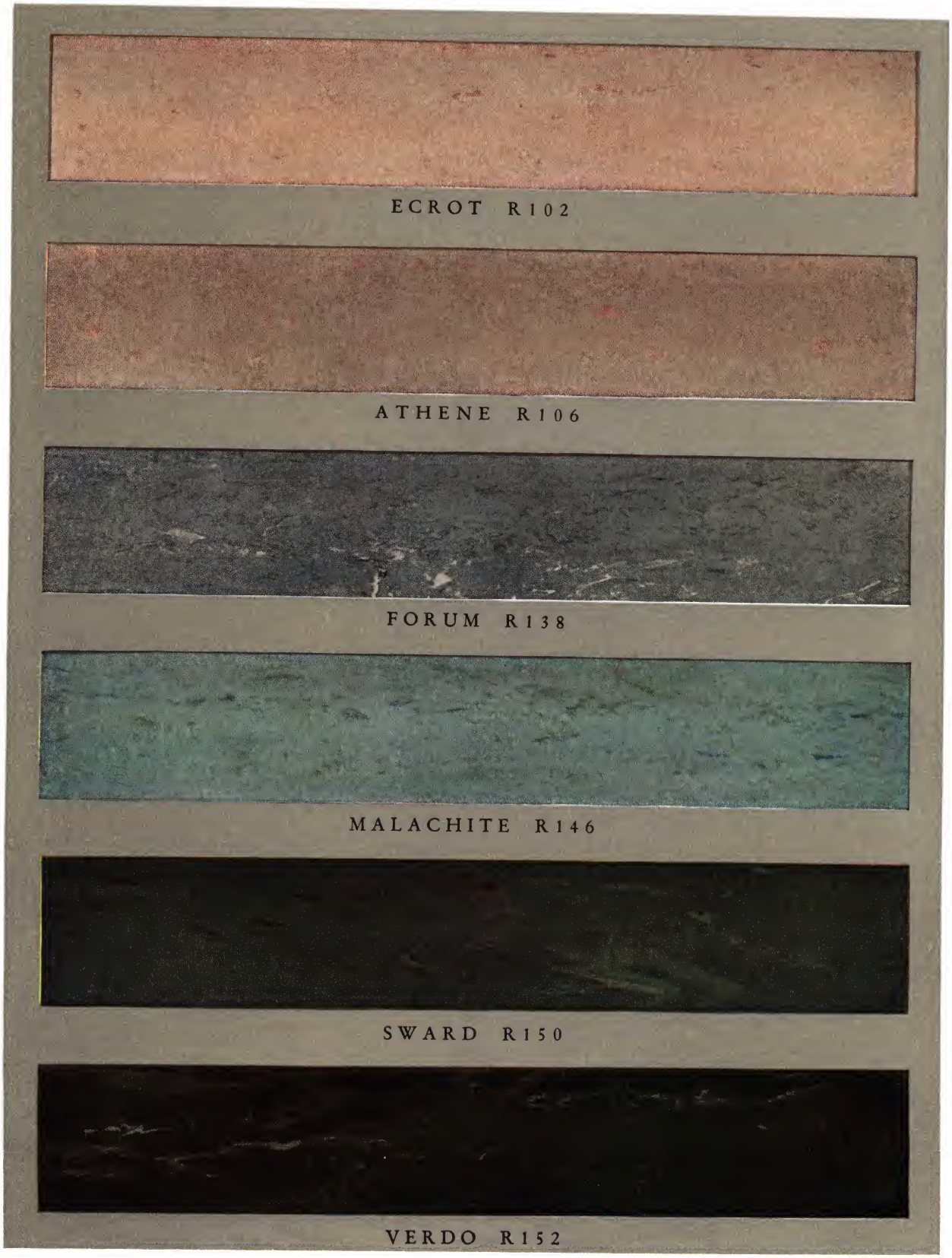
CHALET R136

TEAK R156

ROYALITE

THE ARCHITECTURAL RUBBER

New Colors and Textures ROYALITE for Floors, Walls and Stairs



COMPLETE SPECIFICATIONS FOR LAYING "ROYALITE" FLOORS

Labor and Material

(1) Where rubber floors are indicated on the drawing or called for in the specifications, they shall be "Royalite" as manufactured by the UNITED STATES RUBBER COMPANY, 355 Valley Street, Providence, R. I.

(2) This contractor shall report to the architect any subfloors that are not in a suitable condition to receive the rubber floor and shall not proceed with the work until the underfloors have been placed in proper condition.

(3) Rubber floors shall be laid after painters, carpenters and plasterers have completed their part of the work, to avoid injury to finished rubber floors.

Schedule

The following shall be noted:

(a) Room, name and number.

(b) Size of units.

(c) Catalogue numbers of color used in fields.

(d) Catalogue numbers of color used in borders, if border is required.

(e) Cove base, if desired. State height.

(f) Type of underfloor—as concrete or wood.

Notes Applying to Specifications of Other Trades for Subfloors

(A) **Concrete**—(For concrete underfloors)—

(a) Top layer of concrete subfloor shall be 1½ in. thick.

(b) The top layer shall be composed of 1 part portland cement and 2 parts clean screened sand. It shall be steel troweled to a smooth finish free from waves and irregularities.

(c) Level of top layer shall be finished lower than the required floor level by the thickness of the "Royalite" specified.

(d) Any admixture in the concrete subfloor shall *not* be specified. The top layer shall *not* be treated with any hardeners, paint or surface coats of any kind.

(e) Any scaling, crumbling, or deterioration of cement subfloor shall be the responsibility of cement contractor.

(f) Steam heat shall be turned on in the building with adequate ventilation so as to draw out all moisture from the interior (floors, walls and ceilings) before rubber floors are laid.

(B) **Waterproofing**—

(a) All concrete surfaces, on or below grade, shall be waterproofed by the membrane system where "Royalite" is to be installed. Both floors and walls below grade shall be waterproofed. Waterproofing shall be carried up in the masonry walls to a point above grade.

(C) **Carpenter**—(For wooden underfloors)—

(a) Underfloors shall be of kiln-dried hardwood, tongued and grooved flooring, not more than 3-in. face width, driven up tight and blind nailed to bearings at least every 16 ins. Irregularities shall be planed down to leave a smooth face.

(D) **"Royalite" Base**—

(a) Where cove base is installed with "Royalite" on concrete floors, a solid wall backing shall be provided, forming an angle of 90 degrees with the floor. Juncture of floor and wall shall be clean and even. Furring strips shall be set flush with face of finished wall above tile and with top ¼ in. below top of cove base.

(E) **"Royalite" Wainscoting**—

(a) Where rubber wainscoting is installed, specify:

1—Sheets

2—Tile

(b) The wall on which "Royalite" Wainscoting is to be installed shall be of hard plaster troweled smooth and free from any irregularities. The surface of the plaster shall not be treated with any surface coat or finish.

(c) Any irregularities in the wall surface must necessarily reflect on the surface of the "Royalite" Wainscoting. The responsibility of a smooth wall surface shall rest upon the plastering contractor.

Special Notes

(a) Lines struck upon the surface of concrete subfloors shall be filled in before "Royalite" is laid.

(b) Concrete underfloor shall be absolutely dry, clean and free from foreign material.

(c) Frozen concrete shall have the surface scale removed and refinished with a new top layer 1½ in. thick.

(d) Concrete and wood underfloors shall be smooth, dry and level.

(e) "Royalite" shall *not* be laid over subfloors that are rough, cracked or warped.

(f) Do *not* specify "Royalite" in basements, spaces below grade, or laid directly on the ground, unless areas are waterproofed by the membrane method.

(g) Do *not* specify "Royalite" in public kitchens or laundries, spaces behind restaurant counters, soda fountains, or in restaurants where excessive spillage of grease and foodstuffs is encountered.

(h) "Royalite" shall *not* be laid on old wood floors which are springy and vibrating, and lacking in that firmness which we require as foundation. This condition is often found in churches, department stores, etc., of the older type, where "sleepers" have dry-rotted, causing this condition.

ASPHALT BLOCK PAVEMENT COMPANY

EXECUTIVE OFFICES
Board of Trade Building
TOLEDO, OHIO

PLANT: TOLEDO, OHIO

COMPRESSED ASPHALT FLOORING BLOCKS AND TILES

Asphalt Block for Floors, Walks and Drives

Asphalt Blocks represent the highest development in heavy-duty floors and surfaces for:

Factories and warehouses
Railroad shops and roundhouses
Piers, bridges and viaducts
Platforms and roof decks
Driveways and walks

Asphalt Block Non-skid Construction

Wherever danger of skidding is present, the specially designed recessed transverse joints of Asphalt Block Non-skid Construction will insure complete safety in all kinds of weather. Adaptable to all paved surfaces, Asphalt Block Non-skid Construction is unsurpassed for prevention of skidding on ramps, inclined approaches to bridges and viaducts, on grades, curves and intersections of traffic areas.

Asphalt Blocks for Roof Decks

"Eightfour" Asphalt Blocks—weighing but 3½ lbs. each—make a flexible, smooth and durable lightweight decking for roofs subjected to traffic or used for storage, parking, rest or recreational purposes.

Asphalt Blocks for Waterproofing Protection

"Eightfour" Asphalt Blocks laid directly on the asphalt coated waterproofing fabric provide a tough, dense shield for protection of this membrane on bridges and viaducts. Many prominent railroads which have selected Asphalt Blocks for this purpose have found that their use eliminates all danger of displacement or damage to the fabric from the rock ballast.



Installing Asphalt Block Floors and Pavements

Asphalt Tiles for Walks and Terraces

Hexagonal or square Asphalt Tiles for walks, terraces and courtyards are decorative, easy under foot and extremely durable. They are particularly appropriate for parks, cemeteries, schools and public grounds.

Standard Block and Tile Sizes

The 5x12 ins. x 2 ins. (deep) Asphalt Blocks weigh 26 lbs. to the square foot and 21½ blocks are required to lay a square yard. This size block is usually specified for heavy-duty floors, platforms, piers, bridges and driveways.

The 8x4 ins. x 1¼ ins. (deep) Asphalt Blocks—"Eightfours"—weighing 15½ lbs. to the square foot and laying 40 to the square yard are designed for installations where similar service requirements prevail, but where factors of weight and thickness of surface are necessary considerations.

Asphalt Tiles—hexagonal, 8 ins. (side to side) by 2 ins. (deep), and square 8x8 ins. x 2 ins. (deep)—are specially designed for areas, subject mostly to foot traffic, where attractiveness and utility are joint considerations.

Description

The Asphalt Blocks made by this Company are the result of more than forty-five years' experience in the manufacture of asphalt paving and flooring blocks, exclusively. Manufactured under strict laboratory conditions, they are guaranteed equal to the highest standard of asphalt block production.

The blocks are composed of refined asphalt and a perfectly graded, crushed rock aggregate, machine mixed at 300° F. to form a perfect asphalt mastic. This scientifically prepared block mix is then fed to great presses where it is moulded into uniform flooring blocks and paving blocks under tremendous compression.

Each and every block is precisely like its neighbor. Such blocks will lay smooth and stay smooth regardless of traffic loads or extremes of temperature. Uniformity of composition, texture and density are very important factors, and explain why we are so exacting in the matter of raw materials and laboratory supervision.

Method of Laying Asphalt Blocks

The installation of asphalt blocks is quite simple and numerous contractors prefer to lay the blocks with their own labor. However, we are always glad to furnish a reliable superintendent or experienced block layers to assist in the operation if such service is desired. We shall also be glad to bid on the installation complete when location and job conditions will permit.

Asphalt Blocks may be easily and economically laid on any suitable foundation. Depending on the kind and condition of the foundation, the blocks are usually laid either on half-inch cement mortar bed or on a thin asphalt mop coating spread uniformly over the foundation surface. After laying, the method of joint treatment—either by an asphalt seal, a cement grout or a sand fill—is determined by the location of the work and the service to which the pavement is to be subjected.

Typical Asphalt Block Installations

Baltimore & Ohio R. R. System, Cincinnati	Platforms
General Motors Truck Corp., Pontiac	Coach factory
Studebaker Corporation, South Bend	Auto plant
Hudson Motor Car Company, Detroit	Driveways
Fisher Body Corporation, Detroit	Press shops
Morgan & Wright Company, Detroit	Tire plant
D. & C. Navigation Co., Cleveland	Piers and docks
Rock Island Lines, Chicago	Bridges
Chicago, Burlington & Quincy R. R., Chicago	Freighthouses
Atchison, Topeka & Santa Fe Ry., Chicago	Roundhouses
Indianapolis Union Station	Platforms
Grand Trunk Railway System, Detroit	Waterproofing
J. L. Hudson Department Store, Detroit	Service areas
Texas & Pacific Ry. Co., Ft. Worth	Freighthouse

INCORPORATED 1885

THE HASTINGS PAVEMENT COMPANY

Compressed Asphalt Flooring Blocks and Tiles

TELEPHONE
WHitehall 4-9140

25 Broad Street
NEW YORK, N. Y.

WORKS
HASTINGS-ON-HUDSON, N. Y.

Asphalt Blocks

Hastings Asphalt Blocks have been manufactured continuously for more than 45 years. Their use provides an asphalt surface in its most convenient form. Manufactured at a large permanent plant, shipped in block form ready to lay, Hastings Asphalt Blocks are always obtainable in any quantities for new work, for extensions or renewals.

Composition—Hastings Asphalt Blocks are made of a scientifically proportioned combination of refined asphalt, crushed rock and pulverized stone dust, heated, mixed and shaped into uniform blocks in giant hydraulic presses under a minimum pressure of 4000 lbs. per sq. in.

SIZES AND WEIGHTS

Width, ins.	Length, ins.	Depth, ins.	Weight each, lbs.	Weight per sq. ft., lbs.	Blocks per sq. yd.
5	12	2	11.0	26.0	21.5
5	12	2½	13.3	32.0	21.5
4	8	1¼	3.5	15.5	40.0

Adaptability—Asphalt blocks have practically an unlimited application in the industrial field. In particular they are most extensively used for piers, viaducts, floors, loading platforms, driveways, courtyards and waterproofing protection.

Asphalt Block Non-skid Construction

Full protection against skidding in any weather is provided by the design of the recessed joints in Hastings Asphalt Block Non-skid Construction. Readily adaptable to all surfaces, Hastings Asphalt Block Non-skid Construction is especially effective in eliminating all danger of skidding on grades and curves of ramps, viaducts and driveways.

Asphalt Tiles

Asphalt tiles are made in two sizes and shapes: Hexagonal 8½ ins. (side to side) by 2 ins. (deep) and Square, 8x8x2 ins. Artistic, long-lasting, smooth and resilient, they are especially appropriate for parks, schools, cemeteries, public grounds, or surfaces subjected primarily to foot traffic. They are usually laid on sand, cinder or natural soil base.

"Eightfour" Blocks

The 8x4x1¼-in. asphalt blocks serve all the purposes of the larger and heavier blocks where service conditions warrant their use, and where weight and thickness of the surface must be kept to certain specified minimums.

Waterproofing Protection—"Eightfour" Asphalt Blocks laid over waterproofing membrane on bridges and viaducts, provide a dense protective seal which effectively guards against damage to the waterproofing from track ballast or water seepage.

Roof Decks and Upper Floors—The toughness and density of "Eightfour" Asphalt Blocks, combined with their small size and light weight, adapt them admirably for roofs and upper floors subject to traffic or used for storage, parking or recreational purposes.

Advantages

Hastings Asphalt Block Pavements are smooth, dustless, quiet, easy under foot, non-absorptive and durable as the hard rock of which they are made.

They present a gritty, non-slippery surface, will not expand or contract, are free from odors and exudations, and will not indent or distort under heavy standing loads or concentrated traffic.

Easy to lay, to take up and relay, Hastings Asphalt Blocks are economical both in first cost and maintenance. They are made to suit all degrees of temperature and all conditions of traffic.

Laying Asphalt Blocks

The character and condition of the foundation determine the use of either a ½-in. cement mortar bed or a uniform mop coat of asphalt upon which to lay the blocks. Joints are broken by a lap of about 4 ins. and are sealed with asphalt, grouted with cement or filled with sand, depending on the uses to which the surface is to be subjected.



Compressed Asphalt Flooring Blocks

References

Manufacturing Plants, etc.

Otis Elevator Co., Harrison, N. J.
Westinghouse Electric & Mfg. Co., Essington, Pa.
U. S. Navy Yards: Brooklyn, Boston, Washington
U. S. Naval Bases, Brooklyn and Hampton Roads
Standard Steel Works, Burnham, Pa.
New York Central Railroad Warehouse, New York, N. Y.

Platforms

Arbuckle Building, Brooklyn, N. Y.
U. S. Army Supply Base, Brooklyn, N. Y.
Lehigh Valley Railroad, Easton, Pa.
Canadian Pacific Railroad, Three Rivers, Canada

Viaducts and Bridges

Victory Bridge over Raritan River, Perth Amboy, N. J.
Susquehanna River Bridge, Columbia and Wrightsville, Pa.
Sunnyside Yards, Pennsylvania Railroad, New York, N. Y.
New Jersey State Highway Bridges (over 200)
Trenton-Morrisville Delaware River Bridge, Trenton, N. J.

Piers

Pier No. 84 South, Philadelphia, Pa.
Gerard Piers Nos. 3 and 5, Philadelphia, Pa.
Bush Terminal, Pier No. 6, Brooklyn, N. Y.
Ocean Steamship Co. Piers, Savannah, Ga.
U. S. Army Supply Base Piers, Brooklyn, N. Y.
New York City Piers, Department of Docks, New York, N. Y.
Lehigh Valley Railroad Pier, Jersey City, N. J.
Wilson Line Terminal Pier, Hoboken, N. J.
McComas Street Terminal Pier and Warehouse, Baltimore, Md.

Walks, Driveways and Courtyards

Greenwood Cemetery, Brooklyn, N. Y.
Biltmore Country Club, Rye, N. Y.
Grand Central Station, New York, N. Y.
G. A. R. Memorial High School, Wilkes-Barre, Pa.
Prospect Park, Brooklyn, N. Y.